When Cumulative Causation Conflicts with Relative Economic Opportunity: Recent Change in the Hispanic Population of the United States

David M. Heer
University of California, San Diego

ABSTRACT

The theory of cumulative causation, originated by Gunnar Myrdal and elaborated by Douglas Massey, implies that a given migration stream normally increases over time. Nevertheless, both Myrdal and Massey recognized that a process of cumulative causation could not continue indefinitely. To explain how this process might cease, I advance a two-part hypothesis applying to a group with little education or English fluency, such as Hispanic immigrants to the United States, which is thereby eligible to fill only a limited subset of jobs. First, the higher the percentage of Hispanics in a population in a given destination, the lower the relative economic opportunity in that area. Second, the lower the relative economic opportunity in a given area, the lower the subsequent rate of population growth for Hispanic immigrants in that area. The results of the quantitative analysis suggest that relative economic opportunity did have a major influence in counteracting the effects associated with the theory of cumulative causation.

Keywords: 1. international migration, 2. labor markets, 3. cumulative causation, 4. Hispanic, 5. United States.

RESUMEN

La teoría de la causalidad acumulada, creada por Gunnar Myrdal y elaborada por Douglas Massey, sugiere que un flujo migratorio normalmente aumenta con el tiempo. Sin embargo, Myrdal y Massey reconocen que un proceso de causalidad acumulada no puede continuar indefinidamente. Para explicar cómo puede cesar este proceso, se propone una hipótesis compuesta de dos partes, aplicándola a un grupo que tiene un nivel bajo de educación y poco dominio del inglés, como los inmigrantes hispanos en Estados Unidos, que los hace elegibles para ocupar sólo una porción limitada de empleos. En primer lugar, cuanto más alto es el porcentaje de hispanos en la población de un destino determinado, menor es la oportunidad económica relativa en dicha área. En segundo lugar, cuanto menor es la oportunidad económica relativa en un área determinada, menor será el crecimiento subsecuente de la población hispana en esa área. Los resultados del análisis cuantitativo sugieren que la oportunidad económica relativa tiene una influencia importante en contrarrestar los efectos asociados con la teoría de la causalidad acumulada.

Palabras clave: 1. migración internacional, 2. mercados de trabajo, 3. causalidad acumulada, 4. hispanos, 5. Estados Unidos.

The theory of cumulative causation, originated by the noted Swedish economist Gunnar Myrdal and elaborated by Douglas Massey, implies that a given migration stream normally increases over time. This is mainly because, at a given destination, networks of migrants from a particular place of origin provide social capital enabling relatives and friends who migrate to obtain jobs easily and to adjust quickly to the new environment. The greater the size of the migratory stream, the stronger the network. The stronger the network, the greater the size of the migratory stream. According to this theory, other things being equal, the volume of a migration stream will be ever increasing.

Gunnar Myrdal first described the theory of cumulative causation in *Rich Lands and Poor,* published in 1957. This book, originally a series of lectures given in 1955 at Cairo, Egypt, was concerned with the large gap separating the per capita income of the less developed nations from that of the more developed nations, and it provided a prescription for narrowing that gap. Myrdal began the second chapter, "The Principle of Circular and Cumulative Causation," with what he described as the vague concept of the vicious circle. The vicious circle was an example of circular and cumulative causation, but of one particular type: a set of forces that reduced the level of some measure of welfare. In the vicious circle, two variables act to create a downward spiral. Myrdal gave as an example the case of a poor man who, because of his inability to nourish himself properly, loses his health, which, in turn, reduces his earnings capacity so that he becomes even poorer than he had been originally.

Myrdal went on to explain that circular and cumulative causation could also create an upward spiral. As an example, he cited the improvement in the status of the American Negro since the publication in 1944 of his famous book, *An American Dilemma: The Negro Problem and Modern Democracy.* In the case of the American Negro, white prejudice reduced the standard of living for blacks while the blacks' low standard of living increased white prejudice. In *An American Dilemma,* Myrdal had predicted that this vicious circle would end. Exogenous forces would impel a decline in white prejudice against blacks, which would increase blacks' standard of living, further reducing white prejudice. In *Rich Lands and Poor,* Myrdal stated that his prediction had been correct: The process of circular and cumulative causation had indeed caused a remarkable increase in standard of living for blacks.

In a series of publications, Douglas Massey and his associates (1990, 1993, 1998) have elaborated on the theory of cumulative causation to explain the continuous rise in the magnitude of Mexican immigration to the United States. Massey's latest and most extended discussion appears in *Worlds in Motion,* where he states, "Causation is cumulative in the sense that each act of migration alters the social context within

which subsequent migration decisions are made, typically in ways that make additional movement more likely" (1998:45-46).

Massey (1998) describes seven factors that act in a circular way to cause additional migration: (1) expansion of networks, (2) distribution of income, (3) distribution of land, (4) organization of farm production, (5) culture of migration, (6) distribution of human capital, and (7) social labeling. Of these factors, I believe I interpret Massey correctly when I deem the first, expansion of networks, to be the most important. Massey et al. (1987) devoted Chapter 6 to discussing the importance of social networks in stimulating the migratory flow from villages in western Mexico to destinations in the United States: "The emergence of mass migration during the 1970s was made possible only by the prior development of a complex social structure that supported and encouraged it… Using comparative historical, ethnographic, and survey data, we illustrate how social networks develop and expand over time to make U.S. migration accessible to all classes of society, transforming it from an isolated social phenomenon to a mass movement fundamental to community life" (1987:139). According to these authors, at a given destination, networks of migrants from a particular place of origin provide social capital enabling relatives and friends who migrate to obtain jobs easily and generally adjust themselves quickly to their new environment.

Among the first demographers to emphasize the importance of social networks in stimulating migration from a particular area of origin to a particular destination were John MacDonald and Leatrice MacDonald (1964). Their article coined the term "chain migration" to refer to the process of cumulative causation whereby, at a particular destination, each additional migrant from a particular place of origin strengthened the social network for potential migrants from that place of origin. Even earlier, the noted immigration historian Oscar Handlin (1951) had remarked on the importance of social networks in the destination for European immigrants to the United States, and Morton Rubin (1960) had noted the importance of such networks for migrating from a rural community in Mississippi to northern cities.

Both Myrdal and Massey have recognized that upward spirals of cumulative causation do not last indefinitely. Massey is very specific in this regard: "In any finite population, of course, processes of cumulative causation cannot continue *ad infinitum*" (1998, 48). What could terminate a cumulative upward spiral of migration from a particular place of origin to a particular destination? In my opinion, the most important factor would be a reduction, relative to other potential destinations, in economic opportunity for immigrants from a particular place of origin.

In the case of Mexican immigrants to Los Angeles County, we have a large number of people with little education and limited English. The lack

of a high-school degree and the inability to speak English are of relatively little importance for performing jobs in garment and many other manufacturing industries, the construction industry, the restaurant and hotel industry, and gardening services. In Los Angeles County, bilingual foremen are able to talk to both workers under their direction, in Spanish, and their own supervisors, in English. Nevertheless, the number of jobs in the county requiring neither a high-school degree nor English fluency is limited. Marcelli and Heer (1997) showed that for Los Angeles County in 1990, for males and females considered separately, the distributions by occupation, industry, and class of worker for undocumented and legal immigrant workers from Mexico were, in each case, very dissimilar to that of the total labor force, in that Mexican immigrants were heavily concentrated in low-skill jobs that did not demand English fluency. Consequently, we should expect that job opportunities for Hispanic immigrants in Los Angeles County are less favorable than for areas that previously have seen very little Hispanic immigration.

To summarize, my hypothesis is:

1. The higher the percentage of Hispanic immigrants in a population in a given destination, the lower the relative economic opportunity in that area.
2. The lower the relative economic opportunity in a given area, the lower the subsequent rate of population growth for Hispanic immigrants in the area.

The example of Los Angeles County justifies the first proposition. The second proposition is simply a restatement of the classic push-pull explanation of international migration (Mattei, 2001; Sassen, 2001). Escobar *et al.* (1998) outline the importance of demand-pull and supply-push factors as determinants of the flow of Mexican immigrants to the United States.

What exactly do I mean by "relative economic opportunity" and, ideally, how would I want to measure it? The basic concept would be the earnings of Hispanic immigrants in a particular place relative to earnings in the United States as a whole, with earnings adjusted for local variations in the cost of living and computed separately for each skill level. This should involve a matrix of earnings subdivided by the recipient's gender, educational attainment, and English fluency. Finally, we would have to summarize cost-of-living-adjusted earnings at each skill level, using a weighting scheme comprising the proportion of Hispanic immigrants in the United States as a whole at each skill level. For 2000, this measurement of relative job opportunity cannot be undertaken until the release, sometime in 2003, of the 2000 Census Public Use Microdata Sample.

In the absence of this measurement, what existing data might support the first of my hypotheses? We can examine the trends in earnings for production workers in manufacturing, comparing California—in 1990, the state with the highest proportion of foreign-born persons born in Latin America—against the United States as a whole. Data show that weekly earnings of production workers in manufacturing in California rose from $494.91 in 1992 to $583.11 in 2000 (California Employment Development Department 2002). However, after adjusting for change in the All Urban Consumers Consumer Price Index (U.S. Bureau of Labor Statistics, 2002), the average weekly earnings declined 2.3% over the eight-year period. For the United States as a whole, average weekly earnings for production workers in manufacturing rose from $442 in 1990 to $597 in 2000. The 1990-2000 percentage increase, adjusted to the CPI, was 3% (U.S. Census Bureau, 200: 400, Table 616). However, given the extreme occupational segregation of undocumented and legal Mexican immigrants from the overall Los Angeles County labor force (Heer *et al.,* 1992; Marcelli and Heer, 1997), it is in no way certain that the trend in earnings for Mexican immigrants in California was identical to that of all production workers in manufacturing in the state.

Accordingly, in this article, I rely on journalistic accounts of relative economic opportunity in Los Angeles County, the Las Vegas Metropolitan Statistical Area (MSA), and the town of Siler City, North Carolina. Marked differences in both the Hispanic portion of the total population in 1990 and the percentage increase in the Hispanic population from 1990 to 2000 differentiate these three locations.

Newspaper Accounts of Local Variation in Relative Economic Opportunity

According to 1990 Census data, Los Angeles County had a very high proportion of Hispanic immigrants in its economically active population. Specifically, among the labor force aged 18 to 64 years, 24.8% were foreign-born persons of Hispanic origin, of whom 42.1% had completed fewer than nine years of schooling (Marcelli and Heer, 1997).

On January 24, 2001, the *Los Angeles Times* (McDonnell, 2001) reported:

STATE'S ALLURE FOR IMMIGRANTS WANES
Jobs: Hearing Word of More Work and Better Pay Elsewhere,
Some Recent Arrivals Are Leaving, Study Finds

It's no surprise to Rene Castillo that many immigrants are eschewing California for places like North Carolina, Massachusetts and the Pacific Northwest. He's thinking about going to Indiana himself in a few months.

"There's already so many people here looking for work, it's hard to find steady jobs that pay much above the minimum," said Castillo, tape measure in his pocket as he and other day laborers trolled languidly for jobs Tuesday among motorists in the HomeBase parking lot on Slauson Avenue in Ladera Heights. "People say life is better elsewhere."

Although California remains the No. 1 destination for foreign immigrants, the state is not quite the magnet that it was a decade ago.

"California is no longer the promised land that it was for immigrants," said Dowell Myers, a demographer and urban planner at USC. Myers is the coauthor of a study released Tuesday that finds that the pace of foreign immigration to California has finally slowed after three decades of rapid growth.

The attitudes of people like Castillo help explain why. Word of saturated job markets in California and of opportunities in other states, has traveled rapidly to the towns and cities of Mexico and Central America, which generate the bulk of immigrants to California.

Pioneering immigrants have set up beachheads in such far-flung locales as Seattle and Minneapolis and New York, informing their compatriots and urging others to join them. Networks have developed among villages in Mexico and neighborhoods in Brooklyn, small towns in Pennsylvania and rural enclaves in Georgia. Drive-by hiring centers, long a flash point for controversy in California, have popped up in suburbs on the East Coast, and in the South and Midwest.

Many low-wage immigrants have left California and relocated elsewhere in the country after becoming fed up with the often rough-and-tumble job market, even amid an economic boom.

"Sure, a lot of the young people go to the two Carolinas, to Washington, to Virginia," said Jose de Jesus Lopez, a 52-year old native of Mexico who was seeking day jobs in the parking lot on Slauson. "They hear there's more jobs, that the patrones [bosses] pay better."

The problem is not a lack of jobs here, the immigrants say—indeed, the region's unemployment rate remains very low. And low-wage employment in construction, restaurants, hotels and elsewhere is relatively plentiful, even for those here illegally.

But the glut of low-skilled workers drives wages down. "There are so many of us here that the work we do has no value," complained Hector Tome, a father of four who says he refuses to work for less than $10 an hour. Others in the parking lot take a similar stand, rejecting jobs that pay less…

Table 1 presents data for Los Angeles County, California, concerning the change from 1990 to 2000 in the total population, the Hispanic population, and the foreign-born population born in Latin America. (The Census Bureau defines the "foreign-born population" as persons born outside the United States or its possessions, but the category excludes those individuals born outside the United States if one, or both, of the parents is a U.S. citizen.) The "foreign-born population born in Latin America" is a category that is largely congruent with the "foreign-born population of Hispanic origin," but it includes persons born in Brazil, Haiti, Jamaica, and other non-Spanish-speaking Latin American nations while excluding non-Latin Americans who consider themselves of Hispanic origin—such as people from Spain or the Philippines. For the sake of simplicity, I shall refer to the foreign-born

population born in Latin America as the population born in Latin America.

Table 1. Demographic Change in Los Angeles County, California, 1990-2000.

Year	Total Population (Number)	Hispanic Population (Number)	Hispanic Population (%)	Lat. Am.-born Population (Number)	Lat. Am.-born Population (%)
2000	9 519 338	4 242 213	44.6	2 143 049	22.5
1990	8 863 164	3 163 343	35.7	1 697 144	19.2
1990-2000 Increase (%)		7.4	34.1		26.3

Source: Tables from the 1990 and the 2000 Census of Population and Housing retrieved from <www.census.gov>, accessed May 15, 2002.

A 1999 *Los Angeles Times* article (Cleland and Romney, 1999) compared job opportunities in Los Angeles with those in Las Vegas, Nevada, and indicated that the process of chain migration away from Los Angeles toward Las Vegas is well underway:

LATINOS FIND LUCK IN VEGAS
Tens of Thousands of Immigrants, Mostly from the Barrios of Los Angeles, Are Discovering That in This Booming Casino Economy, Even a Kitchen Helper Can Lead a Middle-Class Life

LAS VEGAS—No one can say Lilia Guzman didn't give Los Angeles an honest try. But after 15 years of going nowhere in South-Central, the weary garment worker from Acapulco was ready for a fresh start. In 1994, she packed up her husband and four kids and headed east.

Guzman followed her dream to the land of quickie weddings and Elvis impersonators, a place where possibilities seemed as vast as the desert horizon and taking risks was as natural as breathing. And like thousands of restless immigrants who beat that trail before her, she wasn't disappointed.

In Las Vegas, Guzman soon learned, even a kitchen helper can lead a middle-class life. A decent wage, health insurance, vacations—all those things she'd never had the nerve to expect were suddenly hers in exchange for eight hours of chopping vegetables at the Mirage. Within two years, even after a stroke left her husband disabled, she was able to buy, with her oldest son, a five-bedroom house in a quiet north-side neighborhood.

"Oh, it's a thousand times better," said Guzman, who has since persuaded her uncle, brother and a handful of cousins to take the same plunge. Laughing, she added, "There's nobody left in Los Angeles." …

With its booming casino economy creating an abundance of service and construction jobs, Las Vegas leads the pack, drawing fortune seekers from all parts of the United States and, increasingly, straight from Mexico and Central America. But the sprawling immigrant barrios of Los Angeles are by far the primary source of new workers….

The casinos create opportunities even for those without English-language skills or high school degrees, but that is only part of the attraction. Las Vegas also offers low rents, family homes for less than $100,000 and quiet neighborhoods. Although some complain

of a growing gang presence, 1998 federal crime statistics showed Clark County and the surrounding area had significantly less violent crime than Los Angeles County, with seven violent crimes per 1,000 residents, versus 10 per 1,000 in Los Angeles County…

Table 2 presents data concerning the 1990-2000 change in the total population, the Hispanic population, and the population born in Latin America in Clark County, Nevada (the Las Vegas MSA in 1990 and the MSA's central county in 2000). In 1990, 9% of the Las Vegas MSA population was Hispanic, slightly above the U.S. average.

Table 2. Demographic Change in Clark County, Nevada, 1990-2000.

Year	Total Population (Number)	Hispanic opulation (Number)	Hispanic Population (%)	Lat. Am.- born Population (Number)	Lat. Am.- born Population (%)
2000	1 375 765	302 143	22.0	151 524	11.0
1990	741 459	87 823	10.5	31 621	4.3
1990-2000 Increase (%)		85.4	244.0		379.2

Source: Tables from the 1990 and the 2000 Census of Population and Housing retrieved from <www.census.gov>, accessed May 15, 2002.

A newspaper account of events in a small city in North Carolina reveals a phenomenal increase in Hispanic population over the 1990-2000 decade (Steadman, 2000):

A CHANGING TOWN
Immigration: A Small Town Struggles to Cope with Change

SILER CITY- The trill of Mexican guitars and the collective murmur of Spanish-sung hymns float down the narrow aisles of St. Julia Catholic Church, where as many as 200 Latino parishioners jam the pews and spill into the vestibule.

Outside the tiny church, the aging downtown sports a new cluster of small tiendas, stores catering to the area's burgeoning Hispanic populace. A decade ago, downtown was mostly empty storefronts and vacant sidewalks in this Chatham County town of 5,000...

For more than a century after Reconstruction, little seemed to change here. In the 1990s, however, upheaval arrived quickly with a Spanish accent. Thousands of new Hispanic immigrants have swollen the population and changed the town forever...

Three thousand or more immigrants, mostly from Mexico but also from Nicaragua and other Central and South American countries, have arrived in recent years to work at the chicken-processing plants and factories that make up much of local industry. Often they were recruited for hard-labor jobs that plant owners had trouble filling, or they followed a friend or relative who had come here to work…

Let us now look at the 1990-2000 change in total population and in Hispanic population for Siler City, North Carolina.

Table 3. Demographic Change in Siler City, North Carolina, 1990-2000.

Year	Total Population	Hispanic Population (Number)	Hispanic Population (%)
2000	6 966	2 740	39.3
1990	4 808	184	3.8
1990-2000 Increase (%)		44.9	1 389.1

Note: No published data exist for the population born in Latin America.

Source: Tables from the 1990 and the 2000 Census of Population and Housing retrieved from <www.census.gov>, accessed May 15, 2002.

Networks versus Employer Recruitment as Sources of Job Information

In principle, potential employees may find jobs in two ways: Through networks, current employees tell friends and kin—who are potential employees—about the existence of job openings. Alternatively, employers actively recruit new employees.

Employer recruitment can take several forms. The simplest is advertising. For example, a *San Diego Union Tribune* article cited Professor David Hayes-Bautista, director of UCLA's Center for Latino Health and Culture, as saying that he had been "driving in his cousin's car in Michoacán, listening to a morning radio program, when he suddenly heard announcements advertising jobs in Iowa and North Carolina" (Weisberg and Sanchez, 2002).

However, employers can also recruit employees more actively. The history of immigration to the British North American colonies during the eighteenth century reveals that indentured labor was very common. Under such a system, an employer paid the transport costs from Europe to North America in exchange for the right to an individual's labor for a specified time, commonly four to seven years. During the colonial period, employers frequently paid bounties to either an immigration agent or the master of the ship that transported the immigrant (Bernard, 1980). Lawrence Cardoso (1980) documents that labor recruiters representing farms, mines, and railroads in the United States established offices in Mexican border cities in the 1890s and developed contacts with Mexican recruiters to bring workers to U.S. enterprises.

Notably, Cleland and Romney's article on Las Vegas explicitly mentions only network recruiting, whereas Steadman's article on Siler City

notes, "Often they were recruited for hard-labor jobs that plant owners had trouble filling, or they followed a friend or relative who had come here to work." The very large increase in Siler City's Hispanic population coupled with the newspaper account citing employer recruitment suggest that while network recruiting played a role, employer recruiting was the most important factor.

Fred Krissman (2001) has criticized social scientists for their over-emphasis on networks and their under-emphasis on employer recruitment as mechanisms for connecting immigrants to jobs in three U.S. crop industries: citrus, grapes and apples. He bolstered his contention through field study in both rural Mexico and the United States. Krissman's contention received dramatic additional support after it was announced on December 19, 2001, that a federal grand jury in Chattanooga, Tennessee, had indicted Tyson Foods, Inc. and six of its top employees on charges of conspiring to smuggle illegal immigrants into the United States to work at Tyson poultry-processing plants:

> The 36-count indictment alleges that Tyson created a corporate culture that condoned hiring illegal immigrants in order to meet production targets and cut costs. It also alleges that the defendants helped illegal immigrants obtain false U.S. employment documents. The indictment implicates 15 Tyson plants in nine states... The indictment of the Springdale, Arkansas poultry company followed a two-and-a-half year undercover investigation by the Immigration and Naturalization Service. The INS said it was the first time it had taken action against a company the size of Tyson, which reported $10.75 billion in sales for fiscal 2001, which ended Sept. 29... According to the claims of the indictment, Tyson employees paid federal undercover agents with corporate checks for transporting illegal immigrants to its processing plants. The indictment also alleges that Tyson employees helped illegal workers use false identification documents, such as Social Security cards... (Merrick, 2001:A4).

Quantitative Analysis

Social networks can be of great importance in helping a newly arrived immigrant get a good job if, at a destination, such jobs are available despite an immigrant's low educational attainment and lack of English fluency. On the other hand, if, at a destination, relative economic opportunity declines or is already low, we should expect both already arrived and potential immigrants to consider alternative destinations and to use their networks to find these more favorable alternatives. Finally, if employer recruitment is also important in linking potential workers to job opportunities, then the presence of networks is not a necessary factor for job recruitment to areas where a potential migrant worker has no friends or relatives.

Assuming the validity of the first part of the hypothesis, we could use as a proxy for relative economic opportunity the proportion of Hispanic immigrants in a given population in 1990. It would then follow that the growth in the proportion of Hispanic immigrants in a given community from 1990 to 2000 would vary inversely to the percentage for the community's Hispanic population in 1990. Unfortunately, because the 2000 Census Public Use Microdata Sample is not yet available, we currently cannot measure the percentage growth in the Hispanic foreign-born population. We can, however, measure the percentage increase in the Hispanic population of each state by the Hispanic portion of each state's population in 1990. Moreover, with recently released 2000 Census data, we can measure the percentage change in the population born in Latin America by the proportion of the total population born in Latin America in 1990, the size of which is closely related to the number of Hispanic immigrants. The only differences are that the population born in Latin America includes immigrants from such non-Spanish-speaking nations in Latin America as Brazil, Haiti, and Jamaica and excludes immigrants from Spain or from any other country outside of Latin America, such as the Philippines, where some persons claim to be of Hispanic origin. In 1998, immigrants to the United States from Spanish-speaking nations constituted 83.8% of all permanent legal immigrants from Latin America (United States Immigration and Naturalization Service, 2000:47).

Accordingly, I will first analyze the percentage increase in the Hispanic population from 1990 to 2000 by the Hispanic portion of the population in 1990 for each of the 50 states and the District of Col-umbia. I assume that the larger the Hispanic proportion of the state's population in 1990, the less favorable was the economic opportunity for Hispanic immigrants in that state. I also assume that the 1990-2000 percentage increase for that population in a given state is a measure of the degree to which Hispanic immigrants have directly migrated to that state or the degree to which Hispanic immigrants have migrated to that state from the state to which they first arrived from abroad.

Table 4 shows that the percentage increase in Hispanic population varied widely by state. For the United States as a whole, the increase was 57.9 percent. The lowest increase (7.8%) was in Hawaii, and the largest (393.9%) was in North Carolina. Seven states—Alabama, Arkansas, Georgia, Nevada, North Carolina, South Carolina, and Tennessee—had increases of 200% or more. Chart 1 shows that, in general, those states with the largest Hispanic percentages of total population in 1990 had the smallest percentage increases in Hispanic population in the subsequent 10-year period. However, among states with small Hispanic percentages of the total population in 1990, the 1990-2000 percentage change in Hispanic population varied widely.

Table 4. Hispanic Percentage of Total Population in 1990, the 1990-2000 Percentage Increase in Hispanic Population, and the 1990-2000 Percentage Increase in Total Population, for Each State and for the United States.

Area	1990 Hispanic Percentage of Total Population	1990-2000 Percent Change in Hispanic Population	1990-2000 Percent Change in Total Population
Alabama	0.6	207.9	10.1
Alaska	3.2	45.2	14.0
Arizona	18.8	88.2	40.0
Arkansas	0.8	337.0	13.7
California	25.8	42.6	13.8
Colorado	12.9	73.4	30.6
Connecticut	6.5	50.3	3.6
Delaware	2.4	135.6	17.6
D.C.	5.4	37.4	-5.7
Florida	12.2	70.4	23.5
Georgia	1.7	299.6	26.4
Hawaii	7.3	7.8	9.3
Idaho	5.3	92.1	28.5
Illinois	7.9	69.2	8.6
Indiana	1.8	117.2	9.7
Iowa	1.2	152.6	5.4
Kansas	3.8	101.0	8.5
Kentucky	0.6	172.6	9.7
Louisiana	2.2	15.8	5.9
Maine	0.6	37.1	3.8
Maryland	2.6	82.2	10.8
Massachusetts	4.8	49.1	5.5
Michigan	2.2	60.7	6.9
Minnesota	1.2	166.1	12.4
Mississippi	0.6	148.4	10.5
Missouri	1.2	92.2	9.3
Montana	1.5	48.5	12.9
Nebraska	2.3	155.4	8.4
Nevada	10.4	216.6	66.3
New Hampshire	1.0	80.8	11.4
New Jersey	9.6	51.0	8.9
New Mexico	38.2	32.1	20.1
New York	12.3	29.5	5.5
North Carolina	1.2	393.9	21.4
North Dakota	0.7	66.9	0.5
Ohio	1.3	55.4	4.7
Oklahoma	2.7	108.1	9.7
Oregon	4.0	144.3	20.4
Pennsylvania	2.0	69.7	3.4
Rhode Island	4.6	98.5	4.5
South Carolina	0.9	211.2	15.1
South Dakota	0.8	107.6	8.5

Table 4. Continuation.

Area	1990 Hispanic Percentage of Total Population	1990-2000 Percent Change in Hispanic Population	1990-2000 Percent Change in Total Population
Tennessee	0.7	278.2	16.7
Texas	25.5	53.7	22.8
Utah	4.9	138.3	29.6
Vermont	0.7	50.3	8.2
Virginia	2.6	105.6	14.4
Washington	4.4	105.8	21.1
West Virginia	0.5	44.6	0.8
Wisconsin	1.9	107.0	9.6
Wyoming	5.7	23.0	8.9
United States	9.0	57.9	13.2

Source: Tables from the 1990 and 2000 Census of Population and Housing retrieved from <www.census.gov>, accessed May 15, 2002.

Chart 1. Percentage Change in Hispanic Population 1990-2000 by Percent Hispanic Population in 1990.

Charts 2 and 3 plot the percentage change in Hispanic population from 1990 to 2000 by the percentage of Hispanic population in 1990. Chart 2 plots this separately for the 19 states for which the 1990-2000 percentage change for the total population was above the U.S. average, and Chart 3 plots this for the 32 states below the U.S. average. As Chart 1 demonstrated, those states with the largest percentage of Hispanics within the total population in 1990 had the smallest percentage increase in Hispanic population in the subsequent decade but states with a small Hispanic percentage in 1990 exhibited a wide variation in the 1990-2000 percentage change in Hispanic population.

Chart 2. Percentage Change in Hispanic Population in 1990-2000 by Percent Hispanic Population in 1990 for 19 States for Which the 1990-2000 Percent Population Change was Above the United States Average.

Chart 3. Percentage Change in Hispanic Population 1990-2000 by Percent Hispanic Population in 1990 for 32 States for Which the 1990-2000 Percent Population Change was Below the United States Average.

Table 5 provides a four-cell cross-classification. The 51 states (including the District of Columbia) are subdivided according to whether the 1990-2000 percentage growth in Hispanic population was above or below the national average of 57.9% and the percentage of Hispanics in the total population in 1990 was above or below the national average of 9%. Of the nine states where the 1990 Hispanic percentage was above the national average, only four (44.4%) had a 1990-2000 Hispanic-population growth rate above the U.S. rate. Conversely, among the 42 states where the Hispanic percentage of total population in 1990 was below the U.S. average, 30 states (71.4%) had a 1990-2000 Hispanic-population growth rate above the U.S. growth rate.

Table 5. Relationship between the 1990 Hispanic Percentage of Total Population and the 1990-2000 Percentage Change in Hispanic Population, by State.

| | *1990-2000 Percent Change in Hispanic Population:* | | *No. of* |
	Above U.S. Mean	*Below U.S. Mean*	*Cases*
1990 Percent Hispanic:			
Above U.S. Mean	4 (44.4%)	5 (55.6)	9
Below U.S. Mean	30 (71.4%)	12 (28.6%)	42

We may also ascertain whether variations in the 1990-2000 growth rate of the total population of each state influenced these results. For the United States as a whole, the total-population growth rate was 13.2%. The growth rate was above the U.S. average in 19 states and below in 32 states. Table 6 performs the same tabulation as Table 5, but does so separately for each of these sets of states. The results show no diminution of the association shown in Table 5. Consider first the 19 states with total-population growth rates above the national average. In the seven states where the Hispanic portion of the total population in 1990 was above the U.S. average, 57.1% had a Hispanic growth rate greater than the U.S. average. In the 12 states where the Hispanic portion in 1990 was below the U.S. average, 91.7% had a Hispanic growth rate greater than the U.S. average. Consider next the 32 states where the 1990-2000 percentage change in total population was below the U.S. average. Among these states, in 1990, only two had a Hispanic portion of the total population above the U.S. average. Neither state had a 1990-2000 Hispanic growth rate above the U.S. mean. However, of the 30 states where the Hispanic portion of the total population in 1990 was below the U.S. mean, 63.3% had a 1990-2000 Hispanic growth rate above the U.S. mean.

The results shown in Tables 4 through 6 strongly support the idea that relatively unfavorable job opportunity can counter a positive spiral causing continual increase in immigration into a particular locality. On the other hand, having a total population with a low percentage of Hispanics in 1990 did not guarantee a high Hispanic growth rate between 1990 and 2000. Instead, in those states, Hispanic growth rates varied substantially.

Table 6. Relationship by State between the 1990 Hispanic Percentage of Total Population and the 1990-2000 Percentage Change in Hispanic Population, Subdivided by whether the 1990-2000 Percentage Change in Total Was Above or Below the U.S. Average.

A. For 19 States Whose 1990-2000 Percentage Change in Total Population Was Above the U.S. Average.

	1990-2000 Percent Change in Hispanic Population:		No. of
	Above U.S. Mean	Below U.S. Mean	Cases
1990 Percent Hispanic:			
Above U.S. Mean	4 (57.1%)	3(42.9%)	7
Below U.S. Mean	11 (91.7%)	1 (8.3%)	12

B. For 32 States Whose 1990-2000 Percentage Change in Total Population Was Below the U.S. Average.

	1990-2000 % Change in Hispanic Population:		No. of
	Above U.S. Mean	Below U.S. Mean	Cases
1990 Percent Hispanic:			
Above U.S. Mean	0 (0%)	2 (100%)	2
Below U.S. Mean	19 (63.3%)	11 (36.7%)	30

Results for the second part of the quantitative analysis appear in Tables 7 through 9 and in Charts 4 through 6. Again, we look first at the data for all states and then analyze separately those states where the 1990-2000 population growth rate was either above or below the U.S. average. The results of this part of the analysis are entirely similar to the results from the first part. In particular, one can note that states whose percentage of Latin American-born population in 1990 was higher than the national average had a slower rate of increase in that population than other states. However, among states with a low proportion of Latin American-born population in 1990, the 1990-2000 percentage increase in that population varied widely.

Table 7. The Percentage of Total Population in 1990 Born in Latin America,
the 1990-2000 Percentage Increase in Population Born in Latin America,
and the 1990-2000 Percentage Increase in Total Population
for Each State and for the United States.

Area	1990 Latin American-Born Percentage of Total Population	1990-2000 Percent Change in Population Born in Latin America	1990-2000 Percent Change in Total Population
Alabama	0.1	557.1	10.1
Alaska	0.6	97.0	14.0
Arizona	4.4	188.6	40.0
Arkansas	0.2	847.5	13.7
California	10.9	51.2	13.8
Colorado	1.3	380.6	30.6
Connecticut	1.8	119.0	3.6
Delaware	0.7	301.1	17.6
D.C.	4.4	37.7	-5.7
Florida	8.3	81.1	23.5
Georgia	0.7	533.7	26.4
Hawaii	0.3	99.9	9.3
Idaho	1.3	187.2	28.5
Illinois	3.1	104.0	8.6
Indiana	0.3	386.1	9.7
Iowa	0.2	462.6	5.4
Kansas	0.8	280.1	8.5
Kentucky	0.1	507.9	9.7
Louisiana	0.8	42.4	5.9
Maine	0.1	59.7	3.8
Maryland	1.8	103.1	10.8
Massachusetts	2.0	97.2	5.5
Michigan	0.3	218.5	6.9
Minnesota	0.2	577.2	12.4
Mississippi	0.1	440.3	10.5
Missouri	0.2	241.8	9.3
Montana	0.1	63.5	12.9
Nebraska	0.4	562.7	8.4
Nevada	3.9	312.2	66.3
New Hampshire	0.3	136.3	11.4
New Jersey	4.2	95.2	8.9
New Mexico	3.6	112.8	20.1
New York	6.5	61.0	5.5
North Carolina	0.3	950.9	21.4
North Dakota	0.1	187.8	0.5
Ohio	0.2	159.6	4.7
Oklahoma	0.6	255.8	9.7
Oregon	1.2	271.9	20.4
Pennsylvania	0.4	135.8	3.4
Rhode Island	2.0	116.1	4.5
South Carolina	0.2	533.3	15.1
South Dakota	0.1	266.3	8.5
Tennessee	0.1	825.6	16.7
Texas	6.2	105.5	22.8
Utah	0.8	535.7	29.6

Table 7. Continuation

Area	1990 Latin American-Born Percentage of Total Population	1990-2000 Percent Change in Population Born in Latin America	1990-2000 Percent Change in Total Population
Vermont	0.1	61.3	8.2
Virginia	1.2	152.0	14.4
Washington	1.2	200.7	21.1
West Virginia	0.1	100.8	0.8
Wisconsin	0.3	295.9	9.6
Wyoming	0.5	104.1	8.9
United States	3.4	91.3	13.2

Source: Tables from the 1990 and the 2000 Census of Population and Housing retrieved from <www.census.gov>, accessed May 15, 2002.

Table 8. The Relationship Between the 1990 Percentage of Population that Was Born in Latin America in Each State and the 1990-2000 Percentage Change in the Percentage of the State's Population Born in Latin America.

	1990-2000 Percent Change in Population Born in Latin America: Above U.S. Mean Below U.S. Mean		No. of Cases
1990 Percent Born in Latin America:			
Above U.S. Mean	5 (55.6%)	4 (44.4%)	9
Below U.S. Mean	37 (88.1%)	5 (11.9%)	42

The results of both parts of the quantitative analysis imply that relative economic opportunity may be capable of countering the effect of strong networks. However, we need more research in order to test this hypothesis thoroughly, but that must wait until after the full release of the 2000 Census Public Use Microdata Sample. We need to devise an operational measure of relative economic opportunity for Hispanic immigrants in each state both in 1990 and in 2000. Once having measured that, we will need figures on the percentage change in the number of Hispanic foreign-born persons for each state (available in the as-yet unreleased sample data from the 2000 Census). If, after this analysis with the complete data from both the 1990 and 2000 Censuses, we continue to find a strong negative relationship between relative economic opportunity for Hispanic immigrants in 1990 and 2000 and the 1990-2000 percentage increase in the Hispanic foreign-born population for each state, we shall have very convincing evidence for the hypothesis that relatively unfavorable job opportunity can terminate the upward spiral caused by the effect of strength of networks on propensity to immigrate to particular places of destination.

Table 9. The Relationship between the 1990 Percentage of Population Born
in Latin America in Each State and the 1990-2000 Percentage Change
in Population Born in Latin America for States, Subdivided by whether
the 1990-2000 Percentage Change in Total Was Above or Below the U.S. Average.

A. For 19 States Whose 1990-2000 Percentage Change
in Total Population Was Above the U.S. Average.

| | *1990-2000 Percent Change in Population Born in Latin America:* | | *No. of* |
	Above U.S. Mean	*Below U.S. Mean*	*Cases*
1990 Percent Born in Latin America:			
Above U.S. Mean	4 (66.7%)	2(33.3%)	6
Below U.S. Mean	12 (92.3%)	1 (7.7%)	13

B. For 32 States Whose 1990-2000 Percentage Change
in Total Population Was Below the U.S. Average.

| | *1990-2000 Percent Change in Population Born in Latin America:* | | *No. of* |
	Above U.S. Mean	*Below U.S. Mean*	*Cases*
1990 Percent Born in Latin America:			
Above U.S. Mean	1 (33.3%)	2 (67.3%)	3
Below U.S. Mean	25 (86.2%)	4 (13.8%)	29

Chart 4. Percentage Change in Persons Born in Latin America 1990-2000
by Percent Born in Latin America in 1990.

Chart 5. Percentage Change in Persons Born in Latin America 1990-2000
by Percent Born in Latin America in 1990 for 19 States for Which the 1990-2000
Percent Population Change was Above the United States Average.

Chart 6. Percentage Change in Persons Born in Latin America by Percent Born
in Latin America in 1990 for 32 States for Which the 1990-2000 Percent
Population Change was Below the United States Average.

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