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Abstract

Although many people believe that immigrants displace native workers, most economic research finds that immigration has little or no adverse effect on natives' employment outcomes. An unusual opportunity to explore this question in the context of a narrowly defined labor market is afforded by the influx of Vietnamese immigrants into California's market for manicurists. Over the years 1987–2002, the number of these new entrants (35,700) slightly exceeded the total number of manicurists in California in 1987 (35,500). Using data for 34 metropolitan areas over the 16-year period, the authors estimate that for every five Vietnamese who entered the market, two non-Vietnamese were displaced. This displacement appears to have been primarily due to a reduction in the number of non-Vietnamese entering the occupation rather than to an increase in the number of current manicurists leaving it.

KEYWORDS: immigrant Vietnamese manicurists' effects on employment

VIETNAMESE MANICURISTS: ARE IMMIGRANTS DISPLACING NATIVES OR FINDING NEW NAILS TO POLISH?

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Although many people believe that immigrants displace native workers, most economic research finds that immigration has little or no adverse effect on natives' employment outcomes. An unusual opportunity to explore this question in the context of a narrowly defined labor market is afforded by the influx of Vietnamese immigrants into California's market for manicurists. Over the years 1987–2002, the number of these new entrants (35,700) slightly exceeded the total number of manicurists in California in 1987 (35,500). Using data for 34 metropolitan areas over the 16-year period, the authors estimate that for every five Vietnamese who entered the market, two non-Vietnamese were displaced. This displacement appears to have been primarily due to a reduction in the number of non-Vietnamese entering the occupation rather than to an increase in the number of current manicurists leaving it.

One of the central questions in the debate over immigration policy is whether immigrants adversely affect labor market outcomes for natives. Some Americans believe they do, worrying that immigrants take jobs away from native workers. Most of the empirical evidence produced by economists, however, does not support these concerns. The result has been a "wide gulf—actually more of a deep chasm—dividing public opinion and the findings from academic studies" (Borjas 1999:62). This disagreement may emanate in part from a difference in focus, with economists concentrating on whether immigrants reduce the overall employment rates of natives, while the public is predominantly concerned that immigrants take away specific jobs.

We estimate the rate at which Vietnamese manicurists displaced non-Vietnamese manicurists in California over the 16 years from 1987 to 2002. The California market for manicurists makes an interesting case

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Licensing data on manicurists can be purchased from the California Department of Consumer Affairs, Public Information Unit, 400 R Street, Suite 2000, Sacramento, CA 95814. Copies of the Stata programs used to generate the results presented in the paper are available from David E. Harrington, Department of Economics, Kenyon College, Gambier, OH 43022.

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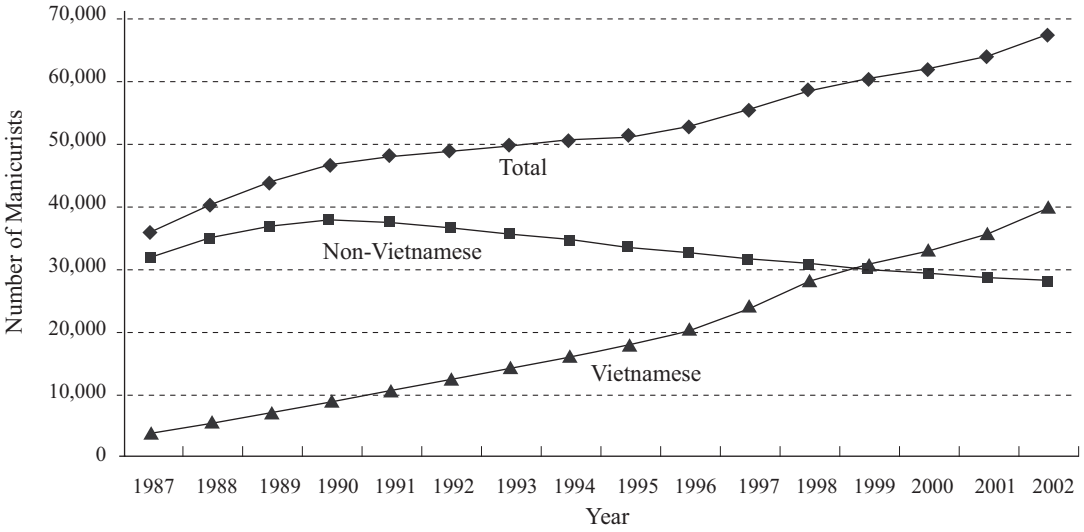

Figure 1. California Manicurists, 1987-2002.

study for several reasons. First, manicurists are easier to track than most other types of low-skilled labor because they are required to be licensed. For this study, we use information from the licensing records of 121,761 manicurists who held a California license in any of the years from 1987 to 2002. The detailed name records together with the uniqueness of Vietnamese names allow us to accurately identify Vietnamese manicurists.

Second, the number of Vietnamese manicurists increased tenfold over the years of our sample, from 3,900 in 1987 to 39,600 in 2002 (see Figure 1). In contrast, the number of non-Vietnamese manicurists grew for a few years and then steadily declined, decreasing from 31,600 in 1987 to 27,300 in 2002. As a result, the composition of manicurists changed dramatically, with the proportion Vietnamese rising from 10% in 1987 to 59% in 2002. The total number of manicurists also increased substantially over the years of our sample, from 35,500 in 1987 to 66,800 in 2002. Adjusting for population growth, the total number of manicurists grew from 1 manicurist per thousand residents in 1987 to 1.45 per thousand in 2002, an increase that is more than three times the 12% increase in real per capita income.

We estimate displacement rates using annual data for 34 metropolitan areas in California over the 16 years from 1987 to 2002. We correct for potential sources of bias, including the possibility that Vietnamese manicurists were replacing, not displacing, non-Vietnamese manicurists, using intercity supply shocks resulting from previously established ethnic enclaves and from the introduction of a Vietnamese language version of the licensing exam in 1996. The licensing data also allow us to characterize the displacement as stemming primarily from either discouraging non-Vietnamese inflows into manicuring or hastening the exit of non-Vietnamese manicurists.

Like the estimates produced by most other empirical studies of the labor market impact of immigration, ours are based on cross-metropolitan comparisons. However, we estimate the effect of immigration on a much narrower labor market than have other studies, which have usually compared the employment levels of low-skilled natives across metropolitan areas with differ-

ent immigrant populations or different immigrant inflow histories. Most of these studies have found little or no evidence of displacement effects. This is puzzling because it appears to be inconsistent with the standard model of demand and supply under the reasonable assumptions that demand is less than perfectly elastic and native labor supply is less than perfectly inelastic.

Narrowing the focus to a single occupation might reasonably be expected to yield more evidence of displacement, especially given the magnitude of the increase in supply caused by the entry of Vietnamese manicurists in California. On the other hand, demand may be quite elastic. Moreover, Vietnamese immigrants appear to have been responsible for innovations in the marketing of manicures, such as stand-alone nail salons, that may have increased the demand for manicurists and thus dampened the displacement effect. Our hope is that documenting the changes that have occurred in the market for manicurists will help shed light on the puzzle of why studies of broader labor markets find little or no evidence of displacement effects.

The Economic Theory of Displacement

Economists use a variety of theoretical models to describe the likely effects of immigration on the labor market opportunities of native workers. The standard textbook model of demand and supply implies that an increase in the supply of immigrants will reduce the number of natives employed. Johnson (1980) derived the corresponding displacement effect, demonstrating that more displacement occurs as native labor supply becomes more elastic and demand becomes less elastic. Altonji and Card (1991) developed a more complex model that allows natives and immigrants to be complements in production and also incorporates the demand of immigrants for locally produced goods. The former feature causes immigrants to have an ambiguous effect on the employment of natives and the latter feature dampens the displacement effect.

The entry of Vietnamese immigrants into the California market for manicurists appears tailor-made for the textbook model of immigration. The more complex model of Altonji and Card (1991) seems unnecessary since Vietnamese and native manicurists are close substitutes in production and Vietnamese women's demand for manicures is a very small component of the overall demand.[1] Hence, economic theory implies that Vietnamese manicurists should have unambiguously displaced non-Vietnamese manicurists over the past twenty years unless demand was perfectly elastic. However, if demand were fairly elastic, the amount of displacement would be much less than one for one. In addition, Vietnamese manicurists appear to have introduced several marketing innovations that may have increased the demand for manicurists, which would further lessen the displacement effect.

Many Vietnamese manicurists have started their own stand-alone nail salons by borrowing money or seeking advice from family members and friends, many of whom also own salons and are willing to help them start similar businesses (Badie 1999). Indeed, the shift toward stand-alone (often discount) nail salons over the past twenty years appears to be an innovation associated with the entrance of Vietnamese manicurists (Dang 1999). These new salons may increase the demand for manicures (and, hence, manicurists) by offering new services and by reducing time costs via quick walk-in service at convenient locations.[2] In his profile of a Vietnamese manicurist, journalist William Booth (1998) argued that she "is the kind of immigrant who does not

[1]Huynh (1996) interviewed Vietnamese manicurists in Los Angeles in the mid-1990s and found that few of their customers were Vietnamese or other Asian Americans.

[2]Angrist and Kugler (2003), using a model similar to that of Altonji and Card (1991), showed that the entry of new firms will reduce the displacement effect. However, the entry of these new firms is tied to the increase in the supply of immigrants only indirectly, through lower wages.

so much compete against the native-born but creates new economic possibilities," having started her own nail salon within an industry "built largely by Vietnamese immigrants." The entry of Vietnamese manicurists also may have increased the demand for manicures if manicures are a fashion trend, exhibiting cascading increases in demand sparked by consumers who were originally attracted by a lower price.[3] The idea that immigrant inflows may increase the demand for low-skilled labor via mechanisms other than lower wages has been discussed as a possible explanation for why cross-metropolitan comparisons rarely find that immigrants displace low-skilled natives (Train 2003).

One would expect that analyzing such a narrowly defined occupation as manicuring should increase the observed displacement effect, since it is easier to induce native workers to switch occupations than to leave the work force or migrate to another metropolitan area. It is possible, however, that little or no displacement will be observed if either the demand for manicures is very elastic or the entry of Vietnamese manicurists increased demand via innovations like the stand-alone nail salon.

Empirical Specification

We estimate the displacement rate in the market for California manicurists by regressing the number of non-Vietnamese manicurists per 1,000 residents (N_{mt}) on the number of Vietnamese manicurists per 1,000 residents (V_{mt}) using observations for metropolitan areas over time. Our specification is

$$(1) \qquad N_{mt} = \lambda_m + \nu_t + X'_{mt}\alpha + \delta V_{mt} + \varepsilon_{mt}$$

for metropolitan area m in year t. This specification includes metropolitan and year fixed effects, λ_m and ν_t, and a vector of explanatory variables, X_{mt}, which includes the unemployment rate and per capita income in the metropolitan area each year. The displacement rate is measured by δ, which is the change in the number of non-Vietnamese manicurists due to the entry of an additional Vietnamese manicurist. The error term, ε_{mt}, captures the effect of unobservable determinants of N_{mt} that vary within metropolitan areas over time. We also estimate a specification that replaces the metropolitan fixed effects with the number of manicurists per 1,000 residents in 1987 (an indicator for initial tastes) and the initial population of the metropolitan area. All of our regressions are estimated using weighted least squares with weights equal to the population of the metropolitan areas.

Our estimate of δ will be biased if Vietnamese manicurists and native manicurists were both drawn to metropolitan areas that experienced unobserved increases in the demand for manicures over the years from 1987 to 2002. The estimated displacement effect will be too small (in absolute value) if the number of Vietnamese manicurists in equation (1) is positively correlated with the error term due to unobserved demand shocks that were occurring within metropolitan areas over time. In this case, we would observe a smaller displacement effect because cities with many Vietnamese manicurists would also have many native manicurists. However, the number of native manicurists would have been even greater had the Vietnamese not entered the market.

Our estimate of δ will also be biased if Vietnamese manicurists were drawn to metropolitan areas due to unobserved decreases in the supply of native manicurists. In this case, the estimate will be too large (in absolute value) if Vietnamese were replacing natives who no longer wanted to be manicurists. The supply of native manicurists may have exogenously decreased over the last few decades as better alternatives became available to women. For example, the share of real estate agents, police officers, and mail carriers who are women increased over the years of our

[3] Bikhchandani, Hirshleifer, and Welch (1998) argued that a decrease in the price of an experience good may start a positive cascade, raising demand as people imitate the fashion choices of others.

sample.[4] If these supply shocks varied within metropolitan areas over time, then the estimate of the displacement effect will be too large. In this case, many of the Vietnamese manicurists were replacing, not displacing, natives who no longer wanted to be manicurists.[5]

We can correct for these potential sources of bias with instrumental variables that help explain the variation in the number of Vietnamese manicurists but are uncorrelated with unobserved changes in both the demand for manicurists and the labor supply of native manicurists. In constructing our instruments, we use two sources of exogenous variation: variation in the size of Vietnamese enclaves across metropolitan areas in 1980, and the introduction of the Vietnamese language version of the licensing exam in 1996.

Vietnamese enclaves were largely established by the first wave of Vietnamese immigrants who entered the United States between 1975 and 1978.[6] Their initial placement was dictated by the federal policy of dispersing refugees, causing groups to be placed in all fifty states, with the largest number going to California (21%). However, many of these refugees had relocated by 1980 (Gordon 1987). These first-wave Vietnamese immigrants tended to be middle-class urban residents who were better educated and more likely to be fluent in English than later waves (Hung 1985). To the extent that their relocation decisions were influenced by labor market conditions, it is unlikely that these conditions would be correlated with unobserved changes in the demand for manicurists or native manicurists' supply in the later period.

Figures 2a and 2b reveal that the trends in the number of Vietnamese and non-Vietnamese manicurists (per 1,000 residents) were very different across metropolitan areas with and without enclaves in 1980. Metropolitan areas are defined as having an enclave if the density of their Vietnamese population in 1980 was larger than the median density of 0.7 Vietnamese per 1,000 residents across all 34 metropolitan areas. Not surprisingly, the number of Vietnamese manicurists was higher and had a much steeper trend in metropolitan areas with Vietnamese enclaves. The trends in the number of non-Vietnamese manicurists were also very different across the two groups of metropolitan areas, with the decline beginning earlier and being more pronounced in metropolitan areas with larger enclaves. The increase in the number of Vietnamese manicurists visibly accelerated after the introduction of a Vietnamese language version of the licensing exam in 1996, especially in metropolitan areas with Vietnamese enclaves.[7] However, the

[4]They increased by 14.9%, 32.6%, and 51.1%, respectively, over the years from 1988 to 2002 (*Employment and Earnings*, January 1990 and January 2003), changes that are part of a longer process of occupation desegregation by gender (Blau, Simpson, and Anderson 1998).

[5]Studies of the effect of immigrant inflows on the outflows of natives, such as Filer (1992) and Card (2001), usually assume that natives flee from cities experiencing large inflows of immigrants. However, Jaeger (2000) presented evidence that immigrants are more likely to locate in metropolitan areas with declining numbers of natives, implying that causation may run in the other direction, with immigrants replacing rather than displacing natives.

[6]Only a trickle of Vietnamese immigrants entered the United States prior to the end of the Vietnam War, averaging less than a thousand a year over the preceding two decades. As the war ended in 1975, the U.S. government evacuated 125,000 Vietnamese, turning the trickle into a flood. The flood subsided for a few years until political turmoil in Vietnam and continued warfare in Southeast Asia led to the mass exodus of several hundred thousand boat people from Vietnam between 1978 and 1980, leading to another spike in Vietnamese immigration.

[7]The supply of Vietnamese manicurists might also have increased around this time due to the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, which eliminated federal welfare subsidies for post-enactment immigrants during their first five years in the United States. Borjas (2002) found that immigrants in California reduced their use of welfare after 1996 even though California replaced most of their lost welfare benefits. In this case, our instruments also capture the differential supply shocks caused by welfare reform across metropolitan areas with different-sized Vietnamese enclaves.

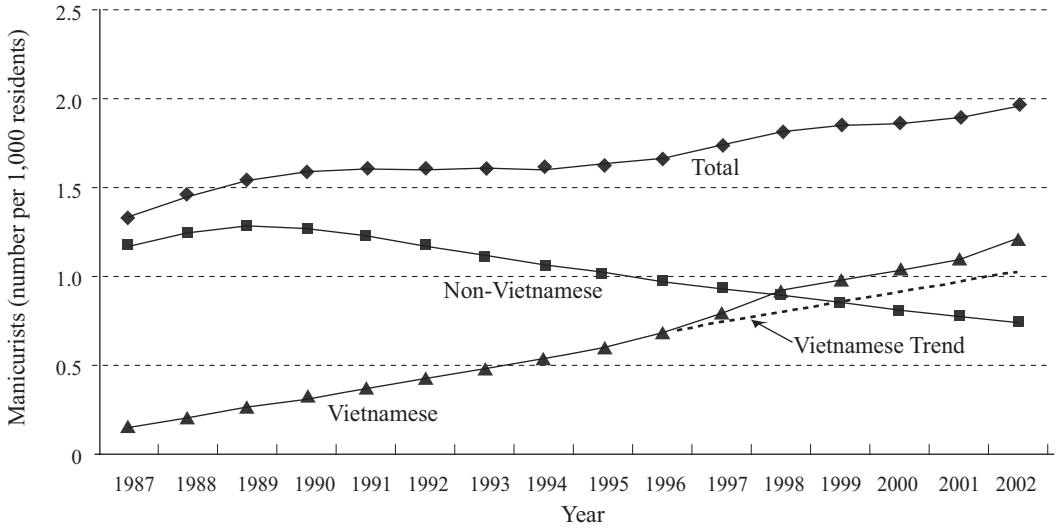

Figure 2a. California MSAs with Vietnamese Enclaves.

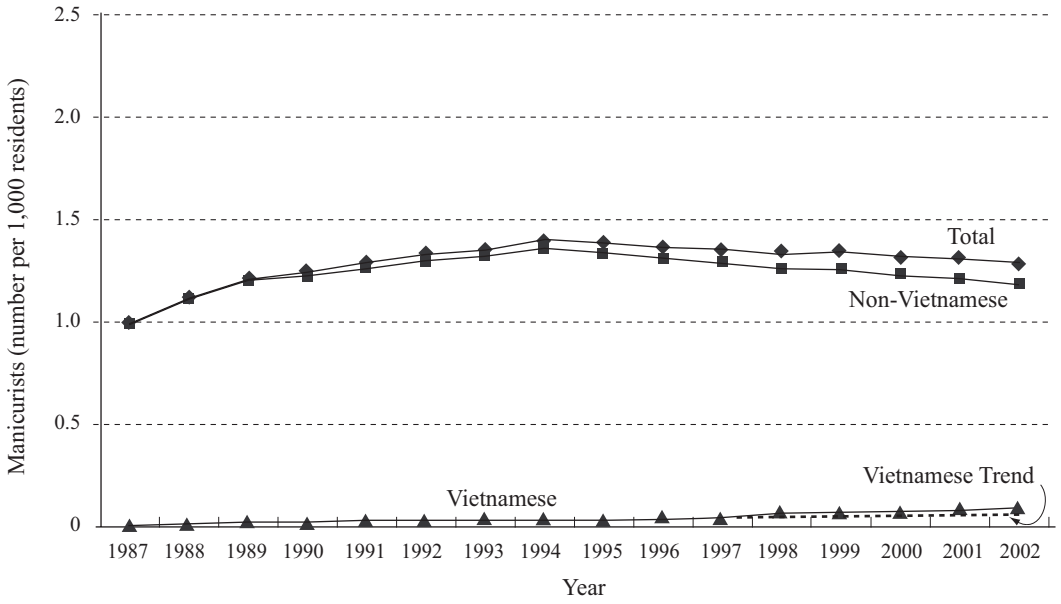

Figure 2b. California MSAs without Vietnamese Enclaves.

decrease in the number of non-Vietnamese manicurists does not appear to have visibly accelerated after 1996.

Our first-stage specification is

$$(2)\ V_{mt} = \tau_m + \psi_t + X'_{mt}\beta + \gamma_1(\text{VEnclave}_{m80} \cdot \text{T}) + \gamma_2(\text{VExam}_t \cdot \text{VEnclave}_{m80}) + \gamma_3(\text{VExam}_t \cdot \text{VEnclave}_{m80} \cdot \text{T}) + \mu_{mt},$$

where V_{mt} is the number of Vietnamese manicurists per 1,000 residents, τ_m and ψ_t are metropolitan and year fixed effects, and X_{mt} includes the metropolitan unemployment rate and per capita income. $VEnclave_{m80}$ is the number of Vietnamese per 1,000 residents in the metropolitan area in 1980; $VExam_t$ is an indicator variable for whether the licensing exam was available in Vietnamese in year *t;* and T is a time trend.

We expect the trend in the number of Vietnamese manicurists to be higher and steeper in metropolitan areas that had larger Vietnamese enclaves in 1980. While the metropolitan fixed effects capture the difference in levels, γ_1 measures the increase in the slope of the trend line due to larger enclaves. We also expect that offering the licensing exam in Vietnamese will cause the trend to shift up in 1996 and become steeper thereafter, changes that should be more pronounced in metropolitan areas with larger Vietnamese enclaves.[8] While the year fixed effects should capture any statewide changes, γ_2 and γ_3 measure differences in the upward shift and changes in slope across metropolitan areas with different-size enclaves.

Our empirical strategy follows the evolution of strategies in the larger literature on immigration by using instrumental variables and defining labor markets more narrowly. Most studies of the labor market effects of immigration use instrumental variables to identify wage and employment effects. Starting with Altonji and Card (1991), many studies (Card 2001; Hunt 1992; Pischke and Velling 1997; Winter-Ebmer and Zweimuller 1996, 1999) have used the initial size of immigrant enclaves as an instrument for changes in the number of immigrants over later time periods.[9] While the initial size of Vietnamese enclaves is a component of our instruments, the fact that it is interacted with a time trend and an indicator variable for a licensing policy change allows us to include the full set of metropolitan and year fixed effects in our first stage regression.

Several recent studies (Borjas 2003; Card 2001; Friedberg 2001) have also sought better estimates of wage and employment effects by narrowing the definition of labor markets, though they have not examined a market as narrow as that for manicurists. Since immigrants are a diverse group with a variety of skills and occupations, each wave of immigrants affects a variety of labor markets, creating a pattern of shocks that depends on the distribution of their skills. Several of these studies have found employment effects of immigrant inflows on natives, ranging from "modest" (Card 2001:58) to "sizable" (Borjas 2003:1370). In contrast, older studies (summarized by Borjas [1994] and Friedberg and Hunt [1995]) found little evidence that immigrants reduce the employment rate of natives.

Data Description

The California Department of Consumer Affairs provided us with information on all 121,761 manicurists who held a license in the state at any time from 1987 to 2002. The information includes their full names, home addresses, license numbers, and the issue and expiration dates (month and year) of their licenses. We identified Vietnamese manicurists by comparing the names of the manicurists in our sample with common Vietnamese names, using a process that is described in the appendix.

It is relatively straightforward to identify Vietnamese manicurists for several reasons. First, Vietnamese names are very distinctive. Second, many of the California records have more than one name listed in the first and middle name field, giving us names such as Hoang Thi Le Ngan and Huong Nguyen Smith. Third, a small number of last names are shared by large numbers of Vietnamese. For example, 10% of the manicurists in the sample (and 28% of the Viet-

[8]The effect should increase with enclave size both because there are more Vietnamese living there and because ethnic enclaves contain a disproportionate share of immigrants who do not speak English well.

[9]Friedberg (2001) used the occupational distribution of immigrants in their home country as an instrument and Angrist and Kugler (2003) used the distance traveled to escape wars.

Table 1. Sample Means for Vietnamese and Non-Vietnamese Manicurists, 2000 Census. (Standard Deviations in Parentheses)

Characteristic	*Vietnamese*	*Non-Vietnamese*
Immigrant	0.988	0.323
	(0.108)	(0.469)
Years in U.S. for Immigrants	13.46	16.66
	(6.16)	(11.01)
Wage (dollars per hour)	10.51	10.86
	(24.15)	(12.04)
Hours per Week	35.03	33.80
	(15.09)	(14.31)
Weeks per Year	42.57	43.63
	(13.53)	(12.94)
Self-Employed	0.253	0.630
	(0.435)	(0.483)
Age	39.32	39.98
	(8.47)	(11.25)
Female	0.847	0.949
	(0.360)	(0.220)
Sample Size	340	257

Notes: The sample is from the 5-percent public-use micro-data sample (PUMS) of Californians from the 2000 Census and includes "miscellaneous personal appearance workers" (occupation code = 452) who worked in "nail salons and other personal care services" (industry code = 899). The sample was further restricted to include only people who either had some labor income or positive self-employment income in 1999.

namese manicurists) share the last name Nguyen and 45% of the Vietnamese manicurists share one of the three most common last names (Nguyen, Tran, and Le).[10] The similarity between the shares of manicurists who are Vietnamese in the 2000 Census, 57%, and in the 2000 licensing data, 53%, also gives us confidence in our identification.

The California licensing data do not tell us whether individual manicurists were immigrants. However, we can investigate whether Vietnamese manicurists were predominantly immigrants and whether non-Vietnamese manicurists were predominantly natives using the 597 California manicurists found in the 5-percent public-use micro-data sample (PUMS) of the 2000 Census.[11] Table 1 presents sample means for characteristics of Vietnamese and non-Vietnamese manicurists from the 2000 Census. Nearly all of the Vietnamese manicurists were immigrants, with 99% of them having been born outside of the United States. Although 32% of the non-Vietnamese manicurists were immigrants, they came to the United States more than 3 years earlier, on average. We refer to Vietnamese and non-Vietnamese manicurists rather than immigrants and natives, although the two categorizations are similar.

The sample of California manicurists from the 2000 Census reveals that the typi-

[10]As a test, our algorithm for Vietnamese names correctly identified 91% of the 44 Vietnamese names in Elliott (1999) and misidentified only 1.5% of the 69 Chinese names in Chang (1991).

[11]The sample includes "miscellaneous personal appearance workers" (occupation code = 452) who worked in "nail salons and other personal care services" (industry code = 899). The industry code for nail salons does not appear prior to the 2000 Census, reflecting the dramatic growth in this industry over the 1990s.

Table 2. Summary Statistics for the California Licensing Data.

Variable	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Total Manicurists per 1,000 Residents	1.66	0.40	0.24	2.71
Non-Vietnamese Manicurists per 1,000 Residents	1.05	0.36	0.24	2.55
Vietnamese Manicurists per 1,000 Residents	0.61	0.48	0.00	1.95
Unemployment Rate	6.76	3.05	2.13	30.40
Income per Capita ($1,000)	16.94	3.56	9.23	31.94
Original MSA Manicurist per 1,000 Residents	1.31	0.44	0.24	2.42
Original MSA Population (100,000s)	50.50	44.80	0.18	106.96
Vietnamese per 1,000 Residents in 1980	3.42	1.79	0.00	7.53

Based on data for 34 California MSAs over the 16-year period 1987–2002 (N = 544). The means and standard deviations are weighted by MSA population.

cal Vietnamese manicurist and non-Vietnamese manicurist earned similar wages (between $10 and $11 per hour) and worked a similar number of hours per week and weeks per year. However, only 25% of Vietnamese manicurists were self-employed, compared to 63% of non-Vietnamese manicurists. This likely reflects the fact that a larger proportion of Vietnamese manicurists were employees at stand-alone, discount nail salons and a larger proportion of non-Vietnamese manicurists rented manicuring booths at beauty salons. The vast majority of manicurists were women; men comprised 15% of Vietnamese manicurists and only 5% of non-Vietnamese manicurists.

Using the California licensing data, we calculated the number of Vietnamese and non-Vietnamese manicurists in each metropolitan statistical area (MSA) in the years from 1987 to 2002 by counting the number of manicurists who had active licenses for at least six months of the year. Thus, someone who was issued a license in March 1990 would be counted as an active manicurist for 1990, but not someone who was issued a license in September. Similarly, manicurists whose licenses expired late in the year would be counted, but not those whose licenses expired early in the year. We then divided by the MSA population in each year to generate the number of Vietnamese and non-Vietnamese manicurists per 1,000 residents. Hence, our sample consists of 16 annual observations on each of 34 California MSAs, resulting in a total sample size of 544 observations. The unemployment rate and income per capita were collected for each county in each year and aggregated using population weights to get MSA-level measures.[12]

We aggregated the data by MSA rather than county because MSAs better capture the relevant labor markets. Since the California licensing data give us home rather than work addresses, we were concerned that our results would suffer from measurement bias if we aggregated by county. In particular, we were concerned that Vietnamese manicurists might be more likely than natives to commute across county lines because of their desire to live in Vietnamese enclaves. Comparing the places of residence and work for the California manicurists from the 2000 Census, we found that Vietnamese manicurists were more likely than natives to commute from Orange County to Los Angeles County, thus crossing a county line but not an MSA line. However, we found that very few manicurists commuted across MSA lines, for example, from Orange County to San Bernardino County.

[12]Estimates of the MSAs' population and income per capita were calculated using county data from the Bureau of Economic Analysis (www.bea.gov/bea/regional/reis/), and unemployment rates are from the Rand California database, www.rand.org.

Table 3. Explaining the Number of Non-Vietnamese Manicurists.

	WLS			*IV*	
Independent Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Vietnamese Manicurists per 1,000 Residents	–0.386*** (11.63)	–0.506*** (10.56)	–0.493*** (14.52)	–0.401*** (7.03)	–0.376*** (9.52)
Unemployment Rate	—	0.022** (2.33)	0.020*** (3.59)	0.022** (2.42)	0.022*** (3.98)
Income per Capita	—	0.041*** (5.38)	0.009** (2.12)	0.039*** (5.49)	0.006 (1.64)
Original MSA Manicurists per 1,000 Residents	—	—	0.634*** (15.54)	—	0.632*** (15.98)
Original MSA Population (100,000s)	—	—	–0.001** (2.22)	—	–0.001*** (4.08)
MSA Fixed Effects	No	Yes	No	Yes	No
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	544	544	544	544	544
R-Squared	0.36	0.90	0.81	0.90	0.81

Notes: Absolute t-statistics calculated using heteroskedasticity-robust standard errors are in parentheses. All regressions are weighted by MSA population.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level (two-tailed tests).

Table 2 presents the weighted means and standard deviations of the MSA variables used in our regressions. The number of manicurists varied widely across MSAs and over time, ranging from 0.24 to 2.7 per thousand residents. Similarly, the fraction of manicurists within an MSA who were Vietnamese varied widely, especially by the end of the period. In 1987, the share of licenses held by Vietnamese manicurists was largest in the Santa Clara MSA (29%), followed by Los Angeles/Orange (16%) and Sacramento (12%). However, the other 31 MSAs had less than the state average of 10%, with most having less than 2%. By 2002, the share of Vietnamese manicurists had grown to 60% statewide, with the largest shares still being found in Santa Clara (85%) and Los Angeles/Orange (72%). While the Vietnamese held substantial majorities of all the licenses in several cities, they still represented less than 10% of the manicurists in half of the MSAs. There was similar variation in the size of Vietnamese enclaves across MSAs. The number of Vietnamese per thousand residents in 1980 (used in the construction of our instruments) varied from 0 to 7.5. Though these levels are small in terms of the overall population, they translate to important differences in the concentration of Vietnamese and enclave strength.

Regression Results

Table 3 presents our results for the regressions that explain the number of non-Vietnamese manicurists per 1,000 residents in California MSAs. Columns (1)–(3) present the results using weighted least squares (WLS), where the weights are equal to the population of each MSA. The estimates of the displacement rate are all statistically significant and range from –0.39 to –0.51, implying that the entry of an additional 10 Vietnamese manicurists would have displaced 4 to 5 non-Vietnamese manicurists. Column (1) shows the results from regressing the number of non-Vietnamese manicurists per 1,000 residents on the number of Vietnamese manicurists (and year fixed effects) without any other explanatory variables. The other regressions, presented in columns (2) and (3), also control

for the unemployment rate and per capita income, but differ in how they control for the invariant characteristics of metropolitan areas. The regression in column (2) includes metropolitan fixed effects, while the regression in column (3) includes the initial number of manicurists per thousand residents and the initial metropolitan population.

The signs of the other estimated coefficients seem plausible, although one must remember that these are reduced form equations. The positive sign on the unemployment rate may be due to non-Vietnamese manicurists being more likely to enter the field or remain in it when outside opportunities are less plentiful. The sign on income per capita may reflect the positive effect of an increase in the demand for manicures in high-income cities on the number of non-Vietnamese manicurists. And the positive coefficient on the initial number of manicurists per thousand residents in 1987 may capture an unobserved taste for manicures in cities where manicurists were initially prevalent.

The WLS estimates of the displacement effect will be biased, however, if there were unobserved shocks to either labor demand or native labor supply. To address this potential problem, we use a set of instruments to measure variations in inter-metropolitan supply shocks attributable to differences in the size of their Vietnamese enclaves in 1980. In particular, we measure the increase in the rate of growth of Vietnamese manicurists associated with enclave size as well as the differential increase in the level and growth rate of Vietnamese manicurists after the introduction of the licensing exam in Vietnamese in 1996. The three shocks are measured using an enclave trend ($VEnclave_{m80} \cdot T$) and two terms that interact whether the licensing exam was offered in Vietnamese with the enclave size ($VExam_t \cdot VEnclave_{m80)}$ and with the enclave trend ($VExam_t \cdot VEnclave_{m80} \cdot T$).

The results for the first-stage regression are presented in Table 4. The estimated coefficients on the enclave trend are positive and statistically significant in the specifications with and without metropolitan fixed effects, implying that the number of Vietnamese manicurists grew faster in metropolitan areas with larger enclaves in 1980. The coefficient on the interaction between offering the licensing exam in Vietnamese and the enclave trend is statistically significant in the specification with metropolitan fixed effects, implying that metropolitan areas with larger enclaves also experienced larger increases in the growth rate of Vietnamese manicurists after the licensing exam was offered in Vietnamese.[13]

The second stage estimates of the displacement effect are presented in columns (4) and (5) of Table 3. Both IV estimates of the displacement effect are statistically significant, with a displacement rate of –0.4. These coefficients imply that for every five Vietnamese manicurists entering the market, roughly two non-Vietnamese manicurists were displaced.

The estimate of the displacement effect decreases from 0.5 to 0.4 when we instrument for the number of Vietnamese manicurists using inter-metropolitan supply shocks associated with variation in the size of Vietnamese enclaves and the introduction of the Vietnamese language version of the licensing exam. This implies that our uncorrected estimates may suffer more from ignoring the fact that some Vietnamese immigrants were replacing, not displacing, native manicurists (unobserved supply shocks) than from ignoring the fact that immigrants and natives were drawn to expanding markets (unobserved demand shocks). In contrast, the literature, with the exception of Friedberg (2001), gives greater weight to the potential problem of unobserved demand shocks.

[13]The observed increase in the number of Vietnamese manicurists associated with the introduction of the Vietnamese language exam suggests that policies of offering English-only licensing exams affect immigrants by acting as a barrier to their entry. By 2002, the number of Vietnamese manicurists statewide had increased by roughly 24% over the pre-1996 trend. The statewide increase is captured by the year effects; only the differential increase across metropolitan areas is used to instrument.

Table 4. First Stage Regressions: Predicting the Number of Vietnamese Manicurists.

Independent Variable	*(1)*	*(2)*	*(3)*	*(4)*
Enclave Trend (Enclave Size in 1980 ∗ *t*)		0.016***		0.018***
		(20.79)		(17.30)
Vietnamese Exam (1=Yes) ∗ Enclave Size in 1980		0.007		–0.002
		(0.64)		(0.18)
Vietnamese Exam (1=Yes) ∗ Enclave Trend		0.009***		0.004
		(2.96)		(1.17)
Unemployment Rate (%)	–0.001	–0.014***	–0.016*	–0.010***
	(0.12)	(2.72)	(1.93)	(4.18)
Income per Capita ($1,000)	0.024**	–0.045***	0.027**	–0.013***
	(2.23)	(8.97)	(2.56)	(5.80)
Original MSA Manicurist per 1,000 Residents	—	—	0.011	0.093***
	—	—	(0.36)	(7.64)
Original MSA Population (100,000s)	—	—	0.005***	0.002***
	—	—	(10.57)	(11.29)
MSA Fixed Effects	Yes	Yes	No	No
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	544	544	544	544
R-Squared	0.90	0.99	0.79	0.97
Joint Significance of Instruments (F-test)	—	429.29	—	439.98

Notes: Absolute t-statistics calculated using heteroskedasticity-robust standard errors are in parentheses. All regressions are weighted by MSA population.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level (two-tailed tests).

Our estimate of the displacement effect would still be biased if non-Vietnamese manicurists reacted to the entry of Vietnamese manicurists by moving to other metropolitan areas in California.[14] Using the sample of California manicurists from the 2000 Census, we find that only 6.2% of the 257 non-Vietnamese manicurists moved between California metropolitan areas in the preceding five years and less than half of them moved to areas experiencing slower rates of entry or having smaller numbers of Vietnamese manicurists. Thus, it is unlikely that our estimate of the displacement effect is biased for this reason.

Characterizing the Displacement: Deterring Entrants or Hastening Exits?

Displacement of native workers by immigrants can be manifested in two ways: lower inflows or higher outflows. Using our licensing data, we examine whether the Vietnamese entry into manicuring was deterring non-Vietnamese from choosing the occupation or hastening the exit of current manicurists. Separating these two effects may give us some insight into the costs of displacement, since potential entrants who choose other occupations may incur lower costs than current workers who have invested in training and accumulated experience. It may also shed light on why the

[14]Cross-city comparisons will produce unbiased estimates of wage and displacement effects if cities with few immigrants are a valid control group for cities with large numbers of immigrants. However, if native workers migrate from cities with large numbers of immigrants to those with few immigrants, the difference in wages between these cities will decrease, leading to an underestimate of the wage effect, and the difference in the number of native workers will increase, leading to an overestimate of the displacement effect (see Borjas, Freeman, and Katz 1992; Borjas 1994).

Table 5. Explaining the Inflows and Exit Rates of Non-Vietnamese Manicurists.

		Inflows of Non-Vietnamese Manicurists		*Exit Rate for Non-Vietnamese Manicurists*	
Description	*Descriptive Statistics*	*WLS*	*IV*	*WLS*	*IV*
Mean of Dependent Variable	—	0.073 (0.055)		0.082 (0.018)	
Change in Vietnamese Manicurists per 1,000 Residents	0.076 (0.050)	–0.462*** (10.66)	–0.630*** (10.28)	0.090*** (4.85)	0.112*** (4.98)
Change in the Unemployment Rate	0.055 (1.118)	0.002 (0.90)	0.003 (1.12)	–0.001 (0.53)	–0.001 (0.63)
Change in Income per Capita	0.149 (0.651)	–0.004 (1.09)	–0.002 (0.47)	–0.001 (0.63)	–0.001 (0.72)
MSA Fixed Effects	—	No	No	No	No
Year Fixed Effects	—	Yes	Yes	Yes	Yes
Observations	510	510	510	510	510
R-Squared	—	0.69	0.68	0.52	0.52

Notes: Absolute t-statistics calculated using heteroskedasticity-robust standard errors are in parentheses. All regressions are weighted by MSA population. The means are weighted by MSA population and the standard deviations are in parentheses.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level (two-tailed tests).

common practice of measuring native inflows and outflows from labor markets using native migration across metropolitan areas has produced mixed evidence of the effects of immigration (see Filer 1991; Frey 1996; Card 2001; Card and DiNardo 2000).[15]

Table 5 presents results from regressions of inflows and exit rates on changes in the number of Vietnamese manicurists per 1,000 residents, changes in unemployment and per capita income, and year fixed effects. Inflows are measured as the number of non-Vietnamese manicurists per 1,000 residents who entered the occupation in each year and exit rates as the proportion of current non-Vietnamese manicurists who exited.[16] As before, we correct for potential sources of bias using the size of the Vietnamese enclave in 1980 and the introduction of the Vietnamese language exam as instruments.[17] The WLS and IV estimates

[15]While Filer (1991) and Frey (1996) found that the net migration of natives is negatively related to the influx of immigrants, Card (2001) and Card and DiNardo (2000) found a small positive effect. Filer also found that natives are more likely to leave and less likely to enter cities that have experienced large increases in their immigrant populations. In contrast, Card (2001) presented evidence that natives are more likely to move to cities that have experienced large increases in the number of similarly skilled immigrants.

[16]Inflows or entrants are defined as those whose license is first issued in a given year; outflows or exits are those whose license expires. The latter may be measured with error since some may leave in the year prior to the expiration of their two-year license. We use the exit rate rather than the number of non-Vietnamese manicurists who exit per 1,000 because outflow levels will necessarily decrease with decreases in the number of current non-Vietnamese manicurists even when there is no change in their exit rate.

[17]Since we are estimating the relationship between changes in Vietnamese manicurists and non-Vietnamese inflows and exits from manicuring, we use a model consistent with a first difference of our empirical model for the levels. The corresponding instruments are the size of the Vietnamese enclave in 1980 and its interaction with an indicator of the availability of the Vietnamese language test.

show substantial displacement in the case of inflows. Roughly, for every two Vietnamese manicurists entering the market, one non-Vietnamese decided not to enter. As for the exit rate, the estimated coefficient is positive, although the effect is small. These estimates imply that the large average increase of about one Vietnamese manicurist per 1,000 residents between 1987 and 2002 caused 9% to 11% of non-Vietnamese manicurists to exit the occupation, less than 1% per year.[18] Overall, the regression results suggest that the entrance of the Vietnamese was largely deterring potential non-Vietnamese entrants rather than hastening the exit of current non-Vietnamese manicurists.

Finally, we examine how quickly manicurists left the occupation for different entering cohorts by calculating the percentage of manicurists who became licensed in a given year and left the market within two years and within six years. The pattern of spells was relatively stable for the years of our sample for both non-Vietnamese and Vietnamese manicurists; if anything, there was a slight reduction in the speed at which the non-Vietnamese exited. This finding is consistent with the small estimated effect of the entry of the Vietnamese on the exit rate for non-Vietnamese manicurists. The Vietnamese also appear to have been much more committed to the occupation, having a lower rate of exit after six years than the non-Vietnamese had after two.

Summary and Conclusions

Between 1987 and 2002, the number of Vietnamese manicurists in California increased by 35,700, a number slightly larger than the total number of licensed manicurists in the state in 1987. Their entry led to some displacement of native manicurists, but at a rate far below one-to-one, implying that Vietnamese manicurists found many new nails to polish. More specifically, we find that for every five Vietnamese manicurists entering the market, two non-Vietnamese manicurists were displaced.

The dramatic increase in the number of manicuring jobs following the entry of Vietnamese immigrants should dispel the notion that immigrants and natives compete for a fixed number of jobs. We cannot determine the extent to which the increase in the number of jobs was due to a very elastic demand for manicurists versus increases in demand. While it is possible that the entire expansion was due to movement along a fixed demand curve, the entrance of Vietnamese manicurists appears to have been associated with new forms of service delivery in the form of walk-in salons that may have increased demand by reducing time costs.

While Vietnamese immigrants and natives do not compete for a fixed number of manicuring jobs, our estimates imply that roughly 14,000 native manicurists were displaced in California between 1987 and 2002, suggesting that "native workers' apprehensions are not completely misguided" (Borjas 1999:63). At the same time, we find that most of the displacement stemmed from a reduction in the number of non-Vietnamese choosing to enter the occupation rather than a quickened exit of those already working as manicurists. Our empirical results help to bridge the gap between the common public perception that immigrants take jobs from natives and economists' findings of modest or no overall effects on employment levels. For a narrowly defined job market, we find evidence of appreciable displacement, whereas many studies of broader markets do not.

Our results would be consistent with small overall employment effects if displaced manicurists (and natives working in similar low-skilled occupations) quickly find other jobs. The costs of displacement may be small if displaced manicurists can easily

[18] A regression of outflows on the change in the number of Vietnamese actually shows a negative correlation, likely reflecting the fact that fewer non-Vietnamese manicurists were left to exit. The coefficients for inflows are somewhat sensitive to changes in specification, but the size of the economic effect is always large, and is much larger than what is seen in exit rates.

move to other jobs at similar wages or if, as we saw here, much of the displacement involves people choosing not to enter the occupation rather than non-Vietnamese manicurists being induced to leave. However, there is no reason to believe that the displacement costs are zero, and they may be viewed as substantial by the displaced workers, especially if it takes time to find new jobs because of friction in the labor market. By the same token, while the costs may not be trivial to those displaced, there are substantial benefits from the entry of Vietnamese manicurists. The entry of Vietnamese manicurists has been associated with innovations and expansions in the market, making a once-exclusive service commonplace.

Appendix
Identifying Vietnamese Manicurists

We began the process of identifying Vietnamese manicurists by obtaining common Vietnamese names from two sources: the *Cal Poly Pomona Asian Name Pronunciation Guide* (http://www.csupomona.edu/~pronunciation/vietnamese.html) and *Adopt Vietnam*, an internet guide for people adopting Vietnamese children (http://www.adoptvietnam.org).

A small number of these common Vietnamese names are also common names for other Asian groups. For example, Lam is a prevalent first name for Vietnamese women but is also a common Cantonese last name. This led us to compare our list of common Vietnamese names with lists of common Cantonese, Mandarin, Cambodian, Korean, Thai, Japanese, Filipino, and Indonesian names, lists that were obtained from the *Cal Poly Pomona Asian Name Pronunciation Guide*. Most of the common Vietnamese names did not appear on these other lists, leading us to classify them as *exclusively* Vietnamese names. When they did appear on one of the other lists, we classified them as *shared* Vietnamese names. We also classified Vietnamese names as being *shared* when they overlapped with European names, such as Bach or Lang.

To supplement our list of Vietnamese last names, we searched for other common Vietnamese names using the names of California manicurists. For example, we found that 38 (60.3%) of the 63 manicurists with the last name of Tieu had first or middle names that were on our list of *exclusively* Vietnamese first names. Most of the rest had either first or middle names that are *shared* Vietnamese names or American names that are popular among the Vietnamese (for example, Jenny). This convinced us that Tieu is a common Vietnamese last name. Since it is not listed as being a common name for any other Asian group, we added it to our list of *exclusively* Vietnamese last names.

More formally, we added a last name to our list of common Vietnamese last names whenever more than 50% of the California manicurists with that last name had first or middle names that were on our list of *exclusively* Vietnamese first names. If the last name was not listed as a common name among other Asian groups, it was added to the list of *exclusively* Vietnamese last names; otherwise, it was added to the list of *shared* Vietnamese last names. There was also a small group of last names that fell slightly below the 50% threshold, yet we thought were *likely* to be Vietnamese last names based on their other first and middle names. The Vietnamese names under each of our three categories—*exclusively* Vietnamese, *shared* Vietnamese, and *likely* Vietnamese—are listed at the end of the appendix.

A computer algorithm assigned manicurists as being Vietnamese if any of the following were true:

- Their last name was *exclusively* Vietnamese.
- Their last name was *likely* Vietnamese or *shared* and one or more of their first or middle names were *exclusively* Vietnamese names.
- Two or more of their first and middle names were *exclusively* Vietnamese.
- One of their first or middle names was *exclusively* Vietnamese and one or more of their first or middle names were *shared* names.

The final step in the process was a series of meetings in which we discussed individual cases that "fell just short" of being assigned as Vietnamese by our algorithm, having, for example, only one *exclusively* Vietnamese first or middle name. Most of these manicurists were obviously Vietnamese, frequently having additional Vietnamese names that were misspelled, concatenated together, or appearing in the wrong fields. Finally, we were careful to avoid pitfalls such as identifying manicurists with names such as De La Torre, Van Dyke, Le Ann, and Mac Kenzie as being Vietnamese because parts of their names were common Vietnamese names (De, La, Van, Le and Mac).

Last Names:

Exclusively Vietnamese:

Anh Bang Banh Be Bo Bui Cai Cam Cao Chau Chim Chu Chuong Co Cong Cu Cuc Cung Dai Dam Dang Danh Dao Daole Dau Dich Diem Dien Diep Dieu Dinh Doan Don Dong Du Dung Giang Giap Ha Hang

Hao Hinh Hoa Hoac Hoang Hua Hung Huong Huyen Huynh Khau Khieu Khoan Khong Khuat Khuc Khuong Khuu Kieu Ky La Lac Lan Lao Le Lien Lieu Loc Loi Luc Luong Luu Luyen Ly Mac Mach Mai Minh My Nga Ngac Ngan Nghe Nghi Nghiem Ngo Ngoc Ngu Nguy Nguyen Nguyet Nham Nhan Nhieu Ninh Nong On Pham Phan Phi Pho Phong Phu Phuc Phung Phuong Quach Quang Sa Son Suong Ta Tai Tat Thach Thai Than Thang Thanh Thi Thiem Thien Thieu Thong Thu Thuan Thuong Thuy Tien Tiet Tieu To Ton Tong Tonnu Tra Trac Tram Tran Trang Tri Trieu Trinh Trung Truong Tsan Tsang Tu Tuan Tuong Tuyet Uong Uy Van Vi Vien Viet Vinh Vo Vong Voong Vu Vuong Vuu Vy Xuan Yen

Shared:

An Au Bach Bi Chung Do Duong Han Ho Hong Khan Kiev Kim Lai Lam Lang Lau Long Lu Ma Quan Sam Tan Tang Ung Vang

Likely:

Ba Bao Che Chiem Hy Kha Kiem Kien Lo Man Mong Ong Thao Thoi

First Names:

Exclusively Vietnamese:

Anh Bao Be Bian Bich Binh Cam Canh Chau Chinh Cong Cuc Cuong Dac Kien Danh Dao Dat De Diem Dien Diep Diu Duc Due Dung Giang Hai Hang Hanh Hao Hien Hiep Hieu Hoa Hoang Hoc Hue Hung Huong Huu Huy Huyen Huynh Hyunh Ket-Nien Khanh Kieu Lan Lanh Le Liem Lien Lieu Linh Loan Loc Ly Mai Minh My Nga Ngan Ngoc Ngon Ngu Nguyen Nguyet Nhan Nhat Nhu Nhung Nu Oanh Pham Phu Phuc Phung Phuoc Phuong Quang Qui Quoc Quy Quyen Sinh Son Suong Tham Thang Thanh Thao Thi Thien Thinh Tho Thom Thu Thuan Tien Toai Toan Tram Trang Tri Trieu Trinh Trong Truc Trung Tu Tuan Tung Tuyen Tuyet Uoc Uyen Van Vien Viet Vinh Vu Vuong Xuan Yen

Shared:

Ai An Chi Chien Dong Duong Ha Han Ho Hong Khan Kim Lam Long Nam Quan Sang Si Tam Tan Thuy

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