Rethinking the Socioeconomics and Geography of Tuberculosis Among Foreign-Born Residents of New Jersey, 1994–1999

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Objectives. This study investigated the socioeconomic profile of foreign-born tuberculosis patients in New Jersey.

Methods. Foreign- and US-born tuberculosis patients in 1994–1999 were compared using various measures of socioeconomic status.

Results. Out of 4295 tuberculosis patients, 2005 (47%) were foreign-born. Foreign-born patients resided in more affluent, more educated, and less crowded areas than did US-born patients ($P < .005$). They were also more likely to have been employed during the 2 years before diagnosis (62% vs 41%, $P < .001$). Private physicians treated the majority of South Asian–born patients.

Conclusions. Substantial numbers of employed foreign-born tuberculosis patients now reside in affluent New Jersey locations. Changes in tuberculosis control programs may be required when the socioeconomic status and place of residence of foreign-born populations diverge from traditional assumptions linking poverty with tuberculosis. (*Am J Public Health.* 2003;93:XXX–XXX)

With reports that tuberculosis (TB) rates among the foreign-born have not declined in tandem with those among the US-born, TB among the foreign-born residents of United States has become a persistent concern.[1,2] Talbot et al.[3] reported that although the US-born TB rate fell 40% from 1993 to 1998 (7.4 per 100 000 in 1993 vs 4.4 per 100 000 in 1998), the foreign-born TB rate fell only 12% in the same period (34.1 per 100 000 vs 30.1 per 100 000). Nationwide, according to the 1990 US census, 8% of the total population was foreign-born, whereas 36% of TB cases occurred among the foreign-born during the years 1993–1998.[3]

Foreign birth is only 1 risk factor for TB in the United States. Other risk factors for TB, such as AIDS and injection drug use, have been identified in recent decades.[4,5] In contrast, the epidemiological evidence connecting TB with socioeconomic deprivation is long-standing, extending even to the last years of the 19th century.[6,7] Early-20th-century declines in TB rates in the United States and England have been attributed in part to reduced crowding and improved nutrition.[8]

More recent evidence points to the continuing influence of poverty on TB rates. On the macro (institutional) scale, Brudney and Dobkin[9] identified underfunding of TB control programs during the New York City fiscal crisis of the 1970s as a contributing element in the increased TB rates seen in the 1980s. A recent Institute of Medicine report on TB came to a similar conclusion.[10] On the local scale, several studies have found neighborhood crowding to be strongly associated with TB rates; in 1 of these studies, the association persisted even after control for AIDS prevalence.[11–13]

We conceived this article out of concern that the close connection between poverty and TB may have been complicated by immigration patterns in the past decade, with potential consequences for TB treatment and control programs. Several demographic and health trends motivated our analysis. First, whereas 47% of New Jersey's TB cases occurred among foreign-born residents during 1994–1999, only 13% of New Jersey residents are foreign-born (according to the 1990 US census, the most recent for which figures on place of birth are available). This percentage of foreign-born residents is the fourth greatest among US states; in absolute numbers of foreign-born residents, New Jersey ranks fifth. The population of New Jersey is 7.7 million, with more than 1.1 million persons born either abroad (approximately 967 000) or in Puerto Rico (approximately 144 000).[14] Second, of the 22 high-burden TB countries so classified by the World Health Organization,[15] 19 appear on New Jersey's surveillance records for the years 1994–1999 (Table 1). Third, approximately 40% of New Jersey's foreign-born population arrived in the United States during the years 1980–1989,[14] and New Jersey has remained an important destination for new immigrants to the United States in the years since then. This has potentially significant implications for New Jersey TB rates, because recent (<5 years) immigration is a risk factor both for TB resulting from reactivation of latent *Mycobacterium tuberculosis* infection and for undiagnosed, active TB disease acquired elsewhere.[1] Fourth, the distribution of the foreign-born US population by region of birth has changed substantially since 1960, when the European-born population accounted for 75% of the foreign-born US population. By 1990, European-born persons accounted for only 23% of the foreign-born population, and Asians, who had accounted for only 5% of the foreign-born US population in 1960, now accounted for 26%. The Latin American–born

Q1: "Recent" defined below as "≤ 5 years," which does not include the 90s.

Q2: Is placement of comma correct—the patterns did not have the consequences, the their complication of the connection did?

Q3: Does "This" mean all 3 points ("These facts . . ."), or just the last?

TABLE 1—World Health Organization–Designated High-Burden Tuberculosis Countries With Their Corresponding Global Ranks of Burden and New Jersey Foreign-Born Resident Tuberculosis Counts: 1994–1999

Country	Global Rank of Burden	New Jersey Count
Afghanistan	18	3
Bangladesh	4	15
Brazil	13	19
Cambodia	22	4
China	2	44
Congo, Democratic Republic	12	2
Ethiopia	9	8
India	1	394
Indonesia	3	10
Kenya	15	11
Myanmar	17	4
Nigeria	6	12
Pakistan	5	25
Peru	20	142
Philippines	7	206
Russian Federation	11	18
South Africa	8	0
Tanzania	14	0
Thailand	16	3
Uganda	19	2
Vietnam	10	69
Zimbabwe	21	0

population of the United States also experienced a large increase, growing from 9% of the foreign-born population in 1960 to 44% in 1990.[16] Fifth, the median age of the foreign-born has declined, from 52 years in 1970 to 37 years in 1990.[17] New Jersey has been affected by changes in immigration patterns observed at the national level.[18,19]

These trends pointed to the importance of reexamining the socioeconomics of TB, the subject of many previous investigations. In particular, we hypothesized that the traditional age distribution and socioeconomic status of TB patients and the socioeconomic profile of the geographic areas within which TB patients reside may have been altered by the arrival of large numbers of TB patients from regions of high TB endemicity. If large numbers of TB patients are now concentrated in socioeconomically advantaged areas, the traditional health department model of care designed for populations residing in socioeconomically depressed areas may not be applicable. It is imperative to address the issues raised by these changes to maintain progress in TB control and elimination in the United States.

SUBJECTS AND METHODS

Tuberculosis cases counted by the New Jersey Department of Health and Senior Services for the years 1994–1999 were analyzed. These records contain the age, type of treatment supervision at case report (health department, private provider, both health department and private provider), employment status within the past 2 years, place of birth, date of report, and date of entry into the United States (when relevant) of each patient, among other variables. We grouped TB cases by place of birth into 10 areas: Asia and the Pacific Rim, United States and Canada, Caribbean islands, Central America, Europe, Mexico, Middle East and North Africa, South America, South Asia (Afghanistan, Pakistan, India, and Bangladesh), and Sub-Saharan Africa. Patients born in Puerto Rico were classified with others from the Caribbean. For foreign-born TB patients, we calculated the time to diagnosis from the date of entry into the United States.

For each New Jersey zip code area in which at least 1 TB case was diagnosed, the following variables were obtained from the 1990 census: percentage of population aged 25 years or older, proportion of college-educated persons aged 25 years or older, per capita income, and proportion of occupied housing units with more than 1 person per room (household crowding). Individual-level TB records were matched with the educational attainment, per capita income, and household crowding measures of the zip code area of residence to assess the socioeconomic context within which the patient resided.

The variables *per capita income* and *household crowding* have been used in previous analyses of TB cases.[12,13] We also analyzed educational attainment, because we believe that this variable reflects longer term or potential socioeconomic status, whereas per capita income and household crowding may reflect short-term circumstances when new immigrants are involved. A dichotomous summary measure of ecological socioeconomic status was created from the 3 socioeconomic variables: a zip code area was classified as *affluent* if its per capita income and educational attainment were in the highest tertile and its household crowding was in the lowest tertile, and as *nonaffluent* otherwise.

We compared US-born and foreign-born TB patients with respect to variables representing the socioeconomic context of the place of residence—educational attainment, per capita income, household crowding, and affluence. We also compared variables capturing aspects of subject-level socioeconomic status—working status within the 2 years before diagnosis for patients aged 25 to 65 years and type of health care provider at diagnosis. Age at diagnosis was also compared by place of birth. All of these comparisons were conducted using aWilcoxon rank-sum test or a χ^2 test. Mantel–Haenszel χ^2 tests for trend were conducted to assess how the proportion of patients that are foreign-born changes with levels of residential socioeconomic factors. A subanalysis for children aged 12 years or younger was also conducted to see whether the results applied to pediatric TB cases—that is, cases that are more likely due to recent infection rather than reactivation of latent disease.

To assess heterogeneity of the results, we made all comparisons by world region of birth with the Kruskal–Wallis test. We also performed a pairwise comparison of each of the world regions of birth with the US-born. Non–European-born patients were compared with European-born patients with respect to time from immigration. Because European-born patients tended to have immigrated at an earlier time than the non–European-born, some of the differences observed may be due to cohort effects.

Q4

Q4: Please rephrase to clarify how factors can have levels. Also, is "residential-level meant, as in "subject-level" above?

TABLE 2—New Jersey Tuberculosis (TB) Counts and Annual Rates, by Year and by US vs Foreign Birth: 1994–1999

Year	TB Count	TB Rate per 100 000
Foreign-born		
1994	293	26.4
1995	324	29.2
1996	383	34.5
1997	342	30.8
1998	327	29.4
1999	334	30.1
US-born		
1994	539	8.1
1995	488	7.4
1996	397	6.0
1997	348	5.3
1998	293	4.4
1999	225	3.4

TABLE 3—Tertile Distributions of Household Crowding, Educational Attainment, and Per Capita Income Among Patients, by US vs Foreign Birth: 1994–1999

Distributions	No. (%) US-Born	No. (%) Foreign-Born	Total
Household crowding,[a] %			
0–3.6	693 (30.3)	742 (37.0)	1435
3.6–10.6	722 (31.5)	674 (33.6)	1396
10.6–22.3	875 (38.2)	589 (29.4)	1464
Educational attainment,[b] %			
0–29.6	865 (37.8)	572 (28.5)	1437
29.6–40.4	789 (34.5)	640 (31.9)	1429
40.4–90.4	636 (27.8)	793 (40.0)	1429
Per capita income,[c] $			
4 900–11 700	941 (41.1)	512 (25.5)	1453
11 900–16 900	734 (32.1)	672 (33.5)	1406
16 900–64 900	615 (26.9)	821 (41.0)	1436
Affluent TB patients[d]			
Affluent	402 (18)	542 (27)	944
Nonaffluent	1889 (82)	1462 (73)	3351
Total[e]	2291	2004	

[a]Household crowding was measured as the percentage of occupied housing units with more than 1 person per room. χ^2 test for trend: $P<.0001$.
[b]Educational attainment was defined as proportion of the population aged 25 years or older with any college education. χ^2 test for trend: $P<.0001$.
[c]χ^2 test for trend: $P<.0001$.
[d]$P<.001$, by χ^2 test. A TB patient was defined as *affluent* if the associated zip code area's per capita income and educational attainment were in the highest tertile *and* household crowding was in the lowest tertile.
[e]One Canadian-born patient was grouped with US-born patients.

RESULTS

During the years 1994–1999, 4295 TB cases were identified in New Jersey—2290 among US-born residents, 1 among Canadian-born residents, and 2004 among other foreign-born residents. Of the 2005 foreign-born patients, 991 (49.4%) were born in World Health Organization–designated high-burden TB countries.[15] The New Jersey average annual case rate during these 6 years was 30.1 per 100 000 among the foreign-born and 5.8 per 100 000 among the US-born. Table 2 shows the counts and annual rates by year and by place of birth.

Areas where US-born and foreign-born patients resided differed significantly with respect to all 3 socioeconomic contextual variables. On average, foreign-born patients resided in zip code areas exhibiting less household crowding (median 6.0% vs 9.8% housing units with >1 person per room), higher per capita income (median $15 500 vs $12 600), and greater educational attainment (median 38.9% of population aged 25 years or older with at least some college education vs 34.3%) ($P=.003$, $<.001$, and $<.001$, respectively). This relationship persisted in all years and for all 3 variables and was statistically significant at $P\leq.01$ for all, with the exception of household crowding in the years 1998 and 1999.

Table 3 shows the distribution of tertiles of household crowding, per capita income, and educational attainment by place of birth. In each case, the Mantel–Haenszel χ^2 test for trend is highly significant ($P<.0001$); the proportion of patients who are foreign-born rises as residential socioeconomic status increases. Of the 2005 foreign-born patients, 542 (27%) lived in affluent areas; of the 2290 US-born patients, 402 (18%) lived in areas so designated ($P<.001$).

The sample included 1509 US-born and 1400 foreign-born patients aged 25 to 65 years. Foreign-born patients aged 25 to 65 years were more likely than US-born patients to have been working within the 2-year period preceding diagnosis: 61.9% (n=867) of foreign-born vs 41.0% (n=619) of US-born patients ($P<.001$). However, the likelihood of exclusively private treatment was about the same for both groups: 41.2% (n=577) of foreign-born vs 40.5% (n=611) of US-born patients ($P=.70$).

Tuberculosis Among Children

During 1994–1999, 65 foreign-born patients and 190 US-born patients aged 12 years or younger were included in the sample. The median age at diagnosis was 3 years for foreign-born children and 8 years for US-born children ($P<.001$). Like their adult counterparts, foreign-born pediatric patients tended to reside in zip code areas exhibiting less crowding (9.0% vs 10.3% occupied housing units with more than 1 person

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Q6: Edit OK?

TABLE 4—Distribution of Numbers of Patients and Zip-Code Level Socioeconomic Indicators, by World Region of Birth: 1994–1999

Region (n)[a]	Attainment of Some College Education, % (*P* Value)[b]	Per Capita Income, Thousands of Dollars (*P* Value)[b]	Household Crowding,[c] % (*P* Value)[b]	Median Age, y (*P* Value)[d]	Median Time From Arrival in US to Diagnosis, y (*P* Value)[d]	25- to 65-Year-Old Patients Employed 2 years Preceding Diagnosis, % (*P* Value)[d]	25- to 65-Year-Old Patients With Exclusively Private Treatment, % (*P* Value)[d]
Africa (72)	39 (.008)	12.8 (.3)	10 (0.8)	31 (<.001)	3 (<.001)	65 (.001)	38 (.9)
Asia (437)	44 (<.001)	17.6 (<.001)	3 (<.001)	41 (.17)	6 (<.001)	65 (<.001)	46 (.09)
Caribbean (378)	33 (<.001)	12.2 (.1)	11 (<.001)	40 (<.001)	9 (.001)	52 (.001)	40 (.12)
Central America (96)	35 (.3)	12.9 (.04)	9 (.2)	30 (<.001)	4 (<.001)	67 (<.001)	29 (.07)
Europe (143)	35 (.1)	16.1 (<.001)	4 (<.001)	56 (<.001)	14	59 (.003)	58 (.004)
Mexico (76)	36 (.3)	13.0 (.4)	7 (.5)	26 (<.001)	8 (<.001)	64 (.005)	18 (.004)
Middle East/North Africa (19)	39 (.008)	12.4 (.07)	11 (.6)	38 (.028)	4 (.03)	31 (.6)	38 (.9)
South America (341)	30 (.1)	12.9 (.002)	10 (.1)	33 (<.001)	4 (<.001)	71 (<.001)	26 (<.001)
South Asia (437)	48 (<.001)	18.7 (<.001)	3 (<.001)	37 (<.001)	5 (<.001)	62 (<.001)	55 (<.001)
US and Canada (2291)	34	12.7	10	43	Not applicable	41	40

[a]Number of foreign-born patients does not sum to 2005, because 5 patients were of unknown nationality and 1 Canadian-born patient was grouped with US-born patients.
[b]*P* values for comparing patients in each world region of birth with US-born patients.
[c]Percentage of housing units with more than 1 person per room.
[d]All *P* values computed from pairwise comparison with US-born patients, with the exception of time to diagnosis, for which *P* values are computed from a pairwise comparison with European-born patients.

per room; $P=.009$), higher per capita income (median $13 000 vs $11 700; $P<.001$), and higher educational attainment (median 34.8% with some college education vs 32.7%; $P=.014$). The proportion of pediatric patients who were foreign-born increased as residential socioeconomic status increased, although this effect was somewhat more modest than the one observed overall ($P=.012$, .003, and .03, respectively, for household crowding, per capita income, and educational achievement).

Foreign-Born by Region

Table 4 shows the distribution of numbers of TB patients and the zip code–level socioeconomic indicators by world region of birth. (Because denominator data by world region for New Jersey cases were not available, it was not possible to present region-specific rates.) Educational attainment, household crowding, and per capita income of patients in the zip code areas where foreign-born patients resided differed significantly among the different world regions ($P<.001$). Post hoc analysis showed that, in general, the zip code areas in which Asian and South Asian TB patients lived had higher educational attainment, less household crowding, and higher per capita incomes than the areas in which US-born TB patients resided ($P<.001$ for all comparisons). Levels of the 3 variables in zip code areas where Mexican-born patients resided were similar to levels in areas where US-born patients resided ($P>.3$ for all).

Subject-level covariates by world region of birth are also presented in Table 4. With the exception of European-born patients, foreign-born patients were younger at diagnosis than US-born patients, although this result was not statistically significant for patients born in the Middle East and Asia. Compared with European-born patients, patients born in all other world regions had a significantly shorter median time to diagnosis from the date of entry into the United States ($P\leq.001$ for all regions except the Middle East and North Africa, for which $P=.027$). Time to diagnosis was missing for 267 patients.

There was a statistically significant association between world region of birth and both employment status and health care provider type ($P<.001$ for both). With the exception of patients born in the Middle East (n=19) and in the United States plus Canada (n=2291), the majority of patients aged 25 to 65 years born in each of the world regions were employed during the 2 years before diagnosis. Only among patients born in Europe and South Asia had a majority been treated exclusively by a private physician (57.9% and 54.8%, respectively).

Q7: Correct? Or "treatment"?

DISCUSSION

Just as the AIDS epidemic altered the age distribution of TB, recent immigration patterns may have produced changes that challenge the conventional wisdom pairing TB and poverty. An epidemic of TB among young foreign-born residents living in relatively affluent areas of New Jersey flies in the face of long-held stereotypes regarding the socioeconomics of TB overall and in particular among the foreign-born. This observation especially applies to immigrants from Asian and South Asian countries, who constitute 43.6% of foreign-born TB patients in New Jersey. Our results agree with those of a study of TB in Great Britain, which found that although

poverty was associated with TB among Whites, no such relationship existed among persons of Asian origin.[20]

The original Centers for Disease Control and Prevention plan to eliminate TB in the United States by 2010 was based on the assumption that elimination could be accomplished by means of targeted interventions aimed at high-risk groups such as the HIV-infected, substance abusers, homeless persons, and the foreign-born.[21] It was theorized that such groups were burdened with multiple health and social problems, and treatment programs were designed accordingly. However, our analysis shows foreign-born TB patients to be more likely than US-born patients to live in relatively affluent locations, to seek medical treatment *outside* the public health system, and to be employed during the 2-year period before diagnosis.

These results have implications for TB control activities and treatment. First, if current trends continue, New Jersey can soon expect more than 300 new foreign-born patients annually, with approximately one third residing in relatively affluent areas. As a result, resource allocation for TB control may need to be adjusted to meet the challenge of foreign-born TB patients residing in affluent areas. However, the modification should be cautious, given that nearly two thirds of foreign-born patients still reside in areas whose lower socioeconomic profile is the one that is traditionally associated with TB.

Second, if large numbers of foreign-born patients obtain treatment from private physicians, those physicians will need to be better informed about the correct treatment of TB and latent TB infection. Previous studies have shown that private physicians are less likely than ___ to provide correct TB treatment.[22,23] This physician education could be accomplished by means of better collaboration between local TB control and prevention agencies and private providers, including consultation to discuss appropriate drug regimens and case management strategies and provision of American Thoracic Society/Centers for Disease Control and Prevention treatment recommendations and guidelines. Other essential ingredients for the successful treatment of foreign-born TB patients by private providers would include broadening the use of directly observed therapy and incentives in the treatment of private patients and distributing educational materials in languages other than English. Moreover, if a relatively affluent TB patient does seek medical care from a public chest clinic, incentives such as food, clothes, and bus tokens to ensure compliance with a demanding TB regimen may be less likely to succeed.[24]

Third, if large numbers of foreign-born TB patients are employed during the 2-year period before diagnosis, they are also more likely to be working (1) during the course of their treatment and (2) during their infectious period. With respect to treatment, public clinic hours, which typically are limited and thus represent a possible barrier to treatment for a person with a demanding work schedule, will need to be expanded. With respect to the possibility of working during the infectious period, more resources will be needed for conducting contact investigations in the workplace. The importance of allocating sufficient resources to contact investigations in general is substantiated by our observation that foreign-born TB patients are likely to be younger at diagnosis than US-born TB patients and hence have a greater probability of transmission, as documented in a number of studies.[25,26] TB control officers carrying out contact investigations involving undocumented or noncitizen foreign-born patients and their possibly undocumented/noncitizen foreign-born contacts will need to convey that cooperation will not increase the risk of deportation.

The subanalysis of pediatric TB patients also showed that foreign-born pediatric patients resided in socioeconomically more advantaged areas than US-born pediatric patients. However, the absolute levels reflect a relatively deprived socioeconomic context for all pediatric patients, regardless of place of birth. Because children are more likely than adults to have been recently infected, this is evidence that recent transmission is still linked to socioeconomically deprived environments.

The epidemiology of pediatric TB is not clear, given the likelihood that some US-born pediatric TB patients have foreign-born parents. (Note that the median age of non-European, foreign-born patients is 37 years, an age at which parenthood is likely.) A study of largely US-born (84%) children in California found that having a foreign-born parent was a risk factor for a positive tuberculin skin test, as was travel to and receiving visitors from countries where TB is endemic.[27] In Great Britain, McCarthy found that approximately one fifth of TB infections among Asian immigrants were most likely acquired during a return visit to Asia.[28] Anonymous surveillance data such as those analyzed here do not permit us to resolve the question of whether a child's infection was recently acquired (either in the United States or abroad during a visit to a parent's country of origin) or due to reactivation of latent infection. Another possibility is that active disease in a child was present before immigration but remained undiagnosed until residence was established in the United States.

This study was limited by (1) the unavailability of country-specific estimates of New Jersey's foreign-born population, and (2) imperfect data on individual socioeconomic status of TB patients. As is the case in many disease registries maintained by state health departments, indicators of individual socioeconomic status in New Jersey's TB registry are largely missing.[29] Because information about health insurance carriers and specific employment at diagnosis was not available, we sketched out the individual socioeconomic status of the patients, using the variables *provider type* and *employment status during the 2 years before diagnosis.* Although both of these variables do point toward a higher socioeconomic status, they also have programmatic implications as discussed ___.

Q8: Please complete phrase.

Q9: What is function of "in general"? (vs what specific contact investigations?)

Q10: Levels of what?

Q11: What is evidence?

Q12: What section is this discussed in?

In 1997, New Jersey was one of 6 states in which the foreign-born population was estimated to exceed 1 million.[30] The other 5 states were California, Florida, Illinois, New York, and Texas; in these states, as in New Jersey, a large proportion of the foreign-born population—from a minimum of 39% (Illinois) to a maximum of 50% (California)—arrived in the United States between 1980 and 1989.[14] These 5 states also exhibit the largest US TB burden.[31] The particular socioeconomic profile of the foreign-born TB patients in each of these states is determined by a complex array of economic, demographic, and historical factors. Some of the differences observed in this study can be attributed to cohort effects; for example, the difference between non-European-born patients and European-born patients with respect to time to diagnosis reflects the fact that the majority of European-born patients immigrated as part of an earlier cohort. Each state will need to perform its own analysis to tailor the measures appropriate to its own foreign-born population.

The Immigration Act of 1990, which established the H-1B visa category, enabled highly trained professionals from abroad to enter the United States, many of whom settled in northern New Jersey and elsewhere—for example, so-called "Silicon Valley" in California.[32,33] These relatively affluent and well-educated immigrants lifted the socioeconomic profile of the foreign-born in the states where they settled. As is the case in New Jersey, a large proportion of these "high-tech" immigrants arrived from high-burden TB countries. Thus, the relationship between socioeconomic status and TB among the foreign-born we observed in New Jersey may well be discernible elsewhere in the United States.

Nationwide, the higher socioeconomic status enjoyed by some immigrants from Asian and South Asian countries is reflected in the fact that nearly 36% of workers from these countries are employed in managerial and professional specialties, a figure significantly higher than that for immigrants from other countries where TB is endemic.[16] Although some of these immigrants currently reside in relatively affluent communities, it is difficult to escape the legacy of *M tuberculosis* infection bequeathed by their place of birth. Even those escaping infection before arrival in the United States may become infected later, given that immigration is no longer the 1-way ticket from place of birth to adopted homeland it was early in the 20th century.

Our analysis has revealed that the underserved population residing in urban areas long recognized to be at risk for TB lives alongside another population whose relative personal affluence and location defy time-honored epidemiological notions. There is substantial variability among foreign-born patients with respect to both personal and environmental socioeconomic indicators. As a result, future progress in TB control and elimination in the United States will require more complex solutions than have previously been recognized. TB among foreign-born residents and their children will continue to be a challenge to TB control measures, a challenge likely to persist as long as TB remains endemic in much of the developing world. ■

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Contributors

A.L Davidow planned the study, analyzed the data, and wrote the article. B.T. Mangura, E. Napolitano, and L.B. Reichman contributed to the formulation of the study hypothesis, the interpretation of data analyses, and the writing of this article.

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Human Participant Protection

No protocol approval was needed for this study.

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Q13: UMDNJ also needed? If so, please spell out.

Q14: What is function of TB Model Center?

Q15: Please correct statement as needed.

Q16: If a chapter is meant, provide title and inclusive page numbers. If not, please explain.

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Table 1 Query 17

Table 3 Query 18

Table 4 Queries 19

Q17: Addition to title OK? Something is need to clarify that the NJ counts are for residents from each country.

Q18: These numbers {last column: 944 and 3351} were added up and inserted just to occupy space. OK? This section doesn't match the rest of the table and the data is not mentioned in the text. Should it be deleted?

Q19: Correct that patients were employed over the 2 years? Also, please clarify the difference between footnote d and footnote b. Could wording in this note apply to columns currently marked both b and d?