

Immigrant Children's Reliance on Public Health Insurance in the Wake of Immigration Reform

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Recent attention has focused on immigrants' use of public programs, especially health insurance programs, in the United States.¹⁻⁶ According to the 2000 census, 1 of every 5 children is a member of an immigrant family, and immigrants are increasingly dispersed across the country.⁷ Immigrant families are also complex in that parents and children may differ with respect to their immigration status. In 1998, 10% of children in the United States lived in "mixed-status" families composed of at least 1 noncitizen parent and at least 1 citizen child.⁸

Because most children depend on their parents to obtain necessary benefits, including health insurance coverage, parental immigrant status may influence a child's health insurance status and, ultimately, his or her health outcomes.⁹ As immigration rates continue to increase, these demographic shifts mean that the health of immigrant children will have a significant impact on the socioeconomic future of all Americans.

Federal, state, and local policies can promote or hinder health insurance coverage for immigrants. The past 12 years have seen a pair of major policy changes designed to reduce immigrant enrollment in publicly funded health insurance programs. First, the Personal Responsibility Work Opportunity and Reconciliation Act of 1996 (commonly known as welfare reform) ruled that immigrants residing in the United States for less than 5 years were no longer eligible for any federally funded public benefits, including health insurance.¹⁰ In response, some states created public health insurance programs to cover immigrants with state funds.¹¹ Federal legislation to extend coverage to lawfully residing immigrant children continues to be debated.¹²

Second, the "public charge" rule of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 was initially interpreted as requiring families to repay the US government for public benefits, including Medicaid, previously received at no cost.¹³ In response to collective advocacy efforts by health care providers and community-based organizations, the government specified in May 1999 that

Objectives. We sought to determine whether the reversal of the public charge rule of the Illegal Immigration Reform and Immigrant Responsibility Act, which may have required families to pay for benefits previously received at no cost, led to immigrant children becoming increasingly reliant on public health insurance programs.

Methods. We conducted a secondary data analysis focusing on low-income children sampled in the 1997 through 2004 versions of the National Health Interview Survey.

Results. Between 1997 and 2004, public health insurance enrollments and the numbers of uninsured foreign-born children in the United States increased by 3.1% and 2.7%, respectively. Using multinomial logistic regression models to account for the substantial differences in socioeconomic status between foreign-born and US-born children, we found that low-income US-born children were just as likely as foreign-born children to have public health insurance coverage (odds ratio [OR]=1.16; 95% confidence interval [CI]=0.89, 1.52) and that, after 2000, foreign-born children were 1.59 times (95% CI=1.24, 2.05) more likely than were US-born children to be uninsured (vs publicly insured).

Conclusions. In the wake of the reversal of the public charge rule, immigrant children are increasingly likely to be uninsured as opposed to relying on public health insurance. (*Am J Public Health.* 2008;98:2004-2010. doi:10.2105/AJPH.2007.125773)

Medicaid benefits would be exempted from the public charge rule.¹⁴ In the wake of these rapid changes, there have been concerns about health care access for immigrant children, especially given that children require regular health supervision visits and immunizations to promote optimal health and well-being.^{2,11,15-17}

Data from the mid-1990s have been used in most recent studies of health insurance coverage among immigrant children. One study involving data from the 1994 and 1996 versions of the Current Population Survey showed that 44.3% of immigrant children were privately insured, 34.1% were publicly insured, and 27.3% were uninsured.¹⁸ The majority of uninsured children had working parents whose employers failed to provide health insurance coverage or were members of families that did not meet Medicaid eligibility requirements for immigrants.¹⁸ Another study of low-income noncitizen adults and children showed that Medicaid participation rates dropped and that noncoverage rates increased between 1995 and 1998; these changes have been ascribed to confusion about eligibility rules for benefits related to welfare reform.¹⁵

The most recent nationally representative analysis of which we are aware (from 1999) confirmed that foreign-born children (approximately 87% of whom were not US citizens⁷) were more likely to be uninsured than to have public health insurance coverage,¹⁹ but the data from that study were collected before the reversal of the public charge rule. In our study, we analyzed data from the 1997 through 2004 versions of the National Health Interview Survey (NHIS) in an effort to determine whether reversal of the public charge rule led to immigrant children becoming increasingly or decreasingly reliant on public health insurance programs.

METHODS

Data Source

The NHIS, a multipurpose nationally representative health survey of the noninstitutionalized civilian population of the United States, has been conducted regularly since 1957 by the National Center for Health Statistics of the Centers for Disease Control and Prevention.^{20,21} The NHIS consists of a basic module

as well as variable supplements that have been fully described elsewhere.^{20,21} Because the NHIS files contain the same or comparable variables from one survey year to the next, they are suitable for trend analysis. Information collected includes self-reported race/ethnicity, country of birth, household income, health and functional status, and health insurance coverage at the time of the interview.^{20,21}

The sample for the combined NHIS files from 1997 to 2004 comprised 675 701 individuals, 105 016 of whom were children (younger than 18 years). Given our focus on public health insurance coverage, we included only children living in families with incomes below 200% of the federal poverty level, the reason being that eligibility for public health insurance programs is generally determined by household income in relation to the federal poverty level and nearly all public health insurance recipients have incomes in this range.²² Use of this criterion resulted in a final sample of 36 684 children.

The independent variable in our analyses was immigrant status, and the dependent variable was child health insurance status at the time of the interview. Children were classified as US born, US born with foreign-born parents (hereafter “mixed status”), and foreign born with foreign-born parents. All individuals born in the 50 states or the District of Columbia were classified as US born. Children with 1 foreign-born parent and 1 US-born parent made up less than 8% of the entire sample and were classified according to the immigrant status of the household reference person; further analyses confirmed that this categorization did not result in misclassification bias (data not shown). Although both mixed-status and foreign-born children can be considered immigrants,^{18,19,23} it should be noted that US-born children of foreign-born parents are US citizens and are not affected by eligibility policies restricting public health insurance benefits for immigrants.

With respect to health insurance status, children were classified as uninsured, privately insured, or publicly insured. Private health insurance included all employer-based plans, and public health insurance included Medicaid, the State Children’s Health Insurance Program, Medicare, and any other publicly funded insurance program (e.g., other state-based programs, military and veterans insurance). We included the following covariates known to be associated

with health insurance status: age, gender, race/ethnicity, presence of chronic conditions, household income, maternal education (less than high school, high school or equivalent, some college), and family structure (living with both parents vs living with a single parent or living with a nonparent).^{24–34}

Data on other related factors (e.g., language of interview, length of stay in the United States) are not consistently collected in the NHIS and were not examined in our analyses. Given the limitations of the NHIS (i.e., data are collected on certain chronic conditions but not others) and consistent with previous studies,^{35–37} we included the following chronic conditions: asthma, attention-deficit hyperactivity disorder, arthritis, autism, cerebral palsy, congenital heart disease, cystic fibrosis, diabetes, mental retardation, muscular dystrophy, and sickle cell disease (determined via questions asking parents whether a doctor or other health professional had ever told them that their child had any of these conditions).

Race/ethnicity categories, based on parental reports (as in other studies^{27,30,33}), were non-Hispanic White, Black, Hispanic, Asian/Pacific Islander, and “other.” Household poverty status was categorized as poor (income below 100% of the federal poverty level) or near poor (100%–200% of the federal poverty level). Because Medicaid coverage in the late 1990s was affected by federal welfare reform and the public charge rule was reversed in 1999,^{38–41} we considered 2 time periods (1997–2000 and 2001–2004) separately in our analyses.

Statistical Analyses

We used the χ^2 test to compare differences in categorical variables between the 3 groups of children (US born, mixed status, and foreign born). We also calculated trends in health insurance coverage according to immigrant status.

The final objective of our analysis was to assess the independent effect of immigrant status on health insurance status (uninsured, publicly insured, or privately insured) after accounting for relevant differences in baseline characteristics. To this end, we created a multinomial logit model that allowed us to examine insurance status while adjusting for these differences by including relevant covariates. We also included a term for the interaction between immigrant status and time period to determine

whether reversal of the public charge rule was associated with increased public health insurance enrollments among foreign-born children.

Statistical tests were 2-tailed. To account for the complex sampling design, SAS-callable SUDAAN was used in weighting all of the analyses so that they were nationally representative and in calculating standard errors.^{20,21,42,43}

RESULTS

The final sample of 36 684 children represented approximately 23 million low-income children living in the United States during each year from 1997 through 2004. In this nationally representative sample, the population of mixed-status children grew significantly, from 3.8 million (15.1% of the nationally representative sample of children living in the United States; SE=0.6%) in 1997 to 4.7 million (20.8%; SE=1.0%) in 2004, whereas the population of foreign-born children did not significantly change (1.6 million [6.2%; SE=0.4%] in 1997 and 1.4 million [6.2%; SE=0.4%] in 2004).

On average, foreign-born children were older than were US-born and mixed-status children (Table 1), reflecting the fact that a greater share of foreign-born children were in the oldest age group. Although the vast majority of children from all groups did not have chronic conditions, foreign-born and mixed-status children were significantly less likely to have a chronic condition than were US-born children.

There were important differences in socio-demographic characteristics between immigrant and US-born children. Whereas most US-born children were non-Hispanic Whites, more than half of foreign-born and mixed-status children were of Hispanic ethnicity. Foreign-born children were 1.3 times more likely than were US-born children to live in families with incomes below 100% of the federal poverty level. Foreign-born and mixed-status children were about 1.5 times more likely than were US-born children to live with both parents. Finally, US-born children were 2.3 times more likely than were foreign-born and mixed-status children to have a mother who had graduated from high school.

There were substantial differences in insurance coverage between foreign-born, mixed-status, and US-born children (Table 2). In all of

TABLE 1—Characteristics of Low-Income Immigrant and US-Born Children: National Health Interview Survey, 1997–2004

	US-Born Children (n = 24 178 ^a)	US-Born Children With Foreign-Born Parents (n = 9404 ^a)	Foreign-Born Children With Foreign-Born Parents (n = 3102 ^a)	P
Female, % (SE)	48.9 (0.4)	48.4 (0.7)	50.0 (1.2)	.55
Age, y, mean (SE)	8.1 (0.1)	7.0 (0.1)	10.9 (0.1)	<.001
Age group, y, % (SE)				<.001
< 5	35.6 (0.4)	44.1 (0.8)	15.4 (0.8)	
6–11	34.4 (0.4)	34.4 (0.8)	33.9 (1.2)	
> 12	30.0 (0.4)	21.5 (0.8)	50.7 (1.2)	
Race/ethnicity, % (SE)				<.001
Non-Hispanic White	56.3 (0.8)	9.2 (0.7)	11.9 (1.2)	
Black	27.2 (0.8)	6.0 (0.4)	6.4 (0.7)	
Hispanic	11.8 (0.4)	73.6 (1.1)	66.5 (1.7)	
Asian/Pacific Islander	0.2 (0.1)	9.8 (0.8)	13.6 (1.1)	
Other	4.4 (0.3)	1.5 (0.2)	1.5 (0.4)	
Poverty status, % (SE)				<.001
Poor	42.2 (0.6)	46.2 (0.8)	53.5 (1.3)	
Near poor	57.9 (0.6)	53.8 (0.8)	46.5 (1.3)	
Has chronic condition, % (SE)	22.0 (0.3)	12.3 (0.5)	8.8 (0.7)	<.001
Lives with both parents, % (SE)	48.8 (0.5)	69.8 (0.7)	75.4 (1.1)	<.001
Maternal education, % (SE)				<.001
Less than high school	24.0 (0.5)	58.6 (1.0)	55.9 (1.6)	
High school	37.2 (0.4)	20.9 (0.7)	20.2 (1.2)	
Some college	38.8 (0.5)	20.4 (0.7)	23.9 (1.2)	

Note. All percentages are weighted. As a result of rounding, values may not sum to 100%. See text for details on variables.
^aUnweighted.

the study years, foreign-born children were more likely to be uninsured than to have public or private health insurance coverage. By contrast, low-income mixed-status children and US-born children were more likely to have public health insurance than to have private health insurance or to be uninsured. There were significant increases in public health insurance participation among US-born and mixed-status children, but not among foreign-born children, between 1997 and 2004. From 1997 to 2004, public health insurance coverage rates among US-born and mixed-status children grew by 15.0% and 13.1%, respectively. Most of this increase in public health insurance participation occurred from 2001 to 2004 (i.e., after reversal of the public charge rule in 1999).

By 2004, mixed-status children were 1.16 times more likely than were US-born children to have public health insurance coverage. In comparison, because public health insurance

coverage rates among foreign-born children did not increase significantly during the study period (1997 rate: 29.3%; 95% confidence interval [CI]=23.6%, 35.7%; 2004 rate: 31.9%; 95% CI=25.6%, 38.9%), US-born children were 1.74 times more likely than were foreign-born children to have public health insurance in 2004. Over the study span, private health insurance participation decreased significantly among US-born and mixed-status children (by approximately 5%–7%), as did the percentage of noncoverage (by about 8%); the percentage of uninsured foreign-born children did not change significantly.

In the final portion of our analysis, we used multinomial logistic regression models to quantify the independent association between immigrant status and health insurance coverage after accounting for differences in relevant covariates (Table 3). Private health insurance coverage and noncoverage were compared with the reference

category of public health insurance, given that this was the focus of our study.

The attenuated effect sizes in comparison with the findings shown in Table 2 provide evidence of confounding by socioeconomic factors and child health status in comparisons of health insurance coverage between foreign-born, mixed-status, and US-born children. Specifically, there was a strong and statistically significant relationship between family income and health insurance status whereby children living in poor families (incomes below 100% of the FPL) were 0.22 times (95% CI=0.20, 0.24) less likely than were children living in near-poor families to have private health insurance coverage ($P<.001$ for the comparison with public health insurance).

Maternal education, family structure, and child health status also remained independently associated with health insurance status. After these statistically significant confounding effects had been taken into account, the analyses yielded the following results. First, foreign-born children were not significantly more likely than US-born children to participate in public health insurance programs versus private health insurance plans (odds ratio [OR]=1.16; 95% CI=0.89, 1.52). In fact, foreign-born children were 3.06 times (95% CI=2.50, 3.74) more likely to be uninsured than to participate in public health insurance programs. Second, this latter finding occurred in the context of a significant temporal effect whereby children overall were 0.22 times less likely to be uninsured (vs publicly insured) after 2001 than before 2001.

Finally, examination of the interaction between immigrant status and time period showed that foreign-born children were 1.59 times (95% CI=1.24, 2.05) more likely to be uninsured (as opposed to publicly insured) after 2001 than before 2001. This interaction was not significant for mixed-status children or in the comparison between public and private health insurance.

DISCUSSION

This analysis of nationally representative data from 1997 to 2004 demonstrates that, relative to US-born children, foreign-born children were neither increasingly reliant on nor more likely to participate in public health insurance programs after reversal of the public charge rule. In fact, less than one third of foreign-born children in

TABLE 2—Health Insurance Status of Low-Income US-Born and Immigrant Children in the United States: National Health Interview Survey, 1997–2004

	1997, % (SE)	1998, % (SE)	1999, % (SE)	2000, % (SE)	2001, % (SE)	2002, % (SE)	2003, % (SE)	2004, % (SE)
US-born children								
Public health insurance	40.5 (1.1)	40.4 (1.1)	42.1 (1.3)	45.0 (1.2)	49.6 (1.3)	52.7 (1.3)	57.2 (1.2)	55.5 (1.2)
Private health insurance	41.1 (1.1)	42.1 (1.1)	40.7 (1.2)	38.3 (1.3)	37.9 (1.3)	36.3 (1.3)	31.5 (1.2)	34.1 (1.2)
Uninsured	18.4 (0.8)	17.5 (0.8)	17.2 (0.9)	16.7 (0.9)	12.4 (0.9)	10.9 (0.7)	11.3 (0.8)	10.4 (0.8)
US-born children with foreign-born parents								
Public health insurance	47.1 (2.0)	38.8 (2.1)	41.3 (2.2)	44.4 (1.9)	50.7 (2.1)	54.2 (2.0)	60.0 (2.0)	60.2 (1.9)
Private health insurance	27.9 (1.9)	30.4 (1.8)	28.0 (2.0)	29.7 (1.7)	27.3 (1.9)	24.8 (2.0)	21.7 (1.7)	23.2 (1.8)
Uninsured	24.9 (1.5)	30.8 (1.8)	30.7 (1.7)	25.9 (1.6)	21.9 (1.6)	20.9 (1.4)	18.3 (1.6)	16.6 (1.3)
Foreign-born children with foreign-born parents								
Public health insurance	29.3 (3.0)	18.7 (2.9)	24.3 (3.2)	23.9 (3.2)	30.4 (3.5)	28.0 (3.5)	32.8 (3.6)	31.9 (3.4)
Private health insurance	21.2 (2.9)	31.0 (3.3)	21.6 (3.5)	24.1 (2.5)	20.8 (2.9)	21.5 (3.4)	12.3 (2.3)	14.5 (2.6)
Uninsured	49.5 (2.9)	50.3 (3.5)	54.1 (4.0)	51.9 (3.4)	48.8 (3.3)	50.5 (3.9)	54.9 (3.4)	53.7 (3.7)

Note. All percentages are weighted. See “Methods” section for details on income and health insurance variables.

this study were publicly insured during each year from 1997 to 2004, as compared with more than 40% of US-born children annually enrolled in public health insurance programs during that period. In the wake of the reversal of the public charge rule, we found that foreign-born children were 1.59 times more likely to be uninsured than to have public health insurance. These findings provide important information for the development of child health insurance programs with specific attention to eligibility guidelines for immigrant children who are not US citizens.

Our finding that public health insurance enrollments were proportionally lower among immigrant foreign-born children than among US-born and mixed-status children even after reversal of the public charge rule is contrary to popular perceptions. Previous studies have documented that foreign-born children are likely to be uninsured^{11,15,19,44}; our study contributes to this literature by showing that this trend has continued despite reversal of the public charge rule. Although it is difficult to separate the effects of policies to restrain immigrants’ enrollment in public health insurance programs from the economic changes and declines in private employer-based health insurance that occurred between 1997 and 2004, it is important to note that, during the period of our results, overall participation in public health insurance programs among US-born and mixed-status children increased by 13% to 15% in the wake of the

enactment of the State Children’s Health Insurance Program and associated outreach efforts.^{17,45}

The large number of uninsured foreign-born children raises concerns about their long-term health and functional outcomes because regular health care supervision is critical to children achieving optimal growth and development. As we and others have shown,^{15,44,46} immigrant children make up as much as one third of the uninsured child population in the United States. Decades of research have documented that uninsured children are less likely than are children with health insurance coverage to see a physician or receive necessary medical care.^{27–29,31–34} The enactment of the Deficit Reduction Act of 2005, whereby states are mandated to require proof of citizenship from US citizens applying for or renewing Medicaid coverage,⁴⁷ may contribute further to deterring immigrant children from seeking needed health care.

Some have argued that uninsured immigrants may strain the resources of publicly funded health care systems by using expensive emergency care or delaying treatment. However, a nationally representative study demonstrated that immigrant children used fewer health care services and had 74% lower per capita health care expenditures than did US-born children in 1996.⁴⁸ Moreover, the cost of providing preventive primary care to children is relatively small in comparison with other health care costs.^{49–51}

Our findings pertaining to the sociodemographic characteristics of immigrant children are not surprising. The fact that a greater share of foreign-born children were in the oldest age group raises concerns about the public health ramifications of underinsurance in this group given the need for preventive care to address obesity and other risk factors. As others have shown, immigrant children disproportionately live in low-income families, and their parents often have less than a high school education and often work in low-wage jobs that may not offer health insurance coverage.^{11,15,46,52–54} In addition to these factors, the linguistic and cultural barriers faced by many immigrant children and their families represent added challenges to obtaining health insurance and necessary health care.^{9,11,55–60} This cumulative disadvantage endangers children’s future well-being in that they are more likely to have poor health status and functional limitations in the long term.^{61,62}

Limitations

There are several caveats to our results. First, our finding that foreign-born and mixed-status children were less likely than were US-born children to have chronic conditions could be explained by differences in health insurance coverage and, in turn, access to health care services; unfortunately, the NHIS did not include consistent data on use of health care services across all of the years covered in this

TABLE 3—Adjusted Child Insurance Status Odds Ratios (ORs), by Immigrant Status: National Health Interview Survey, 1997–2004

	Private vs Public, OR (95% CI)	Uninsured vs Public, OR (95% CI)
Immigrant status		
US born (Ref)	1.00	1.00
US born with foreign-born parents	0.96 (0.84, 1.10)	1.12 (0.97, 1.29)
Foreign born with foreign-born parents	1.16 (0.89, 1.52)	3.06** (2.50, 3.74)
Gender		
Girl	1.00 (0.94, 1.07)	1.01 (0.94, 1.10)
Boy (Ref)	1.00	1.00
Age group, y		
< 5 (Ref)	1.00	1.00
6–11	1.58 (1.46, 1.71)	1.53** (1.38, 1.68)
> 12	2.00 (1.83, 2.19)	1.99** (1.80, 2.21)
Race/ethnicity		
Non-Hispanic White (Ref)	1.00	1.00
Black	0.58** (0.52, 0.64)	0.71** (0.62, 0.81)
Hispanic	0.65** (0.57, 0.73)	1.19** (1.06, 1.35)
Asian/Pacific Islander	0.84 (0.66, 1.08)	0.74* (0.57, 0.96)
Other	0.47** (0.37, 0.59)	0.70* (0.53, 0.92)
Has chronic condition		
Yes	0.69** (0.63, 0.76)	0.59** (0.53, 0.66)
No (Ref)	1.00	1.00
Family structure		
Lives with single parent or nonparent	0.55** (0.51, 0.60)	0.53** (0.48, 0.58)
Lives with both parents (Ref)	1.00	1.00
Maternal education		
Less than high school	0.40** (0.36, 0.44)	1.09 (0.97, 1.22)
High school	0.70** (0.65, 0.76)	1.00 (0.90, 1.11)
Some college (Ref)	1.00	1.00
Poverty status ^a		
Poor	0.22** (0.20, 0.24)	0.51** (0.46, 0.55)
Near poor (Ref)	1.00	1.00
Time period		
Before 2001 (Ref)	1.00	1.00
After 2001	0.58** (0.54, 0.63)	0.45** (0.40, 0.51)
Immigrant status × time period		
US born, before 2001 (Ref)	1.00	1.00
Mixed status, after 2001	0.84 (0.70, 1.01)	1.03 (0.87, 1.23)
Foreign born, after 2001	0.80 (0.56, 1.14)	1.59** (1.24, 2.05)

Note. CI = confidence interval. All percentages are weighted.

^aPoor was defined as a family having an income below 100% of the federal poverty limit. Near poor was defined as having 100% to 200% of the federal poverty limit.

* $P < .05$; ** $P < .01$.

study. However, our sensitivity analysis eliminating the chronic conditions variable from our logistic regression models had no significant effect on estimates for any of the other

coefficients (data not shown). Second, as in nearly all large nationally representative data sets, the NHIS does not include information regarding the documentation status of

immigrants, and undocumented children are likely to be underrepresented. Therefore, our results may underestimate the true number of uninsured immigrant children.

Third, the NHIS is a cross-sectional survey, and therefore causal inference is limited. However, at present, this survey provides one of the few nationally representative data sets able to support trend analyses. Fourth, the NHIS tightly controls access to state-level data, limiting our ability to examine the effects of state-funded public health insurance programs for immigrants. Since the changes in the federal regulations, more than 20 states have created replacement programs, and other local programs have been financed through public–private partnerships.^{63,64} Additional research in this area is needed.

Fifth, as a result of limitations in the NHIS data, we were unable to examine the influence of other important linguistic and cultural factors (e.g., English proficiency, length of stay in the United States) on health insurance trends among immigrant children. It is likely that these factors explain some of the observed relationship between children's immigrant status and their health insurance status. Finally, we did not account for the heterogeneity present within immigrant populations; however, despite this diversity, immigrant populations have shared concerns and challenges pertaining to federal eligibility rules for public benefits and immigration status.

Conclusions

Contrary to popular perceptions, foreign-born children in the United States do not rely on public health insurance programs more than US-born children, despite reversal of the public charge rule. Even after the significant socioeconomic differences between US-born and foreign-born children had been taken into account, the vast majority of foreign-born children in our study were much more likely than were US-born children to be uninsured, to be living in poverty, and to have parents with less than a high school education.

Such cumulative social disadvantage is likely to adversely affect the ability of immigrant children to become productive members of the American labor force. In the various discussions of proposals for universal child health coverage,^{51,65,66} policies designed to promote

the healthy growth and development of this highly underserved population merit serious consideration, given their potential to ensure the future socioeconomic well-being of an increasingly diverse American population. ■

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Contributors

S. Pati originated and directed the study, guided the statistical analyses, and developed the article. S. Dana-goulian conducted the statistical analyses.

Human Participant Protection

No protocol approval was needed for this study.

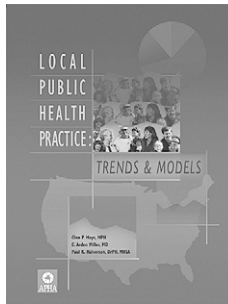
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