

## DOCUMENT RESUME

ED 297 048

UD 026 266

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**TITLE** Demographic Projections of Non-English-Language-Background and Limited-English-Proficient Persons in the United States to the Year 2000 by State, Age, and Language Group.

**INSTITUTION** National Clearinghouse for Bilingual Education, Rosslyn, VA.

**SPONS AGENCY** National Inst. of Education (ED), Washington, DC.; Office of Bilingual Education and Minority Languages Affairs (ED), Washington, DC.

**REPORT NO** ISBN-0-89763-100-5  
**PUB DATE** 84  
**CONTRACT** 400-80-0040  
**NOTE** 138p.  
**PUB TYPE** Reports - Research/Technical (143) -- Statistical Data (110)

**EDRS PRICE** MF01/PC06 Plus Postage.

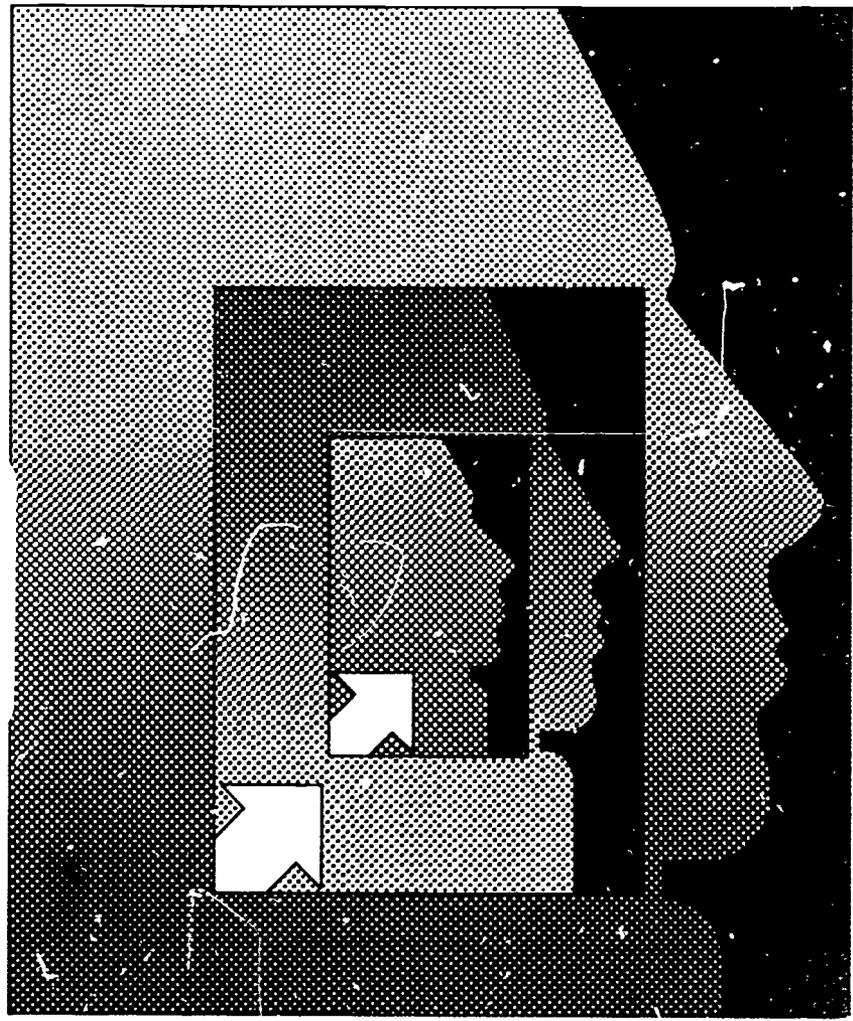
**DESCRIPTORS** Asian Americans; Demography; \*Educational Planning; Elementary Secondary Education; \*Ethnic Groups; Hispanic Americans; \*Limited English Speaking; Minority Groups; \*Non English Speaking; Population Distribution; Population Growth; \*Population Trends; Statistical Studies

## ABSTRACT

This study makes demographic projections of the limited English proficient (LEP) and non English language background (NELB) populations in the United States to the year 2000, based on 1976 figures. Results of NELB projections include the following: (1) the Spanish group is increasing dramatically, but the Asian and non-Spanish/non-Asian groups are also growing; (2) the younger age groups will decline significantly but temporarily; (3) the heaviest concentration of NELBs will remain in California, New York, and Texas; (4) the Spanish are much younger than other groups; and (5) the Spanish are concentrated in California, Texas, and New York, while the Asians are concentrated in California, Hawaii, and New York. Results of the LEP projections include the following: (1) the numbers of LEPs declined slightly during the 1980s, but will either increase or return to their previous levels by 2000; (2) the 5- to 9-year-old group is increasing more than the 10- to 14-year-old group; (3) California and Texas will show overall gains in the number of LEPs, while New York remains the same; (4) the numbers of younger Spanish and Asians are increasing; and (5) the Spanish are concentrated in California, Texas, and New York. Educational implications include the following: (1) Spanish LEPs will become an increasingly important factor in educational planning; (2) the sheer numbers of the Spanish should not mask the needs of smaller groups; and (3) geographic concentration will influence the allocation of funds. Extensive tables, charts, and graphs of statistical data and a six-page bibliography are included. (FMW)

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# Demographic Projections of Non-English-Language-Background and Limited-English-Proficient Persons



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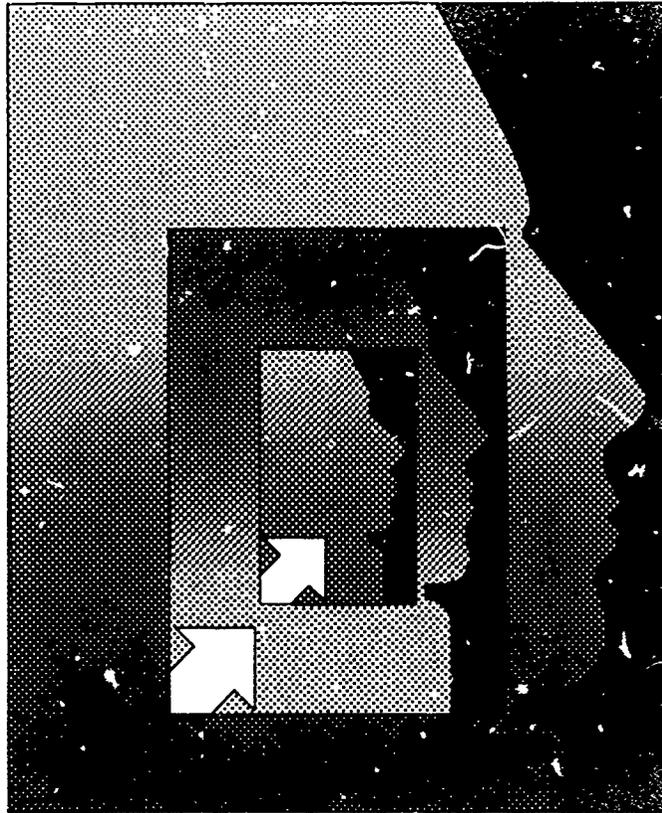
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## in the United States to the Year 2000 by State, Age, and Language Group

DO26266





*Demographic Projections of  
Non-English-Language-Background and  
Limited-English-Proficient Persons  
in the United States to the Year 2000  
By State, Age, and Language Group*

Rebecca Oxford-Carpenter, Louis Pol, David Lopez,  
Paul Stupp, Murray Gendell, and Samuel Peng

This document is published by InterAmerica Research Associates, Inc., pursuant to contract NIE 400-80-0040 to operate the National Clearinghouse for Bilingual Education. The National Clearinghouse for Bilingual Education is jointly funded by the Office of Bilingual Education and Minority Languages Affairs and the National Institute of Education, U.S. Department of Education. Contractors undertaking such projects under government sponsorship are encouraged to express their judgment freely in professional and technical matters; the views expressed in this publication do not necessarily reflect the views of the sponsoring agencies.

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1555 Wilson Boulevard, Suite 605  
Rosslyn, Virginia 22209  
(703) 522-0710/(800) 336-4560

Library of Congress Catalog Card Number: 84-61164  
ISBN: 0-89763-100-5  
First Printing 1984  
Printed in USA  
10 9 8 7 6 5 4 3 2 1

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## *Foreword*

This report provides projections of non-English-language-background (NELB) and limited-English-proficient (LEP) persons in the United States to the year 2000 with 1976 as a base year in language, age, and state categories. The research was conducted as Study A-3 in the Elementary and Secondary Education Act (ESEA) Title VII Part C Bilingual Education Research Agenda under Contract Number OE-300-79-0737. Sponsors were the National Center for Education Statistics (NCES) and the Office of Bilingual Education and Minority Languages Affairs (OBEMLA), U.S. Department of Education.

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## *Acknowledgments*

The researchers are grateful to Gerald Kahn, NCES project officer, for his cooperation in all aspects of this project. Leslie Silverman, Dorothy Waggoner, William Sonnenberg, David Dubois, and Rolf Wulfsberg, all currently or formerly of NCES, provided many suggestions at various stages of the research. Thanks also go to Rudolph Troike, formerly of InterAmerica Research Associates, for his guidance. Others who offered useful input were Gilbert N. García of the Office of Bilingual Education and Minority Languages Affairs (OBEMLA); Reynaldo Macías, formerly of the National Institute of Education (NIE); and the Part C Coordinating Committee members.

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*Demographic Projections of  
Non-English-Language-Background and  
Limited-English-Proficient Persons*

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# Executive Summary

The non-English-language-background (NELB) population in the United States across all ages is projected to increase from 28 million persons in 1976 to 30 million in 1980, 34.7 million in 1990, and 39.5 million in the year 2000. These are persons whose usual or second individual language, usual or second household language, or mother tongue is other than English, regardless of their proficiency in English.

Limited-English-proficient (LEP) persons are a subset of the NELB group. In the United States, LEP children ages 5-14 are projected to drop from 2.5 million in 1976 to 2.4 million in 1980, then gradually increase to 2.8 million in 1990 and 3.4 million in 2000, thus reflecting the projected temporary declines for younger age groups in the entire U.S. population. These are among the findings from a study conducted by InterAmerica Research Associates, Inc., and its subcontractor WESTAT, Inc.

The purpose of this study was to make demographic projections of the LEP population in the United States for the years 1980, 1985, 1990, 1995, and 2000 using 1976 as the base year. NELB projections were made because they were a prerequisite for LEP projections. For the study, consultants designed a new Cohort Component Prevalence Rate Method for making the demographic projections.

This executive summary contains:

- Results of NELB projections by language, age, major

- states, language and age, and language and state
- Results of LEP projections by language, age, major states, language and age, and language and state
- Sources of data
- Projection methodology
- Caveats
- Educational implications.

## Results Of Non-English-Language-Background (NELB) Projections

### NELB Results by Language

- The Spanish<sup>1</sup> NELB population increases from 10.6 million (38% of total) in 1976 to 18.2 million (46%) in 2000.
- The Asian<sup>2</sup> NELB population increases from 1.8 million to 2.3 million.
- The combined non-Spanish/non-Asian<sup>2</sup> NELB population increases from 15.5 million to 19 million.
- Growth of the Spanish group (by 7.6 million) accounts for two-thirds of the total growth of the NELB population (by 11.5 million).

### NELB Results by Age

- Although all age groups show overall gains, distinct differences in the number of NELBs appear for

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<sup>1</sup> In this report "Spanish" is used to include all Hispanic groups, such as Mexican, Puerto Rican, Latin American, and Mexican Spanish.

<sup>2</sup> In this report "Asian" refers to the following language-background groups: Chinese, Filipino, Japanese, Vietnamese, Korean. For the sake of classification other Asian-language-background groups, which include smaller numbers of persons, are included in the "non-Spanish/non-Asian" category.

various ages. Most of the "younger" age groups (5-14, 15-24, and 25-34) experience significant but temporary declines; "older" age groups (35-54 and 55-plus) exhibit more dramatic and steady increases than younger groups.

- The 0- to 4-year-old age group rises steadily from 1.8 million in 1976 to 2.6 million in 1990 and remains at that level until the year 2000.
- The 5-14 age group drops from 3.8 million in 1976 to 3.6 million in 1980, then steadily rises to 5.1 million in 2000.
- The 15-24 age group increases from 3.8 million in 1976 to 4.1 million in 1980, decreases to 3.7 million in 1990 and 1995, then rises to 4.3 million in 2000.
- The 25-34 age group increases from 3.6 million in 1976 to 5.2 million in 1990, then declines to 4.7 million in 2000.
- The 35-54 age group increases most rapidly from 7 million in 1976 to 13.1 million in 2000.
- The 55-plus age group increases steadily from 7.9 million in 1976 to 11 million in 2000.

#### NELB Results by Major States

- There is a heavy concentration of NELBs in California, New York, and Texas. These three states contain 45 percent of all NELBs in 1976 and 48 percent in 2000.
- California NELBs increase from 5.2 million in 1976 to 8.3 million in 2000.
- New York NELBs increase from 4.4 million in 1976 to 5.1 million in 2000.
- Texas NELBs increase from 3 million in 1976 to 5.6 million in 2000.

#### NELB Results by Language and Age

- Spanish NELBs are much younger than other NELB groups; 2.6 million Spanish NELBs ages 5-14 comprise 62% of all NELBs ages 5-14 in 1976, and 3.5 million Spanish NELBs ages 5-14 constitute 70% of all 5-14 NELBs in 2000.
- In 1976, 22.6% of Spanish NELBs are 5-14 years old, compared to 13.6% of Asian NELBs and 7.7% of non-Spanish/non-Asian NELBs. Similar results occur for all projection years to 2000.
- The age structure of Asian NELBs is similar to that of NELBs as a whole, except for the older age groups. The Asian 35-54 age group dominates after 1985.
- Non-Spanish/non-Asian NELBs have more individuals in the 35-54 and 55-plus age bands throughout the projection years than Spanish NELBs. There is, however, a dramatic rise in the number of 35- to 54-year-old Spanish NELBs after 1990.

#### NELB Results by Language and State

- Three states—California with 2.9 million (28%), Texas with 2.6 million (24%), and New York with 1.4 million (14%)—account for 66% of the national total of Spanish NELBs in 1976.
- By 2000, these states will have 68% of Spanish NELBs, California with 5.3 million (29%), Texas with 5 million (27.6%), and New York with 2 million (11%).
- In 1976, the Asian population is concentrated in California with 700,000 (39%), Hawaii with 240,000 (13%), and New York with 180,000 (10%).
- Between 1976 and 2000, California and Hawaii show gains in the absolute number of Asian NELBs, while New York stays the same at 180,000 in 1976.

### Results Of Limited-English-Proficiency (LEP) Projections

#### LEP Results by Language

- The numbers of Spanish, Asian, and non-Spanish/non-Asian LEPs experience slight declines during the 1980s, but are projected to rise strongly or return to the original levels by the year 2000.
- Between 1976 and 2000, LEP persons increase by 880,000; of this number, 840,000 (95.5%) are Spanish LEPs.
- Spanish LEPs increase from 1.8 million (71%) of all LEPs in 1976, to 2.6 million (77%) of all LEPs in 2000.
- There are approximately 130,000 Asian LEPs in 1976 and 2000.
- Non-Spanish/non-Asian LEPs are at 600,000 in 1976 and 2000.
- LEP rates (LEP-to-NELB ratios) vary considerably by language, with the highest LEP rates (0.75) found among Spanish and Vietnamese populations and the usual range being 0.41 to 0.53.

#### LEP Results by Age

- There is a slightly greater overall increase in 5- to 9-year-old LEPs than in 10- to 14-year-old LEPs between 1976 and 2000.
- The 5-9 age group moves from 1.3 million in 1976 to 1.8 million in 2000. The age 10-14 group increases from 1.3 million in 1976 to 1.6 million in 2000.

#### LEP Results by Major States

- California and Texas show overall gains in the number of LEPs between 1976 and 2000 (California, 600,000 to 900,000; Texas, 500,000 to 900,000), while New York stays the same at 500,000 in 1976 and 2000.

- LEPs are more highly concentrated than NELBs in these states. The percentage of the national LEP population clustered in these states increases from 63% to 67% between 1976 and 2000, as compared with the percentage of the national NELB population in these states, which rises from 45% to 48% during the same period.

#### LEP Results by Language and Age

- The number of Spanish LEPs ages 5-9 increases at a faster rate than Spanish LEPs ages 10-14 between 1976 and 2000 (900,000 to 1.4 million).
- There is a pronounced increase in the number of younger Asian LEPs between 1976 and 2000 (70,000 to 81,000) and a slight drop in older Asian LEPs (56,000 to 54,000).
- There is virtually no change in the number of non-Spanish/non-Asian LEPs in both age groups between 1976 and 2000 (300,000 in each age group).

#### LEP Results by Language and State

- Spanish LEPs are concentrated largely in the three key states of California, Texas, and New York.
- Of the total growth of 880,000 LEPs projected between 1976 and 2000, 700,000 (79.5%) come from just the Spanish-speaking LEPs in these states.

### Sources of Data

The major sources of data included the 1975 Current Population Survey-Survey of Languages Supplement (CPS-SLS), the 1976 Survey of Income and Education (SIE), the 1976 Children's English and Services Study (CESS), and the U.S. Bureau of the Census population projections to the year 2000.

The CPS-SLS, conducted by the Bureau of the Census, used stratified, multi-stage cluster sampling of households and was used as a pilot test for certain questions that were later used in the SIE. The CPS-SLS asked questions about current individual language, current household language, mother tongue, ability to speak and understand English, birthplace, year of immigration, and ethnic origin. The researchers obtained differential growth rates for the Spanish language group from the CPS-SLS.

The SIE was conducted by the Bureau of the Census in spring 1976. The SIE questions on language background and current usage were developed by NCES, which provided partial financial support to augment the SIE sample and to add the language questions. The survey sample consisted of fifty-one independent state samples that totaled nearly 160,000 occupied households. Personal interviews were completed in nearly 95 percent of these households. The NELB estimates for the 1976 base year came from the SIE.

The CESS was jointly sponsored by NIE and NCES to obtain the number of LEP children nationwide and in the four subpopulations of California, Texas, New York, and the remaining U.S. states. The CESS used stratified, multi-stage sampling of 35,000 households. Approximately 2,000 were identified as NELB and eligible for inclusion. Eventually, 1,909 children (ages 5-14) and their families were interviewed. A thirteen-item surrogate "measure of English language proficiency" (MELP) and a specially constructed test, the Language Measurement and Assessment Inventories (LM & AI), were administered to each child. The CESS provided the basis for LEP rates for this study.

The researchers used the Bureau of the Census Series II-B population projections to the year 2000. These projections are based on the Cohort Component Prevalence Rate Method, which uses age cohorts and accounts for population changes resulting from the interaction of fertility, mortality, and migration. Series II-B of the Census Bureau's illustrative projections of state populations by age, race, and sex assumes: (1) a total cohort fertility rate of 2.1; (2) an increase in life expectancy from 69.1 to 71.8 years for men and 77 to 81 years for women between 1976 and 2050; (3) a net immigration of 400,000 persons per year; and (4) a continuation from 1975 to 2000 of the civilian, non-college interstate migration patterns by age for the 1970-1975 period. These projections appear to be the best set of assumptions for this study.

### Projection Methodology

The Cohort Component Prevalence Rate Method was developed for this study. Its name was derived from the application of limited-English-proficiency (LEP) prevalence rates to the projection of the total population by age groups and states.

The technique had two basic steps: first, to project the NELB population, and second, to multiply LEP rates (LEP-to-NELB ratios for the base year) by the projected NELB population to produce the numbers of LEPs. The number of NELBs could be projected in all age groups, but because of the age limitations in the CESS only LEPs for ages 5-14 could be projected. The estimates of LEPs for ages 4-18 in 1976 presented by the CESS included extrapolated figures beyond the 5-14 age range. Due to possible unreliability, extrapolated figures were not used as a basis for LEP projections; therefore this study was bound to the 5-14 age group.

Categories for projections included the *eighteen non-English language groups found in the SIE*, plus combinations such as Asian, Spanish, and total non-English, *geographic area* including the entire United States (all 50 states, and the District of Columbia); and *age*. A statistical criterion was used to determine which language by geographic area by age categories to pro-

ject. Only those categories which had population estimates in the SIE equal to or greater than three times the standard error for the population estimate were included for projection. The calculation of standard errors based on cell sizes was provided with the SIE.

Using the CESS and the SIE, LEP figures were obtained by linking English-language-proficiency data from a small sample with data from a two-item surrogate MELP from a larger sample. The MELP covers both the individual's indicated ability to speak and understand English and family income above or below \$15,000. A probabilistic approach was used to link the CESS and the SIE with the MELP. First, the MELP items were selected from the CESS data set and arranged in a matrix. The probabilities of persons being LEP (based on the language proficiency test) were determined for each cell in the matrix. Then the cell probabilities were applied to parallel cells of the larger SIE database to generate LEP figures.

### Caveats

Three issues must be raised concerning the base population projections: (1) lack of usable information about legal or illegal immigration; (2) lack of reliable information on refugees; and (3) inability to differentiate the growth rates and age structure of the base population by all specific language groups.

The most serious caveat regarded immigration of illegals or undocumented aliens. The Census Bureau summarized all the available studies on illegal immigration and found that the number of illegal aliens in the United States was estimated by various studies to be from 2.9 million to 12 million, most of whom were Hispanic. Many of these studies were strictly guesswork. Furthermore, flow rate of illegal aliens into and out of the United States was indeterminate. With no definitive source to draw upon and with an overwhelming probability of error, the question of illegal immigration was not addressed in making projections in this study. Therefore, the figures in this study are lower-bound projections, and it was assumed the actual figures—particularly for Hispanics—would be higher. Also, figures for legal immigration were not available, because they were not tabulated by language and state residence.

The Indochinese and Cuban refugee influx indicated the difficulty of considering world political events in making population projections. A 1980 NCES study by Goor indicated almost 100,000 Indochinese children ages 5-18 resided in the United States as of October 31, 1979—almost double the reported number for the 1977-1978 school year. Trends of such political refugee immigration were so unpredictable it was impossible to include them in a systematic projection methodology.

Although the 1980 census provides some data on Indochinese refugees, reliable information concerning recent Cuban refugees will have to emerge from a later census.

Another important caveat concerned the inability to differentiate growth rates and age structure of the base population by relevant language groups. Because of this, projections for some of the specific non-Spanish European language groups may be overestimated (e.g., Polish) and projections for some of the Asian language groups (e.g., Vietnamese) may be underestimated. It was impossible to further adjust the figures in a realistic way without knowledge of the growth rates and age structure of the language groups.

Four issues affected LEP rates: (1) there may be a language shift resulting from intermarriage and acculturation, (2) immigration will affect LEP rates; (3) insufficient information on the expected effect of school experiences on LEP rates; and (4) lack of data caused investigators to use a single set of LEP rates for non-Spanish groups.

Another difficulty, the use of a constant rate assumption, applied to both NELB and LEP rates. The projection method assumed constant LEP and NELB rates. However, it was likely the two rates would not remain constant, and the further from the 1976-1978 period, the larger the error would be, especially for the NELB rate. Without more trend data, it was impossible to project varying rates across time for NELBs and LEPs, although naturally the projection numbers varied across time due to the use of Census Bureau population projections in the projection algorithm.

Despite the caveats raised here, this study produces the best available information on the numbers of NELB and LEP individuals in the United States to the year 2000. To date it is the only study that makes such projections by language, age, and state. Attending to these caveats, many users will find the projections to be extremely important for educational policymaking.

### Educational Implications

Spanish-language LEPs will become an increasingly important factor in educational planning to the year 2000. The reasons are twofold. First, Hispanics have a higher LEP rate than most other language minority groups, and second, the Hispanic group is younger than other language minority groups. However, the sheer number of Hispanics who are limited in English proficiency should not mask the needs of smaller groups, such as Vietnamese and Navajo, which also have high LEP rates. The geographic concentration of NELBs and LEPs in New York, California, and Texas should significantly influence the allocation of educational funds for the next few decades.

# Chapter I

## Introduction

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This study reports the projected number of non-English-language-background (NELB) and limited-English-proficient (LEP) persons in the United States to the year 2000 by nation, state, age, and language. This is the first study to provide detailed projections of LEP persons in these categories.

Educational planning decisions, particularly those involving language minority students, must be formed based on adequate data about the sociological context in which education takes place. Some of the most obvious and important sociological factors were demographic in nature, such as the size, geographic concentration, and age structure of various language minority groups. This study focused on demographic factors. The school-age data will be useful to federal and state administrators of Title VII bilingual education, Title I compensatory education, vocational education, career education, special education, Lau civil rights compliance, and other educational programs involving significant numbers of NELB and LEP children. The NELB data on all ages will be helpful in planning adult and post-secondary education programs, extension, military training, and voter registration programs.

### Historical Background

In the early 1960s large numbers of people from Cuba, Mexico, and other countries migrated to the United States. In the wake of this influx, Hispanics worked for the improvement of educational services to language minority students. Many school districts responded by providing courses in English as a second language (ESL). Later ESL courses, based on traditional foreign-language teaching principles, were criticized because they frequently omitted culturally

relevant materials and focused solely on English instead of also providing instruction in the native languages.

Congressional hearings in 1967 revealed the educational needs of language minority students were not being met. In 1968 Congress passed the Bilingual Education Act, Title VII of the 1965 Elementary and Secondary Act (ESEA), as amended. This legislation states:

The Congress hereby finds that one of the most acute educational problems in the United States is that which involves millions of children of limited English-speaking ability because they come from environments where the dominant language is other than English. (Section 701, ESEA Title VII, as amended)

In 1969, Congress appropriated \$7.5 million in funds for Title VII bilingual education. These projects were required to use two languages of instruction, one being English, to cover all or part of the project's curriculum including culturally relevant material. In fiscal year 1980, Title VII expenditures grew to \$176 million indicating the expansion of the program in size and importance throughout the United States.

In addition, such judicial actions as the 1974 Supreme Court ruling in *Lau v. Nichols* have recognized the importance of providing equal educational opportunity by addressing the language needs of students who speak languages other than English.

Congress called for a count of the number of persons needing bilingual education and related services. Section 731(e)(1) of Title VII, as amended by Public Laws 93-380 and 95-561, stated that by September 30, 1980, the Secretary of Health, Education and Welfare shall submit to Congress "a report identifying the approximate number of children of limited English proficiency in the Nation, by language and by State." This study fulfills that mandate.

## Definitions

Definitions of LEP, NELB, and MELP are necessary for understanding this study. The terms "limited-English-proficient" and "limited English proficiency," both abbreviated as LEP, refer to persons of non-English language background (NELB) who have been determined by a language test or by a surrogate measure of English language proficiency (MELP) to be deficient in English language skills. Persons of limited English proficiency are called "LEPs" in this study, while persons of non-English language background are called "NELBs." As expected, NELBs are a larger group than LEPs. In this study, NELBs are persons of any age whose usual or second individual language, usual or second household language, or mother tongue is other than English, regardless of whether they usually speak English. The LEP rate is actually the LEP-to-NELB ratio, or the percentage of any NELB group that is LEP.

The term "measure of English language proficiency" is used in a specific way in this study: it means a surrogate measure or proxy method for determining LEP estimates based on census-type questions rather than on a language proficiency test. The main purpose of a MELP is to allow estimation of LEP rates when language testing is precluded by cost and time factors. For a MELP to be useful, it must first be calibrated in a study in which both the MELP and the language test are administered; then the MELP alone can be used as a proxy or surrogate for the language test in a larger study to impute levels of English proficiency. Three other purposes of a MELP include validating in the future projections made now, updating estimates of a variable for which there is no current information (i.e., LEP in 1995) by using a known past relationship with a known variable (NELB) via a MELP, and making future projections using a MELP. In all MELP uses, it is essential the MELP be in closer approximation to the LEP definition than the NELB definition.

It is helpful to distinguish among the terms "population projections," "forecasts," and "estimates." A population projection combines known information (e.g., the age and sex composition of a population) with assumptions concerning future demographic behavior (fertility, mortality, and migration rates), which generates population numbers for some specified year(s) in the future. Alternative projections are provided by varying the assumptions since several demographic scenarios may be possible. Currently, the U.S. Bureau of the Census produces four sets of projections for the U.S. population by varying these demographic assumptions.

Sometimes the producer of the projections assigns a higher probability to one set of assumptions than to the

others. In this case, one set of numbers is produced, and this is called a "forecast." The difference between a projection and a forecast concerns the degree of confidence the producer has in one set of assumptions being more likely to hold than all others.

"Estimates" are usually generated for periods between the ten-year censuses and after the estimate year in question. Estimates published by the U.S. Bureau of the Census through federal-state cooperative programs usually appear two years after a given estimate year. Procedures to create population estimates are frequently different from those that yield projections.

This investigation was concerned with population estimates for 1976 and, more importantly, those for 1980, 1985, 1990, 1995, and 2000. Since estimates for 1976 were used, the numbers for 1980 are still regarded as projections even though that year has past. A population projection was used to provide a set of numbers on which to base planning decisions. An equally important purpose, however, may be analytic in nature. Any population projection will contain some error. As projections are made farther away from the current year, the error can be greatly magnified. By analyzing errors or periodically ascertaining the difference between projected and actual numbers and attempting to isolate the sources of the differences, errors in the future may be reduced. Error sources, such as faulty fertility or morality assumptions, can be identified and subsequent assumptions adjusted.

Appendix A contains a glossary of these and other important terms. Appendix B discusses NELB, LEP, and MELP.

## Relevant Studies

The 1970 Census (U.S. Bureau of the Census, 1973) asked a direct language question only on mother tongue (i.e., language spoken in the home as a child) for 15 percent of the total population. It also asked a question about country of origin for 5 percent and 15 percent samples and a question about Spanish origin for 5 percent. Results of the 1970 Census showed that of over 193.6 million native-born U.S. citizens, 159 million had English as their mother tongue, while 4.8 million had German as their mother tongue, 6.1 million had Spanish, 3.1 million had Italian, and 2.2 million had French. Of the 9.6 million foreign-born residents of the United States, 1.7 million had English as their mother tongue, 1.6 million had Spanish, 1.2 million had German, and 1 million had Italian. Combining the native- and foreign-born residents, the highest figures for English as a mother tongue were 160.7 million; Spanish, 7.8 million; German, 6.1 million; and Italian, 4.1 million. The 1970 Census was considered to have a

serious undercount of Hispanics and other language minority groups.

The 1975 Current Population Survey-Survey of Languages Supplement, or CPS-SLS (U.S. Bureau of the Census, 1975) asked questions about current individual language, current household language, mother tongue, ability to speak and understand English, birthplace, year of immigration, and ethnic origin. The CPS-SLS used stratified, multi-stage cluster sampling of households and was used as a pilot test for certain questions that were later used in studies such as the Center for Applied Linguistics-MELP and the SIE. The CPS-SLS indicated that 90 percent of U.S. citizens had no second language, while 4.3 million reported Spanish as a second language, and 4.9 million reported English as a second language. Of the 8 million persons 4 years old or older, who reported a language other than English as their usual language, 5 million (60 percent) reported difficulty in speaking or understanding English. Four million persons 4 years old or older reported Spanish as their usual language; of this number 54 percent reported difficulty in speaking or understanding English. Of all U.S. citizens, 2 percent reported Spanish as their usual language, and 96 percent reported English as their usual language. The number of U.S. citizens living in non-English households was 4.8 million. These figures are somewhat different from NCES-published figures from the SIE, which appeared in a later report (Waggoner, 1976).

The 1976 SIE (Waggoner, 1978) was required by the Education Amendments Act of 1974 to furnish current data on the number of school-aged children at the poverty level to formulate allocation of ESEA Title I (compensatory education) support. The Census Bureau conducted the SIE with input from NCES. Information on English language proficiency was desired; however, the Census Bureau prohibited the use of tests, recordings, or direct interviews for studies such as the SIE. Therefore, a surrogate measure of English language proficiency (MELP) was needed.

In anticipation of the SIE, the Measure of English Language Proficiency study (Stolz & Bruck, 1976) was conducted to develop a MELP that consists of a set of census- or survey-type questions usable as a substitute for language proficiency data. The CAL-MELP study included a sample of children and adults from the states of Florida, Texas, Arizona, and California. The study calibrated the MELP (a set of items including length of time in the United States, ratings of proficiency in speaking and understanding, usual household language, language spoken with siblings, language spoken with best friends, educational attainment, income, year of birth, and others) with a language test covering reception, production, and communication,

and with other language ratings. A discriminant function analysis showed 82 percent correct classification between the test and the MELP.

The 1976 SIE used stratified, multi-staged cluster sampling, with primary sampling units (PSUs) stratified by the proportion of persons ages 5-17 living in poverty in 1970. The SIE included 158,500 households and 440,000 individuals in a sample of fifty-one independent state samples. The SIE found that approximately 28 million persons in the United States, including about 5 million school-age children, have mother tongues other than English or live in households in which languages other than English are spoken (Waggoner, 1978). Approximately two-thirds of all these persons and more than four-fifths of the school-age children were native born. One person in eight in the United States was classified as non-English language background (NELB), and one in ten school-age children 6-18 was NELB. More than one-third of all NELBs and 60 percent of all school-age children were Spanish; Spanish-language-background persons numbered 10.6 million. Other principal NELB groups were Italian and German (3 million each); French (2 million); and Asian, including Chinese, Filipino, Japanese, Korean, and Vietnamese (2 million). These figures may be conservative, particularly for the Hispanic population, which includes a sizeable number of undocumented persons.

The 1978 CESS (O'Malley, 1981) was conducted by the National Institute of Education (NIE) and NCES to obtain counts of LEP children nationwide and for the four subpopulations of California, Texas, New York, and the remaining states. The CESS used stratified, multi-stage sampling of 35,000 households. Approximately 2,000 were identified as NELB and eligible for inclusion. Eventually, 1,909 children (ages 5-14) and their families were interviewed. A thirteen-item MELP and a specially constructed test of English language proficiency in reading, writing, speaking, and understanding (the Language Measurement and Assessment Inventories—LM & AI) were administered to each child. Discriminant function analysis showed classification accuracy ranging from 54 percent to 67 percent between the MELP and the test. The MELP enabled the CESS to be linked with the SIE and obtain estimates of LEP. The 5-14 age group contained 2.4 million LEP children. Using extrapolation, the study determined that the U.S. school-age population (4-18 years) contained an estimated 3.6 million LEP children, equal to 63 percent of all NELB children in that age range. More Spanish NELB children ages 5-14 were classified as LEP compared with other NELB groups. This means that the LEP rate was higher for Spanish NELB children ages 5-14 (73 percent) than for all other NELB groups combined in that age range (47 percent).

CESS results indicated that LEP rates did not vary appreciably by age. The study showed that 1.5 million (62 percent) of all LEP children lived in California, Texas, and New York. The proportion of LEP children in these states ranged from 70 percent to 77 percent, while the proportion in the rest of the country was 53 percent. The CESS did not deal with specific LEP categories other than Spanish.

The Census Bureau's Series II-B illustrative projections of state populations by age, race, and sex to the year 2000 (U.S. Bureau of the Census, 1979) were important to the current study because they provided the basic projections used. The Census Bureau projections assumed: (1) a total cohort fertility rate of 2.1; (2) an increase in life expectancy from 69.1 to 71.8 years for men and 77 to 81 for women between 1975 and 2000; (3) a net immigration of 400,000 persons per year; and (4) a continuation from 1975 to 2000 of the civilian, non-college interstate migration patterns by age for the

1970-1975 period. These projections were selected as the best set of assumptions for this study.

Together, the language-related studies highlight the importance of an adequate MELP used as a proxy for a language proficiency test. Only the small MELP and CESS studies could provide direct data on the extent of limited English proficiency. The key was to link one of these smaller studies to a larger one (in this case the SIE) to generate more specific figures concerning language cross-classification by geographic distribution.

Studies cited above indicate the large numbers of U.S. NELB and LEP persons who potentially need specially designed educational services. The studies also show the need for more detailed information on LEP children so that educational services can be planned correctly. This study is the first investigation that provides in-depth data on limited English proficiency in terms of age, language, and state.

# Chapter II:

## Methods

This chapter concerns the methodology of the projection study. Specifically discussed are evaluation of data sets, sampling frames of data sources, projection methodology, categories for projection, rejected projection methods, assumptions, Spanish differential growth rate, age disaggregation, and technique for determining limited-English-proficiency estimates.

### Evaluation of Data Sets

Existing data were used to project the number of LEP persons in this study. The initial task was to identify data sources that were available or that would be available in the near future. This entailed three steps; first, the investigators obtained a clear understanding of the type of data required by analyzing the objectives and projection models to be used. This helped to define this study's data requirements including the scope of analysis (e.g., population projections for detailed language groups by age and state) and the type of variables to be incorporated into the analysis. Second, while examining data requirements they defined existing data sources by contacting various government agencies and reviewing the literature listed below. Last, they scrutinized data sources identified through the literature search and those suggested by NCES by applying a set of criteria developed to ensure appropriate data for the study. As a result, several data sets were selected and recommended for the study.

The major data sources identified through the literature search or consultations with government agencies and those recommended by NCES are:

- Children's English and Services Study (CESS), 1978
- Survey of Income and Education (SIE), 1976
- The 1970 Census by Bureau of the Census
- The 1980 Census by Bureau of the Census
- Survey of Teachers' Language Skills
- Current Population Survey, October 1979
- Current Population Survey, November 1979
- The 1976-77 Elementary and Secondary School Civil Rights Survey
- Project Head Start Program Information Report, 1979
- Supplementary Questionnaire, Application for Bilingual Education, Office of Bilingual Education
- Longitudinal Manpower Survey
- Management Initiative Tracking System, Office of Bilingual Education
- The National Longitudinal Surveys, 1966-1978, Employment and Training Administration, U.S. Department of Labor
- The National Longitudinal Survey, 1979, Employment and Training Administration, U.S. Department of Labor
- The 1978 HUD Survey on the Quality of Community Life, U.S. Department of Housing and Urban Development
- National Assessment of Educational Progress
- National Longitudinal Study of the High School Class of 1972
- The State Education Agency Survey, National Center for Education Statistics, U.S. Department of Education
- Current Population Survey, March 1976
- Current Population Survey, March 1977
- Current Population Survey, March 1978
- Statistics Concerning Indian Education, annually 1971-1976, Bureau of Indian Affairs, U.S. Department of the Interior

- The Migrant Student Record Transfer System
- Equal Employment Opportunity Survey, Equal Employment Opportunity Commission
- Manpower and Immigration Policies in the United States, National Commission for Manpower Policy, 1978
- The Characteristics and Role of Illegal Aliens in the U.S. Labor Market: An Exploratory Study. U.S. Department of Labor, 1976.

A detailed description of the evaluation procedures and a checklist of sources describing the results of variable screening of the data sets are available in the original report.

#### Data Sets Selected as Most Useful

All data sets were reviewed to determine whether they contained data required for the study. Most data sources included only partial information relevant to the study; therefore, the data sources usefulness in making population projections for various language groups was limited. Several data sources containing sufficient data to make estimates of various NELB persons and/or data for defining LEP rates were useful in making population projections. They are:

- 1970 Census
- Survey of Income and Education (SIE), 1976
- Children's English and Services Study (CESS), 1978
- Current Population Survey, November 1979
- Census Bureau's Population Projections
- Survey of Teachers' Language Skills
- 1980 Census
- Title VII ESEA Data

The last two were not available at the time of the study, although they may be useful in a future project. The data sources were examined to determine their quality and comprehensiveness. In general, all the sources provided reliable estimates for the United States. Only the SIE furnished reasonable estimates at the state or local levels, but not for all age and language groups. The SIE also contained items, common to those in CESS, that are surrogate items for measuring LEP. The 1970 Census data set was too old for the purposes of this study, and its specific language question did not provide appropriate categories for defining detailed language backgrounds. In addition, these data underestimated language minority groups, particularly the Hispanics. CESS is the only source that provided empirical test scores of English language proficiency, as well as LEP surrogate items on a representative national sample. Because of its small sample (1,909 individuals), estimates for many language groups were impossible; even national population estimates were subject to considerable error. The best use of CESS was to link it to the SIE in determining the LEP population,

using the common surrogate items for measuring LEP.

The number of existing data sets available for the study was limited. There was no single data source that had all the data elements required. The study needed to employ several data sources from which desired elements could be extracted and then incorporated into the computation of projections. Based on the study's needs, as defined by the objectives, the following data sets were selected: the CESS, the SIE, Current Population Surveys, and Census Bureau Population Projections.

### Sampling Frames of Data Sources

Table 1 (see Appendix D) displays information on the sampling frames of data sources used in this (the SIE and CESS), as well as sources not used in this study (*Current Population Surveys*, the 1970 Census). Table 1 also indicates the variable of interest, such as language and ethnicity questions, and standard error data.

### Projection Methodology

Prevalence Rate Method, represents a synthesis of cohort component method projections with prevalence rate techniques. It begins with Equation #1:

$$\text{Projected LEP for Year Y} = \frac{\text{NELB (1976)}}{\text{Total Population (1976)}} \times \text{Projected Population for Year Y} \times \frac{\text{LEP}}{\text{NELB}}$$

NELB Rate LEP Rate

The LEP projections for Year Y (a), is the product of the following three elements: (b) the NELB-to-total-population ratio (based on the 1976 SIE *NELB Rate* for a particular language, state, and age group) is the proportion of the population that is *at risk* of being LEP; (c) the Census Bureau's noninstitutionalized population for Year Y for a particular state and age group (Bureau of Census, 1977); and (d) the LEP-to-NELB ratio calculated from CESS and SIE figures (*LEP Rate*) for a particular language and age group. The LEP rate (d) was excluded from the equation by the NELB projections.

Figure 1 (see Appendix E) is a flowchart of elements in this formula. The formula can be modified to allow for projections by age, state, and language. This is called the Cohort Component Prevalence Rate Method because (b) and (d) involve the calculation of prevalence rates while (c) utilizes the Census Bureau's population projections and estimates which were based on a method that used age cohorts and accounted for

population changes resulting from the interaction of three components as fertility, mortality, and migration. Explicit in this formula were the assumptions that not only did the LEP rate remain constant across time, but so did the NELB rate. Another assumption was that NELB rates were age-band specific and not cohort specific (i.e., as the 5- to 6-year-olds in 1980 become 10- to 11-year-olds in 1985, they do not carry over the 5- to 6-year-old NELB and LEP rates, but exhibit the 10- to 11-year-old NELB and LEP rates).

The overall methodology involved two basic steps: first, the NELB population was projected; then LEP rates were multiplied by the projected NELB population to produce LEPs.

Equations #2 and #3 are alternative ways of expressing the elements in Equation #1.

#### Equation #2:

$$\text{Projected NELB Population for Year Y} = \text{NELB Rate (from SIE)} \times \text{Projected Population for Year Y}^*$$

\* (from Census Bureau's *Population Estimates and Projections*)

#### Equation #3:

$$\text{Projected LEP Population for Year Y} = \text{LEP Rate}^* \times \text{Projected NELB Population for Year Y}$$

\* (derived from CESS and SIE using MELP)

### Categories for Projections

The categories for projections included:

1. Language. The eighteen non-English language groups included in the SIE, plus combined groups of Asian, non-Spanish, non-Asian, non-Spanish/non-Asian, and total non-English. "Asian" included Chinese, Filipino, Japanese, Korean, and Vietnamese. All other Asian languages were grouped in the "non-Spanish/non-Asian" or "other" category.
2. Geographic Area. Nation, all states, and the District of Columbia.
3. Age. For policy purposes, three sets of age categories were selected: contiguous ages (0-55 plus), school ages only (5-14), and miscellaneous ages. The contiguous age set included seven mutually exclusive categories; the school age set included six non-mutually exclusive categories; and the miscellaneous age set included eight non-mutually exclusive categories.

A stringent criterion was used to determine which language by geographic area by age categories would be projected. Only those cells having population estimates (in the 1976 SIE, the necessary basis for all the

projections) equal to or greater than three times the standard error of the cell sample were included in the database for projection. This criterion ensured a 99 percent positive percent confidence interval.

### Rejected Projection Methods

Four types of projection methodologies were considered: mathematical extrapolation, ratios or prevalence rates, cohort component methods, and economic forecasting-related methods. The method selected was a combination of two of the techniques called the Cohort Component Prevalence Rate Method.

A "straight" cohort-component method was rejected because basic data required for this technique did not exist at the time of this study. Age-specific fertility and mortality rate estimates were just beginning to be produced by selected states, and their reliability had yet to be established. Regarding the migration component, there were reasonable age-specific estimates of legal migrants, but not by state of destination; virtually no reliable data existed on illegal immigrants. Mathematical extrapolation methods were ruled out for basically the same reason—lack of the necessary data. The required "good" estimate of a growth rate to produce such a projection did not exist. Even if such an estimate were available, the projection would be unsound because the entire method would most likely be based on one growth rate, given the lack of longitudinal data required to project such changes in growth rates. This growth rate could be expected to change. Economic forecasting was rejected because of the lack of necessary data. Although population growth was subject to economic influences, virtually no data existed that allowed quantifying these effects especially when dealing with immigrants who were responding to economic contributions in both their mother country and the United States.

### Assumptions

The projections used Series II-B, the U.S. Census Bureau's illustrative projections of state populations by age. Series II-B assumes: (1) a cohort total fertility rate of 2.1, which is consistent with the birth expectations seen in survey data; (2) an increase in life expectancy from 69.1 to 71.8 years for men and 77 to 81 years for women between 1976 and 2050; (3) net immigration of 400,000 persons per year; and (4) a continuation from 1975 to 2000 of the civilian, non-college interstate migration patterns by age for the 1970-1975 period (U.S. Bureau of the Census, 1977a, 1979a). While other Census Bureau projections could have been used, Series II-B had the best set of assumptions concerning future levels of fertility, mortality, and migration. Series I was

rejected because of an exceedingly high fertility assumption—2.7 cohort total fertility rate. Series III was not used because of a low fertility assumption—1.7 cohort total fertility rate. Series II-A and II-C were not used because of a seemingly unrealistic interstate migration assumption, continuation of 1965-1970 rates versus no interstate migration.

Equation #1 assumes constant LEP and NELB rates. It was unlikely, however, the two rates would remain constant, and the further from the 1976-1978 period, the larger the error would be especially with respect to the NELB projection. The NELB population, in particular, was most likely growing at a rate somewhat different from the total population.

### Spanish Differential Growth Rate

While there are no direct measures of the NELB population growth rate, other measures can be used to approximate this growth. For example, surrogate measures for Spanish language growth exist in other data sources. One example is the growth of the Spanish origin population found in current population surveys.

A differential growth rate was applied for Spanish NELBs, because they are growing at a faster rate than the rest of the NELB population in general and the total U.S. population. This differential growth rate was calculated from figures in the *Current Population Surveys, Series P-20*. The growth rate of the total U.S. population is now about 0.8 percent per year, and by the year 2000 the Census Bureau projects it may fall to about 0.4 percent per year or it may stay constant, depending on future fertility. For this study, the 0.8 percent growth figure for the total U.S. population was chosen. The growth rate of the Spanish origin population, in contrast, is approximately 2.2 percent per year. The differential growth rate is 1.4 percent per year (2.2 percent minus 0.8 percent). This growth rate differential was projected for more than one year by using the basic compound interest or geometric progression formula. The annual growth rate for each projection year was calculated for each state/age group, and the differential of 1.4 percent per annum greater was applied for the Spanish NELB group. See Appendix C for further discussion.

### Age Disaggregation

Another issue concerned the manipulation of published data by age to correspond to the age categories required in this study. While the SIE data were available by single years and could therefore be aggregated in any way desired, Bureau of the Census population projections for states were produced in in-

tervals varying from five to forty years. Therefore, it was necessary to utilize two standard demographic techniques to disaggregate the data. The first broke ten-year age intervals into two five-year bands by fitting a second-degree function through three consecutive central points of the decennial groups (Arriaga 1968, 295).

Once data by five-year intervals were determined, formula was used to create one-year age categories. The formula involved fitting a fourth-degree polynomial through five points with an adjustment for the sixth point (Shyrock and Siegel 1971, 699-702; Wolfenden 1954, 152-156). The result was a smoothed single-year age distribution.

### Technique for Determining Limited-English-Proficiency Estimates

The methodology used was to derive state- and language-specific LEP estimates by linking a language proficiency test with a larger, census-type survey via a surrogate language measure, known as a MELP (measure of limited English proficiency). The CESS investigation, designed to provide this linkage, used a language proficiency test known as the Language Measurement and Assessment Inventories (LM & AI) an indirect, discrete-point instrument having eleven different forms, one each for ages 5-14. The LM & AI was objective based, built by expert consensus, and covered all four language skills—reading, writing, speaking, and understanding. This test was administered to 1,909 children ages 5-14. Where the SIE identifies non-English-language-background persons of all ages, the CESS identifies NELBs and LEPs only in the 5-14 age group.

A set of cutoff scores was determined for each age to which the LM & AI was administered in order to classify individuals as LEP or non-LEP. This results in a CESS estimate of 2.6 million 5- to 14-year-old LEP children out of 3.8 million NELBs of the same ages. In order to obtain LEP rates for the current study, a new MELP was devised to provide the linkage needed between the highly aggregated, small-sample CESS and the more comprehensive coverage of the SIE.

The new MELP consisted of two items—children's indicated ability to speak and understand English and their family income (above or below \$15,000). The real basis of this MELP was the language item. The family income item was only cross-classified with the speak-and-understand response "very well." Empirical testing indicated the use of the family income item was not helpful in discriminating LEP from non-LEP for the other speak-and-understand responses—"well," "not well (more than a few words)," "not well (just a few words)," "not at all," and "no answers."

A probabilistic approach was used to link the CESS and the SIE with the MELP. First, the MELP items were selected from the CESS data set and arranged in a matrix. The probabilities (proportions) of persons being LEP (based on the LM & AI) were determined for each cell of the matrix. Once those probabilities were produced, they were applied to the same cells of SIE data to generate LEP estimates.

The CESS data were used to produce LEP-to-NELB ratios (LEP Rates) for the following language/geographic categories: Spanish-speaking in (1) California, (2) Texas, (3) New York, (4) rest of nation, and (5) non-Spanish-speaking NELB for the entire nation. When these LEP rates were applied to the SIE data via

the MELP, it was possible to produce disaggregated LEP estimates for all language.state categories. Not all of these categories were reported due to the standard of errors of NELB in the SIE. The categories, for which figures were reported, must meet the criteria that the NELB estimate be more than three times its standard error.

For a comparison of LEP rates taken directly from the CESS and those derived from the SIE by application of the MELP, refer to Table 2 (see Appendix D). In general, the LEP rates from the SIE-and-MELP system are slightly lower than those from the CESS. This discrepancy can be attributed to variances in the response patterns to the MELP item questions in the two surveys.

## Chapter III:

# Projections of Non-English-Language-Background (NELB) Persons

This chapter presents projections of non-English-language-background (NELB) persons to the year 2000. Since it was necessary to project NELBs before LEPs, NELB results are discussed first. The LEP projections are discussed in Chapter IV. NELB results are given in the following sequence: overview, results by language, results by age, results by state, results by language and age, and results by language and state. In contrast to LEP results, which are available only for 5- to 14-year-olds, NELB results are given for all age groups.

Due to unanticipated changes in fertility, mortality, and migration patterns, these results are not forecasts or predictions of actual changes in number, but rather represent the best projections possible given the available data and current trends.

### Overview

In the entire United States, the total number of NELBs is projected to increase from approximately 28 million in 1976 (the base year) to 30 million in 1980, 34.7 million in 1990, and 39.5 million in 2000.

### NELB Results by Language

NELB results by language are shown in Figure 2 (see Appendix E) and Table 8 (see Appendix D). Of all NELBs during any year, the largest single language-background group is Spanish which comprise 10.6 million NELBs in 1976 (38 percent of the total NELB population). Spanish NELBs increase to 11.8 million in 1980, 13.2 million in 1985, 14.8 million in 1990, 16.4 million in 1995, and 18.2 million in 2000 (46 percent of the total NELB population).

Asian NELBs rise steadily from 1.8 million in 1976 to 1.9 million in 1980, 2 million in 1985, 2.1 million in 1990, and 2.2 million in 1995 and 2000.

Non-Spanish and non-Asian NELBs (combined) increase from 15.5 million in 1976 to 16.3 million in 1980, 17 million in 1985, 17.8 million in 1990, 18.5 million in 1995, and 19 million in 2000.

In the 1976 base year, the specific language-background categories containing more than one million persons are: Spanish, 10.6 million; Italian, 2.9 million; German, 2.7 million; French, 1.9 million, and Polish, 1.5 million.

### NELB Results by Age

These results are presented in Figure 3 (see Appendix E) and Table 9 (see Appendix D). The number of NELBs in the 0- to 4-year-old band is projected to rise steadily from 1.8 million in 1976 to 2 million in 1980, 2.4 million in 1985, and reach a plateau of 2.6 million in 1990, 1995, and 2000.

The 5-14 age group, the school-age band studied in the CESS, shows a distinctly different pattern. In 1976 this age group has 3.8 million NELBs, but drops to 3.6 million in 1980 then rises consistently in the remaining projection years (3.7 million in 1985, 4.2 million in 1990, 4.8 million in 1995, and 5.1 million in 2000). This pattern is explained in terms of the annual U.S. birth rate. Except for the period 1968-1971, the annual number of births in the United States dropped steadily from the late 1950s until 1976. As these successively smaller birth cohorts (i.e., those born during the same year) reach school-age, the size of the school age

population after 1976 will be expected to decline.

The 15-24 age group shows less overall growth than the 5-14 age group and declines in numbers at a different time. In 1976 the 15- to 24-year-old NELBs number 38 million; in 1980, 4.1 million, in 1985, 4 million; in 1990 and 1995, 3.7 million; and in 2000, 4.3 million.

By contrast the two older age categories, 35-54 and 55-plus increase steadily from 1976 to 2000. The 35-54 age group rises dramatically from 7 million in 1976 to 7.4 million in 1980, 8.4 million in 1985, 9.9 million in 1990, 11.7 million in 1995, and 13.1 million in 2000. A slightly less dramatic increase is shown by the 55-plus age band, which rises from 7.9 million in 1976 to 8.8 million in 1980, 9.5 million in 1985, 9.9 million in 1990, 10.3 million in 1995, and 11 million in 2000.

### NELB Results by State

As shown in Figure 4 (see Appendix E) and Tables 10 through 12 (see Appendix D), in 1976 there is a strong geographic concentration of NELBs in California, New York, and Texas. California NELBs increase steadily from the 1976 figure of 5.2 million to the 2000 figure of 8.3 million. In New York, NELBs increase monotonically from 4.4 million in 1976 to 5.1 million in 2000. Texas NELB numbers rise dramatically from 3 million in 1976 to 5.6 million in 2000. The combined concentration of NELBs in these three states is 45 percent of all NELBs in 1976 and 48 percent in 2000. Because the number of NELBs increases more strongly in California and Texas than in New York, the percentage of all U.S. NELBs located in New York falls from 16 percent in 1976 to 13 percent in 2000. In contrast, the percentage of all U.S. NELBs living in California rises from 19 percent to 21 percent between 1976 and 2000; the parallel figures for Texas are 11 percent in 1976 to 14 percent in 2000.

### NELB Results by Language and Age

As seen in Figures 5 through 10 (see Appendix E) and Table 13 (see Appendix D), the Spanish NELB group is much younger than the rest of the NELBs, and this configuration becomes more pronounced with the passage of time. In 1976, 2.4 million Spanish NELBs, ages 5-14, constituted 62 percent of all 5- to 14-year-old NELBs, while the 10.8 million estimate for total Spanish NELBs accounted for 38 percent of all NELBs in 1976. This 5- to 14-year-old Spanish NELB group grows to 2.8 million (67 percent of 5- to 14-year-old NELBs) in 1990 and 3.5 million (70 percent of 5- to 14 year-old NELBs) in 2000.

The age structure of the Asian language group largely

parallels the results for NELBs as a whole, except in the older age groups. While all NELBs tend to have lower estimates for the 35-54 age group than the 55-plus age group in 1976 (6.9 million versus 7.9 million), 1980 (7.4 million versus 8.8 million), and 1985 (8.4 million versus 9.4 million), the reverse is true of Asians. The Asian figures for these years are 1976 (490,000 versus 280,000), 1980 (510,000 versus 310,000), and 1985 (570,000 versus 330,000). After 1985, the 35-54 age group overtakes the 55-plus age group for NELBs as a whole. For Asians, the dominance of this 35-54 age group is even more pronounced.

The grouping of languages classified as non-Spanish/non-Asian in this study's tables is notable for its almost complete contrast with Spanish NELBs in age structure. While there are more Spanish than non-Spanish/non-Asian in the age groups 0-34 inclusive, the non-Spanish/non-Asian group has more individuals in the 35-54 and 55-plus age groups. This is true through all of the projection years. This fact, however, obscures the tremendous growth of Spanish NELBs in the 35-54 age group, which grows from 2.2 million in 1976 to 5.2 million in 2000 (236 percent growth). On the other hand, the population of non-Spanish/non-Asian NELBs in the 35-54 age group grows from 4.2 million in 1976 to 7 million in 2000 (66 percent growth). The 55-plus non-Spanish/non-Asian group grows steadily from 6.6 million in 1976 to 8.7 million in 2000 (31 percent growth). The growth of the 35-54 age group to surpass the 55-plus age group for all NELBs in the 1990, 1995, and 2000 projections relies heavily on the explosive growth of the number of Spanish NELBs in the 35-54 age group.

When percentages of NELBs in the 5-14 or school-age group and in the oldest age group (55-plus) were compared by language background, Spanish NELBs were generally younger than Asian NELBs, who in turn were younger than non-Spanish/non-Asian NELBs. For example, in 1976, 22.6 percent of Spanish NELBs were 5-14 years old, compared to 13.6 percent of Asian NELBs and 7.7 percent of non-Spanish/non-Asian NELBs. In 1976, 9.6 percent of Spanish NELBs were 55 or older, compared with 15.3 percent of Asian NELBs and 42.4 percent of non-Spanish/non-Asian NELBs. Similar percentages occur for the remaining projection years.

A more striking contrast in percentages was evident in focusing on specific languages within the non-Spanish/non-Asian category. In 1976, many language groups in this category had extremely high percentages in the 55-plus age group. For example, 67 percent of Scandinavian NELBs, 61 percent of Yiddish NELBs, 58 percent of Russian NELBs, 55 percent of Polish NELBs, 47 percent of German NELBs, and 43 percent of Italian NELBs were ages 55 or older.

## NELB Results by Language and Major States

As shown in Figures 11 through 16 (see Appendix E) and Table 14 (see Appendix D), California with 2.9 million (28 percent), Texas with 2.6 million (24 percent), and New York with 1.4 million (14 percent) account for 66 percent of all Spanish NELBs in the United States during 1976. By 2000, California and Texas increase their shares to 5.3 million (29 percent) and 5 million (27 percent); New York grows to 2 million (11 percent) of the national total. By 2000, the combined total of these the states is 12.3 million (68 percent). Other significant increases from 1976 to 2000 occur in Florida (800,000 to 1.6 million), Arizona (400,000 to 800,000), and New Mexico (400,000 to 800,000).

In 1976 the Asian population is concentrated mostly in California with 700,000 (39 percent), Hawaii with 240,000 (13 percent), and New York with 180,000 (10 percent). By 2000, California and Hawaii show gains to 900,000 (42 percent) and 340,000 (15 percent), while New York stays at 180,000 (now 8 percent). Between 1976 and 2000, Texas steadily increases from 67,000 to 88,000 Asian NELBs.

In 1976 the non-Spanish/non-Asian NELB population is concentrated mostly in New York with 2.8 million (18 percent) and California with 1.5 million (10 percent). By 2000 New York is still at 2.8 million (14 percent), and California has grown to 2 million (10 percent). During this period, Pennsylvania grows from 1.1 million to 1.2 million, New Jersey grows from 1 million to 1.1 million, and Illinois is stable at 1 million. This fact generally reflects that the growth of the non-

Spanish/non-Asian group from 16 million to 19 million occurs primarily in the faster growing areas of the country where the non-Spanish/non-Asian group is currently not concentrated.

Aside from these larger language groups, there are some significant concentrations of less populous individual language groups in particular states. In 1976, 199,000 (37 percent) of the Chinese in the United States, 248,000 (47 percent) of the Filipinos, 194,000 (44 percent) of the Japanese, 161,000 (33 percent) of the Portuguese, and 3 million (28 percent) the Spanish reside in California. By the year 2000, these figures rise to 259,000 (39 percent) of the Chinese, 322,000 (50 percent) of the Filipinos, 252,000 (47 percent) of the Japanese, 209,000 (35 percent) of the Portuguese, and 5.4 million (29 percent) the Spanish. New York has high concentrations of many language groups, such as Yiddish (403,000 [47 percent] in 1976, to 406,000 [39 percent] by 2000); Italian (995,000 [34 percent] in 1976 and 1 million [28 percent] in 2000); Greek (161,000 [30 percent] in 1976 and 163,000 [24 percent] in 2000); and Chinese (107,000 [20 percent] in 1976 and 107,000 [15 percent] in 2000). Navajos are clustered in New Mexico (76,000 [48 percent] in 1976 and 108,000 [48 percent] in 2000) and in Arizona (61,000 [39 percent] 1976 and 103,000 [46 percent] in 2000). Massachusetts has 164,000 (34 percent) of the nation's Portuguese in 1976 and 195,000 (33 percent) in 2000. Louisiana houses 524,000 (27 percent) of the U.S. French population in 1976 and 628,000 (26 percent) in 2000. In 1976, 115,000 (26 percent) of the U.S. Japanese lives in Hawaii, compared with 163,000 (30 percent) in 2000.

## Chapter IV:

# Projections of Limited-English-Proficient (LEP) Persons

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This chapter presents projections of limited-English-proficient (LEP) persons to the year 2000. These LEP projections are given only for 5- to 14-year-olds, that is, the age group used in the Children's English and Services Study (CESS). The LEP projections are offered in this sequence: overview, results by language, results by age, results by state, results by language and age, and results by language and state. As with the NELB results, the LEP results are projections, not predictions, due to possible future changes in trends of fertility, mortality, and migration.

### Overview

The total number of LEP children ages 5-14 in the United States in 1976 are approximately 2.5 million, dropping to 2.4 million in 1980 and 1985, and gradually increasing to 2.8 million in 1990 and 3.4 million in 2000. The 2.5 million figure can be compared with the finding of 2.4 million LEP children in the same age band in the 1978 CESS.<sup>1</sup> This comparison is not surprising since the LEP projections show a decline from 2.5 million in 1976 to 2.4 million in 1980 and 1985; the CESS results also capture this decline. These data reflect U.S. population projections showing temporary declines in younger age groups about the same time.

### LEP Results by Language

Between 1976 and 2000 there is an increase of 880,000 LEP persons. Of this figure, 840,000 persons

(95.5 percent) are Spanish LEPs. This result is a product of the higher growth rate for Spanish speakers, the concentration of Spanish LEPs in the 5-14 age band, and higher LEP rates for this group.

Results of limited-English-proficiency projections by language are shown in Figure 17 (see Appendix E) and Table 15 (see Appendix D). Spanish LEPs number 1.8 million in 1976, dropping to 1.7 million in 1980, returning to 1.8 million in 1985, and rising to 2.1 million in 1990, 2.5 million in 1995, and 2.6 million (an overall rise from 71 percent of all LEPs in 1976 to 77 percent in 2000).

Asian LEPs also show a temporary decline. In 1976 there are 130,000, dropping to 120,000 in 1980 and 110,000 in 1985, returning to 120,000 in 1990, and rising to 130,000 in 1995 and 2000.

The remaining group of LEPs (non-Spanish/non-Asian) total 600,000 in 1976 and 1980, declining to 500,000 in 1985, and returning to 600,000 by 2000.

A portion of the differing language results can be explained by variations in LEP rates (LEP-to-NELB ratios). Children ages 5-14 of Asian or other non-Spanish language backgrounds, with occasional exceptions, have LEP rates in the range of 0.41 to 0.53, with a composite ratio of 0.50 (meaning that 50 percent of the NELBs in these groups are also LEP). LEP rates below 0.50 are found for such NELB group as Filipino, French, German, Greek, Japanese, Korean, and Polish. LEP rates of 0.50 to 0.60 occur for Chinese, Italian, and Portuguese NELBs. Yiddish and Navajo NELBs have LEP rates of 0.60 to 0.70. The highest LEP rate, 0.75, is found for Spanish and Vietnamese NELBs. In

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<sup>1</sup> The figure of 3.6 million LEPs in the CESS is based on extrapolation for the entire 4-18 age band.

most cases where a language minority group is older and more integrated into U.S. society, the ratios are smaller. Those LEPs newly arrived in the United States and those culturally separated from the mainstream of society, the Navajo, for example, have higher ratios.

While LEP rates for individual languages were assumed to be constant across time for the projections, the predominance of growth by the Spanish group raised the national average LEP rate from 0.65 in 1976 to 0.68 in 2000. The 0.65 figure reflects 2.5 million 5- to 14-year-old LEP children (1.8 million Spanish and 700,000 non-Spanish) versus 3.8 million 5- to 14-year-old NELB children (2.4 million Spanish and 1.4 million non-Spanish) in 1976. The 0.68 figure reflects 3.4 million 5- to 14-year-old LEP children (2.6 million Spanish and 800,000 non-Spanish) versus 5 million 5- to 14-year-old NELB children (3.5 million Spanish and 1.5 million non-Spanish) in 2000.

### LEP Results by Age

The 5- to 9-year-old LEP group numbers 1.3 million in 1976, dropping to 1.2 million in 1980 and 1985, and rises to 1.5 million in 1990 and 1.8 million in 1995 and 2000. The 10- to 14-year-old LEPs number 1.3 million in 1976, 1.2 million in 1980 and 1985, 1.3 million in 1990, 1.4 million in 1995, and 1.6 million in 2000. This results in a slightly greater overall increase in 5- to 9-year-old LEPs than in 10- to 14-year-old LEPs. These results are shown in Figure 18 (see Appendix E) and Table 16 (see Appendix D).

It is assumed the LEP rate (LEP-to-NELB ratio) will drop as children grow older because of their longer exposure to an English-speaking environment. This assumption, however, is not fully supported by the results. Except for Spanish children, the 12- to 14-year-olds have a higher LEP rate than the 10- to 11-year-olds. Reasons for such patterns are not clear. One possible explanation is there are more immigrants ages 12-14 or older entering the United States. Legal immigration data seem to provide evidence supporting this statement. In 1978, the proportion of all immigrants ages 10-19 was about one-third greater than for immigrants less than age 10 (9.5 percent versus 7.3 percent) (U.S. Department of Justice, 1978). This pattern is consistent for all language categories.

### LEP Results by State

State LEP projections are presented in Figure 19 (see Appendix E) and Tables 17 and 18 (see Appendix D). Two of the three main states in which LEPs are concentrated show overall increases to the year 2000 despite some temporary plateaus. California LEPs number

600,000 in 1976, 1980, and 1985, then rise steadily to 700,000 in 1990, 800,000 in 1995, and 900,000 in 2000. Texas LEPs total 500,000 in 1976 and 1980, 600,000 in 1985, 700,000 in 1990, 800,000 in 1995, and 900,000 in 2000. In contrast, New York LEPs total 500,000 in 1976, 400,000 in 1980 and 1985, and 500,000 in 1995 and 2000.

The projection of the total LEP population concentrated in three states rises from 63 percent in 1976 to 67 percent in 2000. These figures compare with 45 percent of all NELBs concentrated in these states in 1976 and 48 percent of all NELBs in 2000. This clearly indicates that in these states LEPs are more highly concentrated than NELBs.

There is a large variation in LEP rates (LEP-to-NELB ratio) by state. While the Spanish LEP rate in New York is 0.92, it is only 0.58 in Florida. Figures for Texas and California, 0.79 and 0.77, are comparable to the national rate. This seems to suggest that Cubans (concentrated in Florida) are much more proficient in English than Chicanos (Texas and California), who are in turn much more proficient than LEPs of Puerto Rican background (New York).

Another possible explanation for the variation in LEP rates by state is that the greater proportion of NELBs in a community, the higher the LEP rate. California, however, which in 1976 had a larger share of all 5- to 14-year-olds of Spanish language background in the United States than did New York (27 percent versus 15 percent), had a LEP rate of 0.77 for that group, scarcely larger than the comparable national rate.

### LEP Results by Language and Age

As shown in Figures 20 through 25 (see Appendix E) and Table 19 (see Appendix D), Spanish LEPs ages 5-9 total 900,000 in 1976, 800,000 in 1980, 900,000 in 1985, 1.1 million in 1990, and 1.4 million in 1995 and 2000. Older (10- to 14-year-old) Spanish LEPs total 900,000 in 1976, 1980, and 1985, 1 million in 1990 and 1995, and 1.2 million in 2000. These figures show that between 1976 and 2000 the number of younger Spanish LEPs grows slightly faster than that of older Spanish LEPs.

Asian LEP children ages 5-9 total 70,000 in 1976, 63,000 in 1980 and 1985, 74,000 in 1990, 84,000 in 1995, and 81,000 in 2000. Asian LEPs ages 10-14 number 56,000 in 1976, 52,000 in 1980, 48,000 in 1985, 47,000 in 1990, 49,000 in 1995, and 52,000 in 2000. These figures show a pronounced increase in the number of younger Asian LEPs and a slight drop in the number of older Asian LEPs between 1976 and 2000.

Non-Spanish/non-Asian LEPs ages 5-9 total 300,000 in 1976, 1980, 1985, and 1990, nearly 400,000 in 1995, and 300,000 in 2000. Older 10- to 14-year-old non-

Spanish/non-Asian LEPs number approximately 300,000 each of the projection years. This indicates little change in the numbers for both of these age groups in the non-Spanish/non-Asian category.

The LEP rate (LEP-to-NELB ratio) exhibits little variation within a language group, but considerable difference across language groups. Spanish LEP rates are clustered around 0.75 for all age groups, while all non-Spanish LEP rates tend to cluster around 0.50. In general, the Spanish 5-9 age group has a slightly higher LEP rate (0.76) than the 10-11 and 12-14 age groups, which have rates of 0.74 and 0.73. By contrast, the non-Spanish groups have LEP rates for these same age groups of 0.50, 0.48, and 0.51.

### LEP Results by Language and Major States

Figures 26 through 31 (see Appendix E) and Table 20 (see Appendix D) show projection results by language and state. The major concentration of 1976 LEP children is for Spanish speakers in California with 500,000, Texas with 480,000, and New York with 330,000. Together these states account for 52 percent of all LEP children. By 2000 the figures grow to a 60 percent share of all LEP children—780,000 in California, 820,000 in Texas, and 410,000 in New York. Of the total growth of 880,000 LEP children projected between 1976 and 2000, 700,000 (79.5 percent) are just from the Spanish-speaking LEPs in these three states. Texas shows the most dramatic growth with 70 percent,

followed by California with 56 percent, and New York with 25 percent. Spanish LEPs in Florida grow from 76,000 in 1976 to 150,000 in 2000 (97 percent growth), and in Arizona from 52,000 to 103,000 (96 percent growth). While Texas surpasses California in the number of Spanish LEPs in 1980 (547,000 versus 513,000), California maintains its lead as the state with the largest number of LEPs overall (902,000) followed by Texas (853,000) in the year 2000.

The gain in non-Spanish LEPs from 1976 to 2000 is only 40,000 which is widely dispersed on a national level. Non-Spanish LEPs decline in New York, Pennsylvania, Illinois, and Ohio, where they are most concentrated. The non-Spanish LEP total for these states drops from 225,000 in 1976 to 204,000 in 2000. This is almost compensated for, however, by the gain from 104,000 to 117,000 in California alone.

There also are significant variations in LEP rates (LEP-to-NELB ratio) by language and state; the highest is 0.92 for the Spanish in New York, and the lowest is 0.41 for the Filipinos in Hawaii. The Spanish group ranges from 0.54 in Oregon to 0.92 in New York. Texas and California, where the Spanish population is most concentrated, have LEP rates of 0.77 and 0.79. Despite the fact that most states have lower Spanish LEP rates, the high rates in California, New York, and Texas brought the national Spanish LEP rate up to 0.75. By contrast, the Asian group ranges from 0.46 in Alaska to 0.63 in Oregon with a national Asian LEP rate of 0.50. The non-Spanish/non-Asian group ranges from 0.43 in Iowa to 0.63 in Arizona. The national non-Spanish/non-Asian LEP rate is 0.50

# Chapter V:

## Caveats

It would have been desirable to make separate cohort component projections of the number of persons in each language and age group in each state. However, the available data did not provide the quantity and type of information needed to do this. Consequently, much of the project's work consisted of devising an alternative projection methodology. The value of the project's work resided as much in its account of the problems involved in devising an alternative projection methodology as in projecting the numbers themselves. This study should be viewed as a first approximation, which because of the lack of requisite data produced numbers that must be carefully and cautiously used.

This discussion specifies reasons why the projected numbers of NELB and LEP persons should be used with caution, and indicates problems which the next projection effort should take into account and, if possible, resolve.

The projection methodology involved the prevalence rate technique in which a set of prevalence rates are applied to a base population, which is projected separately. This technique is often used to project school enrollment and labor force participation.

The project used the most recent Census Bureau projection of the U.S. population, by states and age groups, for its base population projection. Once the Measure of English Language Proficiency (MELP) was defined, the prevalence rates were obtained by calculating (using 1976 Survey of Income and Education and Children's English and Services Study data), in specified age categories the proportion of NELBs and the proportion of LEPs within the NELBs. There were problems involved in making decisions regarding both the base population and the prevalence rates. The following

discussion deals first with the base population issues then with issues concerning the prevalence rates.

### Base Population Issues

Four main issues were evident regarding the base population figures: (1) lack of usable information about illegal immigration; (2) lack of reliable information about the refugee influx; (3) inability to differentiate growth rates and age structure of the base population by all relevant language groups; and (4) use of only one of the Census Bureau's available population projection series.

#### Illegal Immigration

In a review of all available studies, the Census Bureau found that the number of illegal aliens in the United States was variously estimated from 2.9 to 12 million (Siegel, Passel, and Robinson, 1980). Many of these estimates were strictly guesswork, while others were based on methodological studies. The studies have relied on various data sources and discrepancies in public reports ranging from the Mexican census to birth and death registrations in the United States. In all of these, certain assumptions have been called into doubt or the authors themselves have provided very large margins of error. Siegel, Passel, and Robinson concluded there were between 3.5 million and 6 million illegal aliens in the United States in 1978.

Aside from the size of the illegal alien population was the rate of flow of this population into the United States. Estimates were further complicated by a very large gross flow from Mexico into the United States, accompanied by a large outflow of illegal aliens back to

Mexico. To determine the demographic and geographic distributions of the net illegal aliens was to engage in guesswork of the highest order. With no definitive source to draw on and with an overwhelming probability of error, illegal immigration into the United States was not addressed in this study.

### Refugees

Ad hoc political decisionmaking regarding the admission of refugees into the United States was not amenable to systematic projection methodology. The recent influx of refugees from Indochina and Cuba also is not reflected in this study. A November 1980 study by NCES (Goor, 1980) indicated that almost 100,000 Indochinese children (ages 5-18) resided in the United States as of October 31, 1979; this was almost double the reported number for the 1977-1978 school year. The recency and the volatility of the rate of flow of these figures indicates the difficulty of considering world political events in making population projections. Whether this population can be measured by the NELB criteria applied to other language groups is not currently known. Also, the ultimate geographic distribution of these recent arrivals may be considerably more concentrated than current sketchy figures indicate. While the Indochinese language groups will certainly have a large impact on education planning, reliable projections of the ultimate dimension of this population will have to await a more detailed description of the population, as well as a cooling of the tensions that created this sudden explosion of displaced people. The 1980 census should go a long way toward providing answers about the Indochinese refugees. Due to the recency of the Cuban influx there was no current, reliable information concerning their number and characteristics, nor will the 1980 Census be able to help.

### Language Group Growth Rates and Age Structure

There was no direct information available on the fertility, mortality, and immigration components of population growth for language groups. This resulted in reliance on the U.S. population as the "parent" population for projection purposes. The assumption was that each state/age/language group would grow at the same rate as the corresponding state/age group for the population as a whole. The Spanish language group was computed to grow at 1.4 percent per year faster in each of these categories.

The major difficulty with this technique was that the age distributions of the individual language groups differed considerably. The non-Spanish European language groups were considerably older than the U.S. population, while the Spanish group was much younger.

These differences in age structure very likely reflected

rates of natural increase (i.e., the differences between births and deaths per 1,000 population), which were high for the Spanish and low for the non-Spanish European language groups. They also may have reflected a considerable difference in net immigration, given that migrants were usually young adults. Consequently, while the higher estimated growth rate of the Spanish-speaking population (compared with the U.S. population) was reasonable, the assumption that other language groups would grow at the same rate as the U.S. population implied an unreasonably high growth rate for the non-Spanish European groups. Hence, the older European language groups may have been overestimated. The most extreme example was the Yiddish language group, which was overwhelmingly older than 55, (60 percent), and should have declined in absolute numbers; yet, due to the methodology, grows 17 percent (850,000 to 1 million) between 1976 and 2000.

Asian language groups, although not as young as Spanish language group, were younger than most of the other language groups. Therefore, the assumption that they would grow at the same rate as the U.S. population very likely resulted in projected numbers that were too small for some Asian groups. This source of underestimation of Asians was distinct from the large influx of Asian refugees in the late 1970s, which was not taken into account.

### Census Bureau Projection Series

The use of only one of the Census Bureau's population projection series (Series II) implied that it was judged the most reasonable. Users of the projected numbers, however, should make their own assessment of which Census Bureau alternative—involving different assumptions about fertility, mortality, and migration—is the most reasonable. The accuracy of the projected numbers depended in part on how close the *actual* trends of fertility, mortality, and migration from 1976 to 2000 were to trends contained in the single population projection series used in projecting NELB and LEP populations in this study.

### Prevalence Rate Issues

A central assumption regarding prevalence rates was that LEP rates would remain constant throughout the projection years, 1976 to 2000. This assumption may be questioned on a number of grounds, including language shift, immigration, effectiveness of schooling, and use of a single set of non-Spanish LEP rates to apply to the SIE.

### Language Shift

Another problem in making projections of language use was language shift, especially between generations.

While it was assumed that acculturation would result in a trend toward English usage by succeeding descendants from immigrants, this was not reflected in the projection methodology. Individuals could migrate out of a language minority group by intermarriage with the language majority group. Such outmigration was not reflected in a cohort component model, which assumed that individuals who were born into or migrated into a population would remain there unless they died or physically migrated out.

#### Immigration

The selection of MELP for linking the CESS with the SIE involved the use of two variables, "ability to speak and understand English," and "family income." Immigration probably should have been a vital factor here. If an individual was foreign born, recency of arrival was important. Immigration, therefore, was more important for trying to project the LEP population than for the NELB.

#### Effectiveness of Schooling

One factor impossible to assess was the potential effect of school experiences on the rates of limited English proficiency for the next several decades. It was not clear how many LEP children were receiving appropriate education and what the effects would be. There were no reliable national evaluations of bilingual education in the United States and the general effects of schooling have been debated since the era of the Coleman and Jencks reports. Therefore, there were no accurate figures that could be used to predict education-based changes in the LEP rates (LEP-to-NELB ratios) of various language and age groups.

#### Non-Spanish LEP Rates

A single set of national LEP rates was computed for all non-Spanish language groups and applied to the

1976 SIE data. Due to the initial inability to differentiate among these language groups in regard to LEP rates, the non-Spanish LEP estimates and projections should be considered less reliable than those for the Spanish language population.

#### Constancy Assumption

Another difficulty—the use of a constancy assumption—applied to both NELB and LEP rates. The projection method assumed constant LEP and NELB rates. However, it was likely that the two rates would not remain constant, and the further from the 1976-1978 period, the larger the error would be, especially for the NELB rate. Without further trend data, it was impossible to project varying rates across time for LEPs and NELBs, although the projection numbers varied across time because of the use of Census Bureau population projections in the projection algorithm.

### Summary

Base population issues included lack of usable information about illegal immigration, lack of reliable information about refugees, inability to differentiate growth rates and age structure of the base population by all relevant language groups, and use of a single set of Census Bureau population projections. Prevalence rate issues included language shift, immigration, effectiveness of schooling, use of a single set of non-Spanish LEP rates to apply to the SIE, and use of an assumption of constancy of rate across time.

Despite these caveats, when this study was conducted it produced the only in-depth information about projections to NELB and LEP persons to the year 2000 by language, age, and state. If the information is used with the proper caution, it will be extremely helpful in educational decisionmaking.

## Chapter VI:

# Summary and Educational Implications

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As previously stated, the number of NELB persons is projected to grow from 28 million in 1976 to 39.5 million in 2000 unless there are unexpected shifts in migration, fertility, and mortality patterns. Spanish-language-background persons increase in absolute numbers and in percentage of the total NELB population, from 10.6 million (38%) in 1976 to 18.2 million (46%) in 2000. Although all age groups show overall gains, distinct differences in the number of NELBs appear for various age bands, with "younger" age groups (5-14, 15-24, and 25-34) experiencing significant but temporary declines, and "older" age groups (35-54, and 55-plus) exhibiting more dramatic and steady increases than younger groups. There is a strong geographic concentration of NELBs in California, New York, and Texas, and this concentration increase from 45 percent of all NELBs in 1976 to 48 percent in 2000. Spanish-language-background NELBs are younger than other NELBs, and are also more heavily concentrated in these states than other NELBs.

The total number of LEP children ages 5-14 increases overall from 1976 to 2000 (2.5 million to 3.4 million) although there is a temporary drop to 2.4 million in 1980 and 1985. The numbers of Spanish, Asian, and combined non-Spanish/non-Asian LEPs experience slight declines during the 1980s but are projected to rise strongly until 2000. Spanish LEPs increase from representing 71 percent of all LEPs in 1976 to 77 percent in 2000. The highest LEP rates (LEP-to-NELB ratio) among non-English-language-background groups are among Spanish (0.75), Vietnamese (0.75), Navajo (0.66), and Yiddish (0.60), compared with the usual rate ranging from 0.41 to 0.53. California and Texas show overall LEP increases until 2000 (California, 600,000 in 1976 to 900,000 in 2000; Texas, 500,000 in

1976 to 900,000 in 2000). New York, begins and ends with 500,000, declining slightly to 400,000 during the 1980s. The proportion of all LEPs residing in California, New York, and Texas increases as does the percentage of Spanish-language-background LEPs living in these states.

These results have implications for bilingual education planning. It is clear that Spanish LEPs will become an increasingly important factor in educational planning over the next two decades. Spanish-language-background persons are already the largest group of NELBs persons, and their share of LEPs will increase. This is due in part to the fact that they have higher LEP rates than do most other NELBs, meaning a greater percentage of the Spanish-language-background children ages 5-14 are limited in their English proficiency than are children of the same ages from most other language backgrounds. The Spanish NELB group is also younger than other NELB groups. These facts indicate that educational planners in many agencies will need to find ways to meet the bilingual education needs of a growing Spanish-language-background clientele.

The numbers of Spanish NELBs and LEPs should not mask the needs of other groups. The very high LEP rates among smaller groups, such as Vietnamese, Navajo, and Yiddish, may be important for educational planning. Planning for these groups in areas where their numerical concentration is low but their LEP rate is high will most certainly be challenging.

The geographic concentration of NELBs and LEPs in California, Texas, and New York should significantly influence the allocation of educational funds and programs for the next few decades. An important caveat, however, was that the projections could not foresee or take into account such phenomena as the increasing

Cambodian refugee influx or the massive Cuban sea-lift operation, both of which have affected geographic concentrations of LEPs. In addition, changes in U.S. immigration policy will certainly affect the projections.

An interesting result affecting educational planning is that LEP children and younger NELB groups temporarily decrease in numbers during the 1980s, then increase again by the year 2000. This reflects the projected temporary decline of younger age groups in

the total U.S. population and becomes a factor in educational planning.

New projections should be made using 1980 Census data. It is important to use the latest and most accurate data to make projections, and the 1980 Census promises to be a very useful data set. When this study was conducted, these projections offered the best available information for educational planning for language minority groups.

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## *Appendices*

# Appendix A:

## Glossary

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**CESS (The Children's English and Services Study).** A study conducted by the National Institute of Education (NIE) with assistance from the National Center for Education Statistics (NCES) in spring 1978 to determine the proportion of minority children ages 5-14 with limited English proficiency.

**CESS Ratios.** The ratios of children with limited English proficiency among all language minority children obtained with the use of the Language Measurement and Assessment Inventories (LM & AI) in the CESS.

**Cohort: Total Fertility Rate.** The average number of lifetime births per woman.

**CPR (Current Population Report).** A report published by the U.S. Census Bureau.

**CPS-SLS (Current Population Survey-Survey of Languages Supplement).** A survey conducted in 1975 by the Census Bureau for NCES.

**Data Item.** Numeric or coded information that describes a category about which data are gathered.

**Data Set.** A machine-readable collection of data items about a related set of entities; also called a file.

**Estimate.** A set of population figures usually produced for intercensal (between censuses) periods and after the estimate year in question.

**Forecast.** A projection that is accorded a higher degree of probability than all other projections.

**Interstate Migration.** The net number of in- or out-migrants for a given state over a specified period of time.

**Language Environment.** The actual language-use context in which an individual lives, consisting primarily of household, work, school, and play settings. Many individuals are classified as NELB who do not have much contact with a language other than English.

**Language Minority.** In this study, this term refers to individuals who meet the NELB criterion (see NELB). The usual substantive meaning is a community whose usual home language is not the socially dominant one and whose language is maintained intergenerationally, by immigration, or by a combination of the two.

**LEP (limited-English-proficient or limited English proficiency).** Persons of non-English language background who have been determined by a language test or application of a MELP to be limited-English-proficient.

**LEP Cutoff Score.** Score on LM & AI below that which an individual is classified as LEP.

**LEP Rate.** Ratio of the number of LEP individuals to NELB individuals in a particular language/geographic category (LEP-to-NELB ratio). In this study these rates have been computed only for the 5-14 age group.

**Life Expectancy (at birth).** The average number of years a person can expect to live.

**LM & AI (Language Measurement and Assessment Inventories).** A language proficiency test used in CESS that has eleven different forms (for ages 5-14) for measuring all four language skills—reading, writing, speaking, and understanding.

**MAEP (measure of adult English proficiency).** A counterpart to the LM & AI developed for use with adults.

**MELP (measure of English language proficiency).** A surrogate manner for determining LEP estimates based on census-type questions rather than a language proficiency test such as the LM & AI. The MELP used for this study consisted of ability to speak and understand English, cross-classified with family income.

**MELP Study.** A pilot study conducted by the Center for Applied Linguistics in 1975 for NCES to determine the feasibility of developing a surrogate measure of English-speaking ability from census-type questions.

**Natural Increase.** Population growth as a result of the balance between births and deaths.

**NELB (non-English language background).** Persons whose usual or second individual language, or usual or second household language or mother tongue, is other than English, whether or not they usually speak English.

**Projection.** A set of population figures produced by merging a set of data, such as the age and sex composition of a population, with assumptions concerning future demographic behavior (fertility, mortality, and migration rates).

**SIE (Survey of Income and Education).** A survey conducted by the U.S. Bureau of the Census with assistance from NCES in 1976. The survey obtained responses from more than 480,000 individuals. This study utilized an extract of the SIE capturing language, handicapping conditions, ethnicity, and other demographic characteristics with weightings applied to individuals so they represented the entire population of the United States.

# Appendix B:

## NELB, LEP, and MELP

Three key concepts on which this study's estimates and projections are based—non-English language background (NELB), limited English proficiency (LEP), and measure of English language proficiency (MELP)—are examined in this appendix.

### Non-English Language Background (NELB)

#### What is the Official Definition of NELB Individuals?

This study's official definition of NELB individuals was: "*Persons whose usual or second individual language, usual or second household language, or mother tongue is other than English, whether or not they usually speak English.*"

For the purpose of complete tabulations one of the following technical definitions was used to select NELBs if:

- (1) The usual household language was other than English
- (2) The second household language was other than English
- (3) The individual's usual language was other than English
- (4) The individual's other spoken language was other than English
- (5) The individual's mother tongue was other than English.

These definitions produced the same figures published in the *NCES Bulletin (78 B-5)*, "Geographic Distribution, Nativity, and Age Distribution of Language Minorities in the United States, Spring 1976." By this definition, there were over 27.9 million NELB individuals in the United States in spring 1976. The "if" definers were somewhat deceptive; they appeared to indicate a person was defined as NELB by any of three criteria: individual language, household language, or mother tongue. The definition was somewhat more restrictive because the individual language use questions (3,4) were asked only if:

- (6) The usual or second household language was not English
- (7) The individual's mother tongue was not English
- (8) The individual was not born in the United States.

A complete cross-tabulation of these variables for the SIE data was not seen. It was suspected, however, that the number of individuals who were foreign born (8) and

reported using a language other than English (3.4) but did not report a non-English mother tongue, (5.7) or current residence in a household where a language other than English was used (1,2,6) was small.

The NELB category included not only persons in households in which languages other than English were spoken, but also persons ages fourteen and older with non-English mother tongues and foreign-born children and adults who spoke languages other than English regardless of the household language characteristics (Waggoner, 1980). The additional specification of "fourteen and above" came from the fact that mother tongue for those under ages fourteen was defined in the SIE by the current household language.

### What Should Be the Definition of NELB?

The mother tongue specification raised a different issue. The current household language was used to define the mother tongue of children ages 0-13. Also the CESS study, which continued to be the basis of all LEP estimates, was carried out only in households where children ages 5-14 were present and where a language other than English was spoken "usually or often" (O'Malley, 1981), as defined by questions identical to the household language questions in the 1976 SIE.

This study should be a close approximation to the population studied in the CESS, *which was limited to those who currently resided in households where a language other than English was currently spoken*. This is a much narrower definition of NELB. This study used the broader definition of NELB in order to produce numbers consistent with those released by NCES. This probably made little difference for children ages 5-14 (because their mother tongue was defined by their current household language), but approximately one-third of the broadly defined NELBs over fourteen years old resided in English-only households. (This estimation was based on the various NCES reports from the 1976 SIE.) The two definitions of mother tongue were quite different (although the magnitude of the practical difference was not known). Also, the presumption that the two groups were logically similar was contrary to the emphasis on *current* language situations and usages that was the essence of the language data collected by the SIE, the CESS, and the 1980 U.S. Census. (It was assumed those individuals defined as NELB because they were foreign born and currently spoke a language other than English, even though they did not meet other criteria, constituted a small portion of all NELBs. It would be worthwhile to find out precisely.)

In estimating and projecting the NELB population, it made little difference whether the broader or narrower (household language only) definition of NELB was used. However, when moving on the LEP estimates, the following situations occurred:

- (1) For those ages 5-14 the age by language group LEP rates were available for groups with an adequate sample size. With a usable MELP, LEP estimates could be made even for populations within this age group for which the CESS study did not provide actual LEP rates based on the LM & AI. Most of this age group of NELBs will be in households using a language other than English, so the MELP-LEP relations found in the CESS study will be directly applicable.
- (2) For those over age fourteen there were no LEP rates from the CESS. Even with a usable MELP for the 5-14 age group there was no basis for asserting that this MELP was applicable to those over fourteen. Such a MELP might be justified for those over fourteen who were in non-English households. The researchers strongly recommend *against* using any such MELP for those adults who, while they had a non-English mother tongue, were not currently residing in non-English households.

Any broadening of the NELB definition goes farther away from the grounding in the CESS. Using the broad definition of NELB did not make any substantial difference for those under fourteen years old. But those over age fourteen, it made LEP projections difficult. For this and other reasons, there are no LEP projections in this study for any age group other than ages 5-14.

Fourteen-year-olds presented another minor problem. The CESS study included the age group 5-14 inclusive, but the SIE asked questions somewhat differently according to whether one was 0-13 or fourteen and over. In the SIE for those fourteen and over mother tongue was a directly asked item; for those 0-13 mother tongue was imputed from current household language. As long as this study was limited to individuals currently residing in non-English households this had no practical effect. In using any broader definition of NELB, however, this slight disparity must be kept in mind.

#### How Does This Study's NELB Definition Compare With Other Language Minority Definitions?

It would be useful to compare the NELB figure with other possible language minority definitions. Table 3 (see Appendix D) presents figures for the non-English population in the United States by various definitions of non-English. Mother tongue data or older figures are not included; all the figures relate to aspects of current language use and are comparable in terms of time and the reliability of the estimates.

Table 3 (see Appendix D) demonstrates the effect of the broader definitions of non-English or language minority. The 1975 and 1976 broad definitions (the first two sets of numbers) are smaller, even though the wording and definition are slightly different. Moving from household to individual language reduces the estimate somewhat for Spanish and a good deal for other languages (from 17 million to 12 million). When only *usual* household and individual languages are considered the numbers for Spanish are reduced to one-half and for other languages estimates are cut to one-fifth. These usual language definitions produce language minority estimates of only 7 million to 9 million, in contrast to the 28 million figure using the broad definitions. There are only 350,000 individuals under age nineteen who usually use a language other than English or Spanish. Reported non-English monolingualism is much rarer—about 1.7 million individuals, 70 percent of whom are Spanish speakers. Finally, in 1975 about 3.8 million individuals report difficulty with English.

It was not meant to suggest that one of these alternative definitions be substituted for the 1976 broad definition. No one definition was better than another for all purposes; the choice of which one to use was dictated by the analytic task at hand. The broad definitions were indicated if researchers wished to include individuals with language backgrounds other than English. The broad definition might also have been useful as an indication of actual language use if it could be demonstrated that individuals tended to seriously under-report the degree to which they used a language other than English. (This is a frequent assertion in the sociology of language, but there is no study that satisfactorily supports this assertion.)

### Limited English Proficiency (LEP)

There were numerous instruments that claimed to measure English language proficiency. Stolz and Bruck (1976) presented a typology for classifying tests of English language proficiency. This typology was based on the conjunction of two independent dimensions:

- (1) Discrete-point versus integrative
  - a. A discrete-point test attempts to analyze English proficiency into its atomic components, then test each component separately.
  - b. An integrative test involves a task that is assumed to call upon a larger range of skills and assesses the respondent's integrated English proficiency rather than separate components.
- (2) Direct versus indirect
  - a. A direct test sample directly from the behavior to be evaluated in the natural setting.
  - b. An indirect test is more contrived and non-naturalistic.

The LM & AI, used as a measure for language proficiency in this study, was an indirect, discrete-point test.

## Measure of English Language Proficiency (MELP)

In addition to these categories of tests, there also was a group of *surrogate* measures of English language proficiency (neither direct nor in-direct). These measures were generally "census-type" or "survey-type" questions (e.g., questions on mother tongue or usual language, which could serve as a proxy for an actual test). These surrogate measures were known as measures of English language proficiency (MELPs). A MELP is an item or set of items used as a correlate of an actual test of English language proficiency. *The main purpose of a MELP is to allow estimation of limited English-proficiency rates when no test can be used*; for example, a very large sample in which testing would be unrealistic or unduly expensive. A MELP must be calibrated in studies in which both the MELP items are asked and a language proficiency test administered. Then the MELP index alone can be used as a proxy in larger surveys and censuses to impute levels of language proficiency.

There are the other uses of a MELP index for *validation* in the future of projections made now, for estimation, and for *new projections*.

In all uses it was essential that the MELP be a closer approximation to LEP than to the NELB definition. It was fortunate this correspondence was least important for the purposes of providing illustrative projections from a data set chronologically close to CESS (the current task). The further away from the time of the calibration study the more important it was to have an accurate MELP which contained items that were not likely to change their relationship to LEP over a period of time. For this reason, it was advisable to confine MELP indices to items with a high degree of "face validity," (i.e., the item that directly asked about an individual's ability to speak English). LEP rates for a broad population category such as all NELB children were likely to be influenced over time by a host of variables, including the consequences of bilingual programs. Therefore, the presumption that 65 percent of the NELBs would still be LEP in 1985 was open to question. There could be greater confidence in the constancy of rates, such as that 95 percent of NELB children found to speak English poorly were LEP. Table 4 (see Appendix D) summarizes the use of MELPs in several relevant studies.

## Appendix C:

### Determining the Spanish Growth Rate

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No reliable time series data about language minorities existed. The notable exception was the Spanish language group, which broadly overlapped with the Spanish origin population. Of the Spanish origin population 84 percent was Spanish NELB, according to the 1976 *Survey of Income and Education* (SIE); the proportion of Spanish NELBs who were not of Spanish origin was negligible. A full analysis of the similarity of these two populations in 1976 could not be made. The absence of comparable language data over time made it nearly impossible to assess the change of directions of these two populations. Several comparisons indicate the Spanish origin population can serve as an adequate surrogate for the Spanish NELB population, at least for determining a growth rate. Table 5 (see Appendix D) compares the nativity and age distributions of the 1976 Spanish origin and Spanish NELB populations, along with a few earlier Spanish origin figures and one for an earlier Spanish language category. The 1969 Spanish origin figures from the *Current Population Survey* cannot be used for absolute comparison with recent *Current Population Survey* figures (due to changes in 1973), but these figures are satisfactory for proportional comparisons. The 1969 language category (Spanish usually spoken at home) is considerably more restrictive than the 1976 Spanish-language-background definition. This language category roughly represents the "more Spanish" 60 percent of the 1976 category; however, this population and all the others in Table 5 (see Appendix D) have similar 0-14 age band proportions. The 5-14 age band comparisons are even more alike (5-14 is not available for 1969). In the critical 5-14 age band Spanish origin and Spanish NELB are substantially the same in 1976 and over time. Furthermore, there is no substantial change in the 0-4 age band proportion over time for either group.

In 1976 the percentage of foreign born figures varied somewhat more between Spanish origin and Spanish NELB. (The 1969 Spanish mother tongue figure was not directly comparable with the Spanish NELB, but it was an indication that foreign born proportions have not changed greatly since 1969.) Immigration will affect the Spanish NELB figures somewhat more than the Spanish origin figures, but since immigration figures were not used in the projections (and because the data were so controversial) any adjustment for Spanish origin/Spanish NELB figures would not be defensible. English-speaking and English mother tongue Hispanics tend to be of higher status and lower fertility than Spanish-speaking Hispanics (Lopez, 1976; Lopez, 1978). Again, since Spanish NELBs were such a large proportion of the total Spanish origin population, these differences did not affect the use of the Spanish origin data.

The lack of good data on the components of Hispanic or other language minority population growth resulted in the adoption of a prevalence rate method. The Hispanic

population is growing faster than the non-Hispanic population and it is certain to continue to do so over the next few decades. The growth rate of the total U.S. population when this survey was done in 1979 was about 0.7 percent or 0.8 percent, and by 2000 the U.S. Census Bureau variously projects it may fall to about 0.4 percent per year or, the growth rate may stay roughly constant depending on future fertility. In contrast to the total U.S. population, Hispanics had some characteristics that assured their continued higher than average growth rate (for example their youthful age structure). Other characteristics, while not as subject to change as age structure, were unlikely to equal U.S. averages. For example, the Hispanic fertility rate (births per woman), while declining, was still substantially above the national average, and the rate was much above the national average for Hispanics who speak Spanish at home (Lopez & Sabagh, 1977). In addition, population and economic trends made it probable that substantial immigration from Latin America would continue in the future. Since separately these components could not be estimated with reliability, the most reliable series of estimates of the Hispanic population—the March Current Population Survey reports of the Spanish origin population for 1973-1979—were used. Since major changes in the sampling frame and in the Spanish origin definers were made in 1973, figures are shown for that year and to 1979 the last available year.

There were several ways to use yearly estimates to derive a growth rate. The basic problem was these yearly figures were *estimates* based on samples and therefore subject to sampling error. For example, March 1974 Spanish origin estimate of 10.7 million had a standard error of about 180,000. This meant there was a 95 percent chance (two standard errors) the true figure was between 11.1 million and 10.4 million (calculations from U.S. Bureau of the Census, 1975, Series P20NA19BER280). Any rate based on adjacent years is subject to considerable error. Regression could be employed or the 1973-1974 and 1978-1979 estimates could be averaged. The method chosen was to take the 1973 and 1979 estimates and calculate the growth rate over this six-year period, or 2.2 percent per year. Alternative methods yielded approximately the same results. For example, if end-year averaging was used, then the rate was estimated to be 2.4 percent per year over a five-year period and 2 percent over a six-year period. To determine the differential between the total and Spanish origin rates, an equivalent rate was calculated over the same period for the total U.S. population. The total U.S. figures published by the Census Bureau in the annual Spanish origin reports were used for comparison. These figures tend to be 2 million or 3 million smaller than total U.S. figures published in the *Current Population Reports* Series P-25, the difference was due largely to the inclusion of the Armed Forces overseas population in the latter series. Both series produced a growth rate of around 0.8 percent per year.

Table 6 (see Appendix D) presents figures for the Spanish origin population. Whether they are satisfactory for that population can be addressed by two questions: (1) Is the Spanish origin rate similar to other authoritative estimates; and (2) Can it justifiably be extended twenty-four years into the future

Regarding the first question, there had been some preliminary or geographically-limited estimates of the Hispanic growth rate (e.g., Marcias, 1977; Mexican American Population Commission, 1973), but authoritative estimates had only come from the Census Bureau, either directly or by calculations based on its population estimates. Because of the definer problem and because Current Population Survey sampling procedures were changed in 1973, most growth rate estimates were dependent on essentially the same data that this study's estimate was based on—the Current Population Surveys from 1973 to 1979. In fall 1979, the office of U.S. Census Bureau Director Vincent Barraba used the apparent growth in the Spanish Origin population from 1973 to 1978 to derive a yearly growth rate of 2.25 percent, which was then extrapolated into the future (*Los Angeles Times*, November 26, 1979). Previously, another branch of the Census Bureau attacked the problem of assessing the real growth of the Spanish origin population between the

noncomparable 1970 census and the March 1976 Current Population Survey (U.S. Bureau of the Census, 1977). In the report, bureau staff stated "rough calculations" indicated the rate of natural increase for the Spanish origin population was 1.8 percent per year. (It was not clear whether this meant an annual rate of 1.8 percent or an average of 1.8 percent over the six years.) Immigration and Naturalization Service figures recorded a total of 670,000 immigrants from Latin America over the time period, according to the same Census Bureau report. If these figures were the components of change and the residual was presumed to be due to procedural differences, then the resulting growth rate was 2.1 percent to 2.3 percent (bracketing this study's rate of 2.2 percent). Any estimated rate based on the same data was going to be similar, but it should be emphasized these data were not just a series, but rather *the* series. The 1980 decennial census approach to identifying Spanish origin individuals was considerably different from the procedure used in 1970, and a variety of other real or potential bases for non-comparability made it unlikely that a sound Hispanic growth rate would be derived from comparing the 1970 and 1980 censuses.

This study's approach to adjusting for the above average Spanish language minority growth rate was conservative. The 2.2 percent rate is at the lower end of probable current rates, and comes from the broader and slower growing Spanish origin population, not the Spanish language minority. The 2.2 percent rate is slightly lower than the most recent Census Bureau estimate of the Spanish origin growth rate, and the method of applying it will, in comparison to the Census Bureau estimate, yield lower net growth rates for the Hispanic population in future years should the total U.S. population decline during the same period.

Regarding the second question, it was impossible to make predictions with total confidence. The youthful age structure, the heavy international migration pressure, and the consistently above-average levels of fertility (particularly among the poor Spanish-speaking immigrant population) assured that the Spanish origin population would grow more rapidly than the total population over the next two decades. How much was difficult to say. The use of the Census Bureau's total population projections reflected that to some degree the Spanish origin population would follow national demographic trends. This was not an extension of the 2.2 percent per year into the future, as the Census Bureau did in its recent projection of the Hispanic population, but rather an hypothesization that the 1973 to 1979 *differential* would hold in the future.

The Spanish group accounts for 40 percent of the total NELBs and 64 percent of the crucial 5-14 age band. Italian, the second largest NELB group, is only one-tenth that size in the 5-14 age band. The set of non-English languages other than Spanish form an extremely diverse group. Many are composed in large part of older immigrant and second generation stock with few young people living in households that are genuinely non-English in language environment. For example, only 13 percent of the German "language minority" is 18-or under, and the LEP rate of the 5-14 German NELB population is very low. Age, LEP, and socio-economic profiles vary considerably from language to language, but overall are quite distinct from the Spanish NELB population. Table 7 (see Appendix D) compares the Spanish and non-Spanish NELB age distributions. By virtue of the non-Spanish NELB "old" age distribution, it cannot grow rapidly, except by high levels of immigration. While certain groups show short-run influxes of immigration (i.e. Indochinese), no other major language compared to the Spanish group has a demonstrated recent history of high immigration into the United States. Spanish language immigration into the United States has been more or less steady throughout this century. Geographic proximity to the United States, the ease of movement, the near certainties of high unemployment throughout Latin America, and labor force needs in the United States—these factors and others—combine to make high levels of continuing Spanish-speaking immigration into the United States a near certainty for the next several decades. This cannot be said for any other language group.

# *Appendix D:*

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## **List of Tables**

Table 1. Sampling Frames of Data Sources

Source	Variables of Interest	Frame	Standard Errors
1969 November CPS	Language and Ethnic Origin	Stratified multi-stage cluster  Approximately 50,000 occupied units were eligible for interview  About 47,750 households were interviewed	Relatively large for small estimates (less than 100,000)
1970 Census	Spanish Origin (5%) Mother Tongue Language (15 percent) Country of Origin (5% and 15% samples)	Every fifth line of the address register is designated as the sampling line  Every fourth 20% sampling unit comprises the 5% sample and the remaining units make up the 15% sample	In general the standard errors are small, but for extremely small numbers, they are relatively large
1971 March CPS	Ethnic Origin (expanded list of origin categories)	Same as 1969 CPS	Errors are smaller than in 1969, but still relatively large for small numbers
1973 and Subsequent CPS	Ethnic Origin (children under 14 in households where wife is Spanish origin also classified Spanish Origin)  Also, list of Mexican Ethnic Origin designation expanded	Stratified multi-stage cluster  Expanding sample from 47,000 to 70,000 households between 1973 and 1979  Frame also reflected changes based on 1970 Census data  The result was to increase the Spanish Origin estimate by about one-half million persons  In addition, the sample of Spanish Origin Persons was increased to reduce sampling variability	Sampling variability reduced, but standard errors are still relatively large for small estimates
1976 SIE	Language (NELB) Total Population Estimates Household Income Age Grade Attainment Speak and Understand	Stratified multi-stage cluster  PSUs stratified by proportion of persons 5-17 years of age living in poverty families in 1970  Approximately 158,500 households and 440,000 individuals	Vary by state For many states and language categories SEs are relatively large
1978 CESS	LM & AI Score Household Income Age Grade Attainment Speak and Understand Language (NELB)	Special purpose sample designed to produce 15% error variance on national LEP estimates  PSUs (counties and large cities) stratified by size of Spanish and non-Spanish minority populations  Multi-stage - 35,000 households screened and approximately 2,000 eligible for interview  Final sample 1,909 children 5-14 years of age	Relatively large for all categories

Table 2. Limited-English-Proficiency (LEP) Rates<sup>1</sup> in the 1976 SIE and the 1978 CESS for the 5-14 Language Minority Population, by Subpopulation

State	Study	Language Minority Population		Total
		Spanish	Other Non-English	
California	CESS	.808	.545	.756
	SIE	.772	.466	.694
New York	CESS	.895	.693	.814
	SIE	.919	.505	.753
Texas	CESS	.818	-(2)	.783
	SIE	.750	-	.772
Remainder	CESS	.654	.519	.579
	SIE	.610	.512	.556
All U.S.	CESS	.774	.548	.690
	SIE	.747	.504	.656

- (1) The LEP rates from the CESS are higher than those originally reported in NCES bulletins because NCES subsequently revised the LEP cutting point.
- (2) The CESS sample was not designed to produce an estimate for this population.

Table 3. Estimated Non-English Populations in the U.S., by Varying Definitions of Non-English

<u>Study</u>	<u>Ages</u>	(in thousands)		
		<u>Non-English Populations</u>		
		<u>Spanish</u>	<u>Other Non-English</u>	<u>Total</u>
1976 Non-English Language Background (SIE)	ALL	10,609	17,376	27,985
	0-18	4,406	2,850	7,256
	19+	6,203	14,527	20,730
1975 Usual or Second Home Language Non-English (CPS)		11,248	16,862	28,110
1975 Usual or Second Language of Individuals		9,235	11,765	21,000
1975 Usual Household Language		5,360	3,170	8,530
1975 Usual Individual Language	ALL	4,525	2,750	7,275
	0-18	1,610	350	1,960
	19+	2,915	2,400	5,315
1975 Non-English Monolinguals		1,200	540	1,740
1975 Individuals Reporting Difficulty with English		2,444	1,403	3,847

Source: 1976 figures: NCES Bulletin 78B-5

1975 figures: Current Population Report, P-23, No. 60 (July 1976)

Table 4. Uses of Measures of English Language Proficiency (MELPs)

Data Source	Type of Proficiency Test	Type of MELP Variables	Analysis Used	Relationship between Test and MELP	Comments
<p>MELP Study (1976)</p>	<ol style="list-style-type: none"> <li>1. Indirect discrete-point; one test for adults, one for children; each test measures reception, communication and production</li> <li>2. Direct integrative (Direct Observation Rating Procedure (DORP))</li> <li>3. School classifications of proficiency (Same as in CESS)</li> </ol>	<ol style="list-style-type: none"> <li>1. Length of time in U.S.</li> <li>2. Rating of speaking</li> <li>3. Rating of understanding</li> <li>4. Usual household language</li> <li>5. Language usually spoken with siblings (child only)</li> <li>6. Language usually spoken with best friend</li> <li>7. Number of years of formal education using English</li> <li>8. Year of birth</li> <li>9. Grade in school</li> <li>10. Highest year of formal education for head of child's household (child only)</li> <li>11. Income (parent only)</li> <li>12. Frequency of reading English language newspaper (parent only)</li> <li>13. Language usually spoken with children in household (parent only)</li> </ol>	<ol style="list-style-type: none"> <li>1. Discriminant function</li> <li>2. Definitional MELP (using speak, understand, and years of formal education using English)</li> </ol>	<ol style="list-style-type: none"> <li>1. 82% categorized same by test and MELP</li> <li>2. 82% categorized same by test and MELP</li> </ol>	<p>The most important MELP variables were speak, understand, and years of formal education using English. This study used LESA instead of LEP. DORP was not used with all subjects, so could not be calibrated with MELP.</p>

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Table 4. Uses of Measures of English Language Proficiency (MELPs) (continued)

Data Source	Type of Proficiency Test	Type of MELP Variables	Analysis Used	Relationship between Test and MELP	Comments
Children's English and Services Study (CESS) (1978)	<ol style="list-style-type: none"> <li>1. Language Measurement and Assessment Inventory (LM&amp;AI) - Indirect discrete-point; 11 different forms (for ages 5-14); objective based, covers all four skills; not a pure measure of English proficiency because it includes memory and cognitive ability</li> <li>2. School classifications of proficiency (Same as in CAL-MELP)</li> </ol>	<ol style="list-style-type: none"> <li>1. Usual individual language</li> <li>2. Other individual language</li> <li>3. Origin of descent</li> <li>4. Country of birth</li> <li>5. Income</li> <li>6. School</li> <li>7. Highest grade</li> <li>8. School exposure for language training</li> <li>9. School attended outside U.S.</li> <li>10. Language of instruction</li> <li>11. Language usually spoken with siblings</li> <li>12. Language usually spoken with best friend</li> <li>13. Ratings by respondent of child's proficiency in four skills</li> </ol>	Discriminant function (DF)	<p>DF 1: 66% accuracy (correct classification)</p> <p>DF 2: 57% accuracy</p> <p>DF 3: 62% accuracy</p> <p>DF 4: 54% accuracy</p> <p>DF 5: 67% accuracy</p>	<p>Best DF included grade retardation</p> <p>Problems with analysis, cut-off scores, and instrumentation</p>
Reanalysis of CESS by Wulfsberg (1979-1980)	LM & AI (See Above)	<ol style="list-style-type: none"> <li>1. Speaking</li> <li>2. Understanding</li> <li>3. Family Income</li> </ol>	Correlational analysis resulting in probabilities of being LEP.		

Table 5. Selected Comparisons of the Spanish Origin and Spanish NELB Populations

<u>Percent Foreign Born:</u>		<u>Source:</u>
1976 Spanish Origin	25%	<u>Survey of Income and Education, 1976</u>
1976 Spanish NELB	29%	<u>Survey of Income and Education, 1976</u>
1969 Spanish Mother Tongue	27%	<u>Current Population Survey, March 1969</u>
<u>Percent Ages 5-14:</u>		
1976 Spanish Origin	25%	<u>Survey of Income and Education, 1976</u>
1976 Spanish NELB	23%	<u>Survey of Income and Education, 1976</u>
1974 Spanish Origin	26%	<u>Current Population Survey, March 1974</u>
<u>Percent Ages 0-14:</u>		
1976 Spanish Origin	38%	<u>Survey of Income and Education, 1976</u>
1976 Spanish NELB	34%	<u>Survey of Income and Education, 1976</u>
1969 Spanish Origin	40%	<u>Current Population Survey, March 1969</u>
1969 Spanish "at home"	38%	<u>Current Population Survey, March 1969</u>

Table 6. Deriving Spanish Origin Differential Growth Rate

Population Estimates			
Year	Spanish Origin	Total U.S.	Source
1973	10,577,000	206,295,000	"Persons of Spanish Origin in the United States: March 1973" <u>Current Population Report, Series P-20</u> No. 264 May 1974
1979	12,079,000	215,935,000	"Persons of Spanish Origin in the United States: March 1979" <u>Current Population Report, Series P-20, No. 347.</u> Advance Report Oct. 1979.
Annual Rate of Growth	2.2%	.8%	

Differential growth rate = 2.2% - .8% = 1.4%

Table 7. Age Distributions of Spanish and Non-Spanish NELBs

Age	Group Percentage	
	Spanish	Non-Spanish
0-4	11	4
5-14	23	9
15-24	19	10
25-34	17	11
35-54	21	28
55+	<u>9</u>	<u>38</u>
	100%	100%

Source: Survey of Income and Education, 1976

Table 8. Non-English-Language-Background Projections by Language Group, 1976 to 2000 (All Ages)

(numbers in thousands)

Year	Language Group			
	Spanish	Asian	Other*	Total
1976	10,608.9	1,841.5	15,534.7	27,985.1
1980	11,745.4	1,921.7	16,279.0	29,954.0
1985	13,191.3	2,023.0	17,066.3	32,280.7
1990	14,778.9	2,115.6	17,847.2	34,741.7
1995	16,436.6	2,196.0	18,525.7	37,158.3
2000	18,145.2	2,262.0	19,085.9	39,493.5

\* Refers to Non-Spanish/Non-Asian

Table 9. Non-English-Language-Background Projections by Age Group, 1976 to 2000  
(All Ages)

(numbers in thousands)

Year	Age Group						
	0-4	5-14	15-24	25-34	35-54	55+	Total
1976	1,815.8	3,846.5	3,825.3	3,639.9	6,966.3	7,891.4	27,985.1
1980	1,948.7	3,636.0	4,096.2	4,282.7	7,414.4	8,828.1	29,954.0
1985	2,386.9	3,683.0	3,950.0	4,887.2	8,439.3	9,477.4	32,280.7
1990	2,580.6	4,197.0	3,707.4	5,224.2	9,944.1	9,879.4	34,741.7
1995	2,611.4	4,817.9	3,743.1	5,038.9	11,697.4	10,263.0	37,158.3
2000	2,604.7	5,049.6	4,250.9	4,731.7	13,069.2	10,998.0	39,493.3

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Table 10. Non-English-Language-Background Projections by Major States, 1976 to 2000 (All Ages)

(numbers in thousands)

Year	State				
	California	New York	Texas	Remainder	Total
1976	5,220.5	4,432.8	3,040.8	15,291.3	27,985.1
1980	5,744.1	4,534.3	3,414.6	16,262.0	29,954.0
1985	6,350.9	4,653.2	3,917.6	17,360.0	32,280.7
1990	6,996.3	4,792.1	4,466.7	18,487.6	34,741.7
1995	7,648.1	4,927.4	5,041.1	19,542.7	37,158.3
2000	8,300.7	5,051.8	5,637.4	20,505.6	39,493.5

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Table 11. Non-English-Language-Background Projections by States, 1976 to 2000 (All Ages)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Alabama	49.7	52.6	55.7	58.9	61.8	64.1
Alaska	52.5	63.0	70.0	76.1	81.3	85.6
Arizona	532.8	622.9	742.1	865.9	991.7	1,116.4
Arkansas	42.8	45.3	48.5	51.9	55.1	58.1
California	5,220.5	5,744.1	6,350.9	6,996.3	7,648.1	8,300.7
Colorado	359.9	414.0	478.1	545.5	613.8	682.5
Connecticut	587.3	605.9	625.9	647.8	667.2	682.9
Delaware	40.4	42.5	45.1	47.7	50.1	52.3
District of Columbia	58.5	58.7	58.5	58.3	58.3	58.9
Florida	1,176.8	1,373.3	1,629.2	1,895.8	2,266.0	2,440.8
Georgia	103.4	113.2	124.3	135.8	147.0	157.7
Hawaii	293.0	327.6	354.9	380.0	402.1	420.0
Idaho	55.8	61.7	70.0	78.6	87.2	95.5

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Table 11. Non-English-Language-Background Projections by States, 1976 to 2000 (All Ages) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Illinois	1,472.6	1,531.4	1,589.6	1,653.4	1,713.4	1,768.4
Indiana	282.5	292.2	303.8	316.0	327.2	337.1
Iowa	152.4	156.3	161.3	166.8	171.7	175.9
Kansas	134.5	141.8	148.2	154.9	161.3	167.6
Kentucky	52.2	55.2	58.8	62.5	66.0	69.2
Louisiana	624.1	658.2	690.0	721.5	749.0	771.8
Maine	134.2	142.6	152.5	162.6	172.1	180.4
Maryland	294.6	318.3	342.4	367.7	392.1	415.0
Massachusetts	951.8	994.5	1,039.9	1,088.2	1,133.0	1,173.0
Michigan	852.1	875.7	908.0	941.1	968.8	990.3
Minnesota	405.1	420.3	438.0	456.5	471.9	484.4
Mississippi	25.3	26.5	27.9	29.3	30.5	31.6
Missouri	192.9	199.7	206.5	213.9	220.3	226.1

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Table 11. Non-English-Language-Background Projections by States, 1976 to 2000 (All Ages) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Montana	60.3	64.1	68.8	73.4	77.7	81.4
Nebraska	121.3	127.9	135.4	143.3	150.6	157.6
Nevada	73.0	82.2	93.8	105.3	116.7	127.6
New Hampshire	124.8	132.8	143.0	153.4	162.8	170.9
New Jersey	1,375.3	1,444.5	1,523.0	1,609.9	1,695.2	1,772.5
New Mexico	507.2	572.2	657.8	748.4	841.1	933.8
New York	4,432.8	4,534.3	4,653.2	4,792.1	4,927.4	5,051.8
North Carolina	84.4	91.4	98.4	105.5	112.2	118.3
North Dakota	97.5	102.5	106.2	109.9	113.0	115.6
Ohio	816.8	829.8	846.1	863.3	876.4	884.7
Oklahoma	127.5	137.3	147.3	157.7	167.7	177.3
Oregon	159.9	172.0	187.1	202.7	217.6	231.8
Pennsylvania	1,291.6	1,322.2	1,348.0	1,376.0	1,398.8	1,413.2

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Table 11. Non-English-Language-Background Projections by States, 1976 to 2000 (All Ages) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Rhode Island	196.3	207.1	216.5	226.3	235.3	243.3
South Carolina	46.5	50.9	55.4	60.0	64.4	68.5
South Dakota	60.7	62.3	63.9	65.5	66.7	67.7
Tennessee	47.7	50.1	53.2	56.4	59.3	62.0
Texas	3,040.8	3,414.6	3,917.6	4,466.7	5,041.1	5,637.4
Utah	82.6	91.2	102.8	114.7	126.3	137.6
Vermont	46.0	48.4	51.0	53.8	56.3	58.4
Virginia	239.5	263.8	289.1	315.0	340.3	364.5
Washington	295.0	311.9	329.1	347.8	365.5	382.2
West Virginia	42.3	43.8	45.7	47.7	49.6	51.3
Wisconsin	436.0	454.9	478.2	502.4	523.8	541.9
Wyoming	31.4	34.8	38.9	43.1	47.2	51.3
Nation	27,985.1	29,954.0	32,280.7	34,741.7	37,158.3	39,493.5

Table 12. Non-English-Language-Background Projections by States, 1976 to 2000  
(Ages 5-14)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Alabama	--	--	--	--	--	--
Alaska	10.6	11.3	11.7	13.3	15.0	15.3
Arizona	117.5	123.1	138.9	165.2	197.1	213.5
Arkansas	--	--	--	--	--	--
California	878.9	832.7	865.4	1,011.5	1,184.5	1,268.0
Colorado	59.6	60.5	65.6	78.7	93.9	101.3
Connecticut	58.8	50.3	46.7	53.0	50.3	62.1
Delaware	4.7	4.2	4.2	4.8	5.5	5.7
District of Columbia	5.9	5.1	4.7	4.6	4.7	4.6
Florida	143.7	152.2	170.9	206.0	249.8	275.1
Georgia	20.4	20.4	20.6	22.4	24.8	25.3
Hawaii	37.0	36.0	36.6	40.5	44.9	45.4
Idaho	9.2	9.2	10.0	11.6	13.5	14.2

-- Figures not projected due to small sample size but included in Nation totals.

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Table 12. Non-English-Language-B. Background Projections by States, 1976 to 2000  
(Ages 5-14) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Illinois	163.7	151.1	149.7	166.8	187.4	192.5
Indiana	40.8	37.7	36.8	40.4	44.8	45.4
Iowa	12.4	10.8	10.4	11.0	12.9	13.0
Kansas	14.9	13.5	13.4	14.8	16.4	16.6
Kentucky	--	--	--	--	--	--
Louisiana	85.9	81.1	78.4	83.7	90.4	89.5
Maine	14.6	13.3	13.0	14.5	16.2	16.4
Maryland	36.7	33.9	32.7	37.2	42.4	43.9
Massachusetts	80.4	69.8	65.8	75.4	86.4	89.5
Michigan	63.4	57.5	55.3	61.2	67.6	67.9
Minnesota	19.0	16.9	16.1	18.4	20.8	21.1
Mississippi	--	--	--	--	--	--
Missouri	15.2	13.3	13.0	14.2	15.6	15.6

-- Figures not projected due to small sample size but included in Nation totals.

Table 12. Non-English-Language-Background Projections by States, 1976 to 2000  
(Ages 5-14) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Montana	6.6	6.1	6.1	6.8	7.6	7.6
Nebraska	9.4	8.8	9.1	10.5	12.2	12.8
Nevada	9.6	9.8	10.4	12.1	14.2	15.1
New Hampshire	11.6	10.4	10.2	11.4	12.9	13.1
New Jersey	149.3	140.0	136.9	157.1	181.7	191.2
New Mexico	111.3	110.9	118.9	138.4	162.0	171.5
New York	603.9	542.1	514.5	572.7	646.0	670.1
North Carolina	--	--	--	--	--	--
North Dakota	4.1	3.6	3.5	3.8	4.2	4.2
Ohio	71.2	62.4	59.5	64.4	70.0	69.4
Oklahoma	26.2	25.2	26.0	28.7	32.0	32.7
Oregon	18.8	17.5	18.0	20.5	23.4	24.4
Pennsylvania	114.3	100.6	95.1	104.9	116.2	116.8

-- Figures not projected due to small sample size but included in Nation totals.

C:

Table 12. Non-English-Language-Background Projections by States, 1976 to 2000  
(Ages 5-14) (continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Rhode Island	13.4	12.3	11.9	13.4	15.1	15.5
South Carolina	--	--	--	--	--	--
South Dakota	2.9	2.6	2.5	2.7	2.9	2.8
Tennessee	--	--	--	--	--	--
Texas	659.1	676.2	737.8	862.7	1,016.2	1,097.3
Utah	12.9	13.7	15.1	17.0	19.4	20.3
Vermont	4.4	4.1	4.0	4.4	4.9	4.9
Virginia	27.4	25.6	25.9	29.5	33.9	35.4
Washington	30.3	28.0	28.1	32.0	36.6	38.1
West Virginia	--	--	--	--	--	--
Wisconsin	19.0	16.7	16.0	18.4	21.0	21.5
Wyoming	4.1	4.0	4.2	4.8	5.5	5.8
Nation	3,846.5	3,636.0	3,683.6	4,197.6	4,817.9	5,049.6

-- Figures not projected due to small sample size but included in Nation totals.

Table 13. Non-English-Language-Background Projections by Language Group and Age Group, 1976 to 2000 (All Ages)

(numbers in thousands)

Year	Language	Age Group					
		0-4	5-14	15-24	25-34	35-54	55+
1976	Spanish	1,113.4	2,396.4	2,054.4	1,766.7	2,251.5	1,026.5
	Asian	176.7	250.1	269.3	386.6	494.3	282.5
	Other*	525.6	1,200.0	1,501.6	1,504.6	4,220.4	6,582.5
	Total	1,815.8	3,846.5	3,825.3	3,639.9	6,966.3	7,981.4
1980	Spanish	1,220.3	2,313.5	2,255.9	2,136.2	2,486.4	1,203.5
	Asian	183.3	228.1	279.9	422.4	516.7	313.7
	Other*	545.1	1,094.5	1,560.4	1,724.1	4,411.3	7,310.9
	Total	1,948.7	3,636.0	4,096.2	4,282.7	7,414.4	8,828.1
1985	Spanish	1,531.9	2,402.9	2,249.1	2,521.0	2,959.5	1,370.6
	Asian	251.1	220.9	259.4	465.6	574.5	333.6
	Other*	639.8	1,059.9	1,446.5	1,900.6	9,905.3	7,773.2
	Total	2,386.9	3,683.6	3,950.0	4,887.2	8,439.3	9,477.4
1990	Spanish	1,696.9	2,802.5	2,170.5	2,784.9	3,641.8	1,515.2
	Asian	222.4	240.6	233.7	480.0	660.8	314.1
	Other*	661.4	1,303.2	1,959.3	5,641.5	5,611.5	8,020.0
	Total	2,580.6	4,197.6	3,707.4	5,224.2	9,944.1	9,879.4
1995	Spanish	1,757.8	3,887.5	2,254.5	2,774.3	4,469.2	1,668.2
	Asian	214.8	263.7	226.4	445.6	757.9	353.6
	Other*	638.8	1,265.5	1,262.2	1,819.0	6,470.3	8,241.0
	Total	2,611.4	4,817.9	3,743.1	5,038.9	11,697.4	10,263.0
2000	Spanish	1,793.0	3,522.0	2,629.4	2,687.9	5,205.8	1,893.2
	Asian	204.2	263.4	246.6	402.2	824.4	374.6
	Other*	607.4	1,264.2	1,374.9	1,641.7	7,038.9	8,730.2
	Total	2,604.7	5,049.6	4,250.9	4,731.7	13,069.2	10,998.0

\* Refers to Non-Spanish/Non-Asian

Table 14. Non-English-Language-Background Projections by Language Group and Major States, 1976 to 2000 (All Ages)

(numbers in thousands)

Year	Language	State			
		California	New York	Texas	Remainder
1976	Spanish	2,970.4	1,472.4	2,568.1	3,598.8
	Asian	717.3	184.4	62.8	878.0
	Other*	1,532.8	2,775.8	409.9	10,818.2
	Total	5,220.5	4,432.8	3,040.8	15,291.0
1980	Spanish	3,345.1	1,562.7	2,907.9	3,931.7
	Asian	764.8	185.2	67.3	913.4
	Other*	1,634.2	2,786.4	439.4	11,420.0
	Total	5,744.1	4,534.3	3,414.6	16,262.0
1985	Spanish	3,804.0	1,677.5	3,369.3	4,341.5
	Asian	812.0	185.4	72.8	954.8
	Other*	1,735.0	2,790.3	475.5	12,066.5
	Total	6,350.9	4,653.2	3,917.6	17,360.0
1990	Spanish	4,305.2	1,805.0	3,877.5	4,791.2
	Asian	857.9	186.1	78.3	994.3
	Other*	1,833.1	2,801.0	511.0	12,702.1
	Total	6,996.3	4,792.1	9,466.7	18,487.6
1995	Spanish	4,830.0	1,937.1	4,414.8	5,255.0
	Asian	898.4	186.3	83.2	1,029.1
	Other*	1,919.7	2,804.1	543.2	13,259.7
	Total	7,648.1	9,927.4	5,041.1	19,542.7
2000	Spanish	5,374.1	2,070.4	4,978.1	5,723.6
	Asian	933.0	185.8	87.6	1,057.0
	Other*	1,993.6	2,795.7	571.7	13,726.9
	Total	8,300.7	5,051.8	5,637.4	20,505.6

\* Refers to Non-Spanish/Non-Asian

Table 15. Limited-English-Proficiency Projections by Language Group, 1976 to 2000  
(Ages 5-14)

(numbers in thousands)

Year	Language Group			
	Spanish	Asian	Other*	Total
1976	1,789.5	125.9	605.0	2,520.4
1980	1,727.6	114.8	551.8	2,394.2
1985	1,744.3	111.2	534.4	2,439.9
1990	2,092.7	121.1	582.1	2,795.9
1995	2,455.8	132.7	638.0	3,226.6
2000	2,630.0	132.6	637.4	3,400.0

\* Refers to Non-Spanish/Non-Asian

Table 16. Limited-English-Proficiency Projections by Age Group, 1976 to 2000 (Ages 5-14)

Year	Age Group		
	5-9	10-14	5-14
1976	1,246.8	1,273.6	2,520.4
1980	1,162.6	1,231.6	2,394.2
1985	1,228.4	1,211.5	2,439.9
1990	1,522.9	1,272.6	2,795.9
1995	1,811.9	1,414.7	3,226.6
2000	1,838.2	1,561.8	3,400.0

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Table 17. Limited-English-Proficiency Projections by Major States, 1976 to 2000 (Ages 5-14)

(numbers in thousands)

Year	State				
	California	New York	Texas	Remainder	Total
1976	609.9	455.1	509.4	947.0	2,520.4
1980	580.6	411.6	523.3	880.7	2,394.2
1985	606.8	394.2	571.8	868.1	2,439.9
1990	712.9	442.6	669.4	972.0	2,795.9
1995	839.0	503.4	789.5	1,095.7	3,226.6
2000	902.5	526.4	853.5	1,119.6	3,400.0

Table 18. Limited-English-Proficiency Projections by States, 1976 to 2000 (Ages 5-14)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Alabama	--	--	--	--	--	--
Alaska	5.4	5.8	6.0	6.8	7.7	7.8
Arizona	73.4	76.9	86.7	103.2	123.1	133.2
Arkansas	--	--	--	--	--	-
California	609.9	580.6	606.8	712.9	839.0	902.5
Colorado	33.7	34.2	37.2	44.6	53.2	57.5
Connecticut	31.3	27.0	25.1	28.7	32.8	34.0
Delaware	2.7	2.4	2.4	2.8	3.2	3.3
District of Columbia	2.9	2.5	2.3	2.2	2.3	2.2
Florida	84.1	89.0	99.9	120.4	145.9	160.6
Georgia	11.0	11.0	11.1	12.0	13.3	13.5
Hawaii	21.0	20.5	20.8	23.0	25.5	25.8
Idaho	5.5	5.5	6.0	7.0	8.1	8.6

-- Figures not projected due to small sample size but included in Nation totals.

Table 18. Limited-English-Proficiency Projections by States, 1976 to 2000 (Ages 5-14)  
(continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Illinois	84.5	78.3	78.0	87.3	98.6	101.8
Indiana	25.1	23.2	22.7	24.9	27.7	28.1
Iowa	6.0	5.2	5.0	5.6	6.3	6.4
Kansas	8.2	7.5	7.4	8.2	9.1	9.3
Kentucky	--	--	--	--	--	--
Louisiana	41.0	38.7	37.5	40.0	43.3	42.9
Maine	7.7	7.0	6.9	7.7	8.6	8.7
Maryland	18.0	16.6	16.1	18.3	20.9	21.7
Massachusetts	41.5	39.0	36.9	42.5	48.9	50.8
Michigan	29.4	26.7	25.8	28.6	31.7	31.9
Minnesota	10.2	9.0	8.7	9.9	11.3	11.5
Mississippi	--	--	--	--	--	--
Missouri	8.1	7.1	6.9	7.6	8.3	8.3

-- Figures not projected due to small sample size but included in Nation totals.

Table 18. Limited-English-Proficiency Projections by States, 1976 to 2000 (Ages 5-14)  
(continued)

(number in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Montana	3.4	3.1	3.2	3.5	3.9	3.9
Nebraska	5.8	5.5	5.6	6.5	7.6	8.0
Nevada	5.3	5.4	5.7	6.6	7.8	8.3
New Hampshire	5.6	5.1	4.9	5.6	6.3	6.4
New Jersey	83.3	78.4	77.0	88.8	103.2	109.1
New Mexico	69.2	68.9	73.9	86.0	100.5	106.4
New York	455.1	411.6	394.2	442.6	503.4	526.4
North Carolina	--	--	--	--	--	--
North Dakota	2.4	2.1	2.0	2.2	2.5	2.4
Ohio	41.4	36.3	34.6	37.6	40.8	40.5
Oklahoma	15.8	15.2	15.7	17.3	19.3	19.7
Oregon	10.5	9.8	10.0	11.4	13.0	13.5
Pennsylvania	65.9	58.3	55.5	61.6	68.7	69.5

-- Figures not projected due to small sample size but included in Nation totals.

Table 18. Limited-English-Proficiency Projections by States, 1976 to 2000 (Ages 5-14  
(continued)

(numbers in thousands)

State	Year					
	1976	1980	1985	1990	1995	2000
Rhode Island	7.1	6.5	6.4	7.2	8.2	8.4
South Carolina	--	--	--	--	--	--
South Dakota	1.8	1.6	1.5	1.6	1.8	1.7
Tennessee	--	--	--	--	--	--
Texas	509.4	523.3	571.8	669.4	789.5	853.5
Utah	7.2	7.7	8.5	9.6	11.0	11.5
Vermont	2.2	2.1	2.0	2.2	2.5	2.5
Virginia	14.6	13.6	13.8	15.8	18.2	19.1
Washington	17.8	16.5	16.6	18.9	21.6	22.6
West Virginia	--	--	--	--	--	--
Wisconsin	8.2	7.7	7.0	8.0	9.2	9.4
Wyoming	2.1	2.1	2.2	2.5	2.9	3.0
Nation	2,520.4	2,394.2	2,439.9	2,795.9	3,226.6	3,400.0

-- Figures not projected due to small sample size but included in Nation totals.

Table 19. Limited-English-Proficiency Projections by Language Group and Age Group, 1976 to 2000 (Ages 5-14)

(numbers in thousands)

Year	Language	Age Group		
		5-9	10-14	5-14
1976	Spanish	886.1	903.4	1,789.5
	Asian	70.2	55.7	125.9
	Other*	290.5	314.5	605.0
	Total	1,246.8	1,273.6	2,520.4
1980	Spanish	839.8	887.8	1,727.6
	Asian	62.8	52.0	114.8
	Other*	260.0	291.8	551.8
	Total	1,162.6	1,231.6	2,394.2
1985	Spanish	904.1	890.2	1,794.3
	Asian	63.1	48.1	111.2
	Other*	261.2	273.2	539.4
	Total	1,228.3	1,211.5	2,439.9
1990	Spanish	1,140.5	952.2	2,092.7
	Asian	74.4	49.0	121.1
	Other*	308.0	274.1	582.1
	Total	1,522.9	1,272.6	2,795.9
1995	Spanish	1,379.6	1,076.2	2,455.8
	Asian	84.1	52.0	132.7
	Other*	348.2	289.8	638.0
	Total	1,811.9	1,414.7	3,226.6
2000	Spanish	1,422.6	1,207.4	2,630.0
	Asian	80.9	54.0	132.6
	Other*	334.7	303.2	637.4
	Total	1,838.2	1,561.8	3,400.0

\* Refers to Non-Spanish/Non-Asian

Table 20. Limited-English-Proficiency Projections by Language Group and Major States, 1976 to 2000 (Ages 5-14)

(numbers in thousands)

Year	Language	State			
		California	New York	Texas	Remainder
1976	Spanish	505.1	332.6	484.9	466.9
	Asian	45.7	--	--	62.3
	Other*	59.1	107.8	21.3	416.8
	Total	609.9	455.1	509.4	946.0
1980	Spanish	485.5	305.5	499.5	437.1
	Asian	41.5	--	--	57.7
	Other*	53.6	93.5	20.8	383.9
	Total	580.6	411.6	523.3	878.7
1985	Spanish	513.0	297.8	547.4	436.1
	Asian	40.9	--	--	55.6
	Other*	52.9	84.9	21.2	375.4
	Total	606.8	394.2	571.8	867.1
1990	Spanish	608.9	339.9	642.6	501.3
	Asian	45.4	--	--	60.0
	Other*	58.6	90.5	23.3	409.7
	Total	712.9	442.6	669.4	971.0
1995	Spanish	723.6	392.6	759.9	579.7
	Asian	50.4	--	--	65.2
	Other*	65.1	97.6	25.7	449.6
	Total	839.0	503.4	789.5	1094.7
2000	Spanish	785.6	416.7	823.6	604.1
	Asian	51.0	--	--	64.6
	Other*	65.9	96.6	26.0	448.9
	Total	902.5	526.4	853.5	1117.6

-- Figures not projected due to small sample size but included in State totals.

\* Refers to Non-Spanish/Non-Asian

Table 21. Exogamy Rates for Selected Racial and Ethnic Groups

	<u>Men</u>	<u>Women</u>
<u>A. All Married Couples in 1970</u>		
White to non-White	.4%	.3%
Negro to non-Negro	1.5	.8
Japanese to non-Japanese	11.0	33.0
Chinese to non-Chinese	13.0	12.0
Hispanic to non-Hispanic	18.0	18.0
 <u>B. Married Couples by Decade of Marriage</u>		
(first marriage only)		
Hispanic to non-Hispanic		
1960-70	19.0	19.0
1950-59	14.0	14.0
1940-49	13.0	13.0
Mexican to non-Hispanic		
1960-70	17.0	17.0
1950-59	11.0	11.0
1940-49	8.0	7.0

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Source: 1970 Census of Population. Special Report: Marital Status, pp. 262-268.

Table 22. Language Questions 1969-1980\*

Language Questions	1969 CPS	1970 Census	1975 CPS	1976** SIE	1979 CPS	1980 Census
1. Current Individual Language	-	-	B, D	B, C	A	A
2. Current Household Language	A	-	A, B	A, B	-	-
3. Mother Tongue	B	-	B	A	B	-
4. Speak and Understand	C	-	D	A, B	A	A
5. Read and Write	A, B, C	-	-	-	C, D	-
6. Relevant Background	A, D, E, F	A, C, D, E, F	A, B, F	A, B, F	A, B, C, D, E, F	A, B, C, F
* See Appendix G						
** These questions also appear in the 1978 CESS study of children in non-English households						

*Appendix E:*

**List of Figures**

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Figure 1. Limited-English-Proficiency Flowchart of Data Inputs and Processes

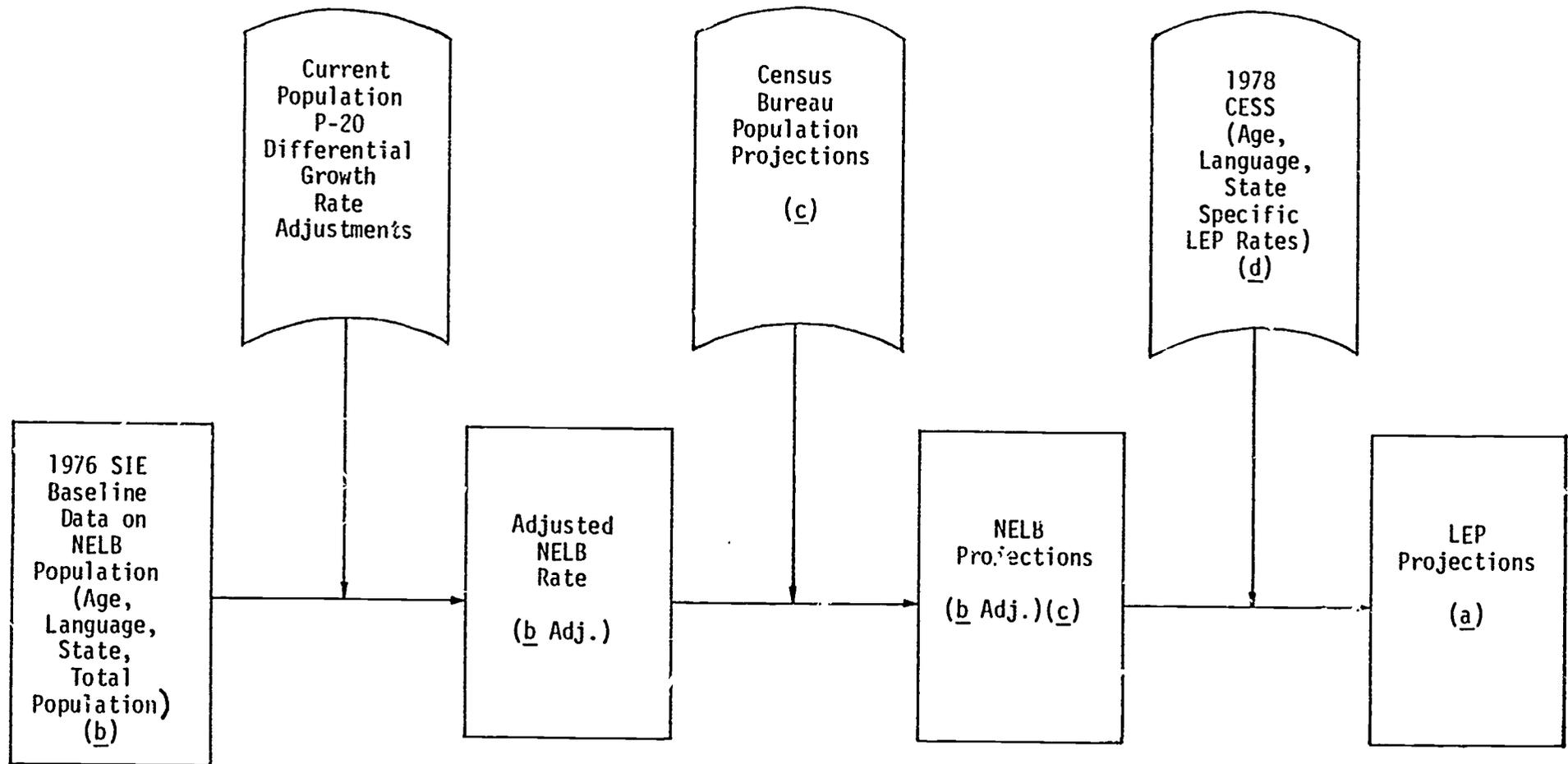


Figure 2. Non-English-Language-Background Projections by Language Group, 1976 to 2000 (All Ages)

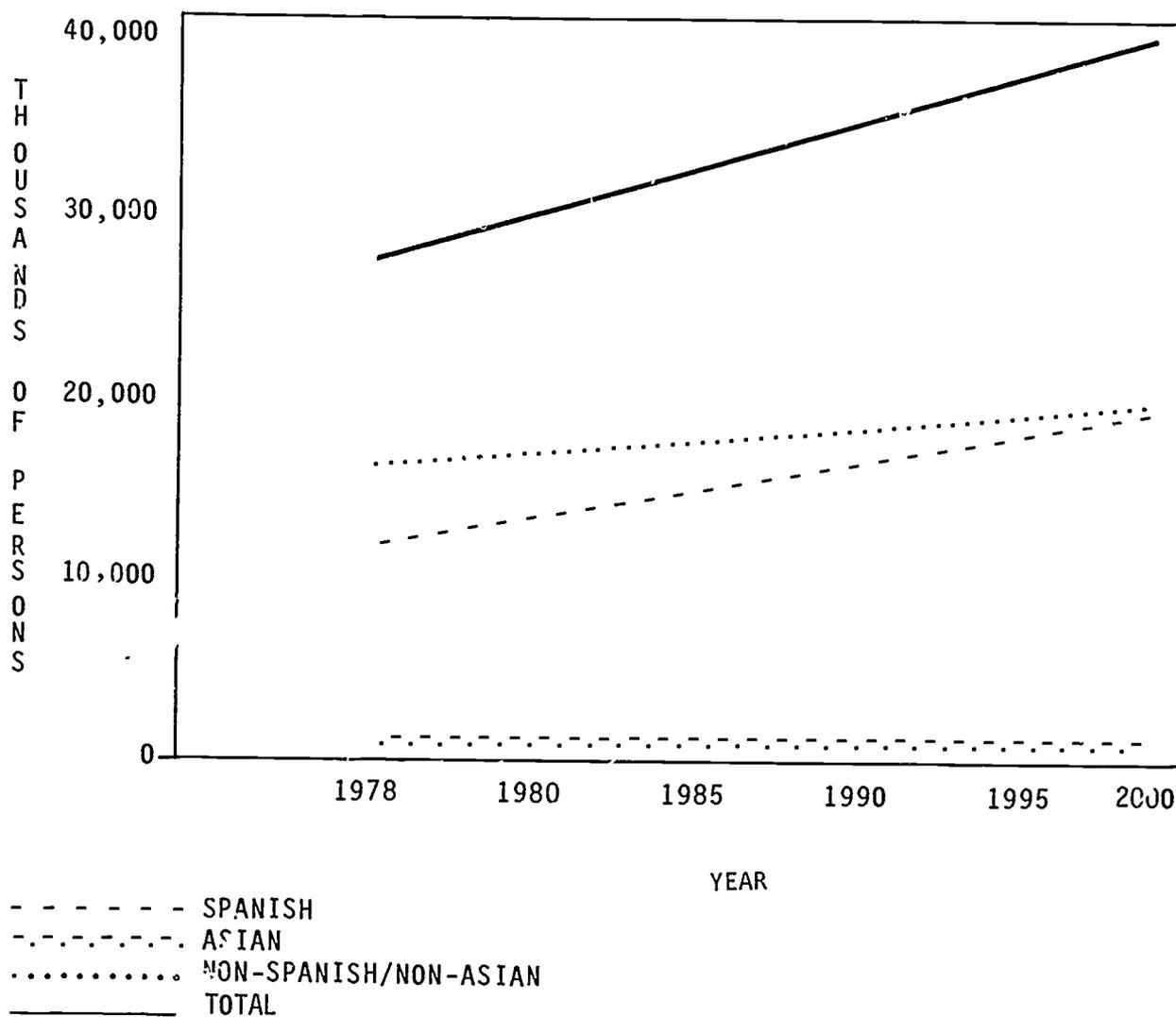
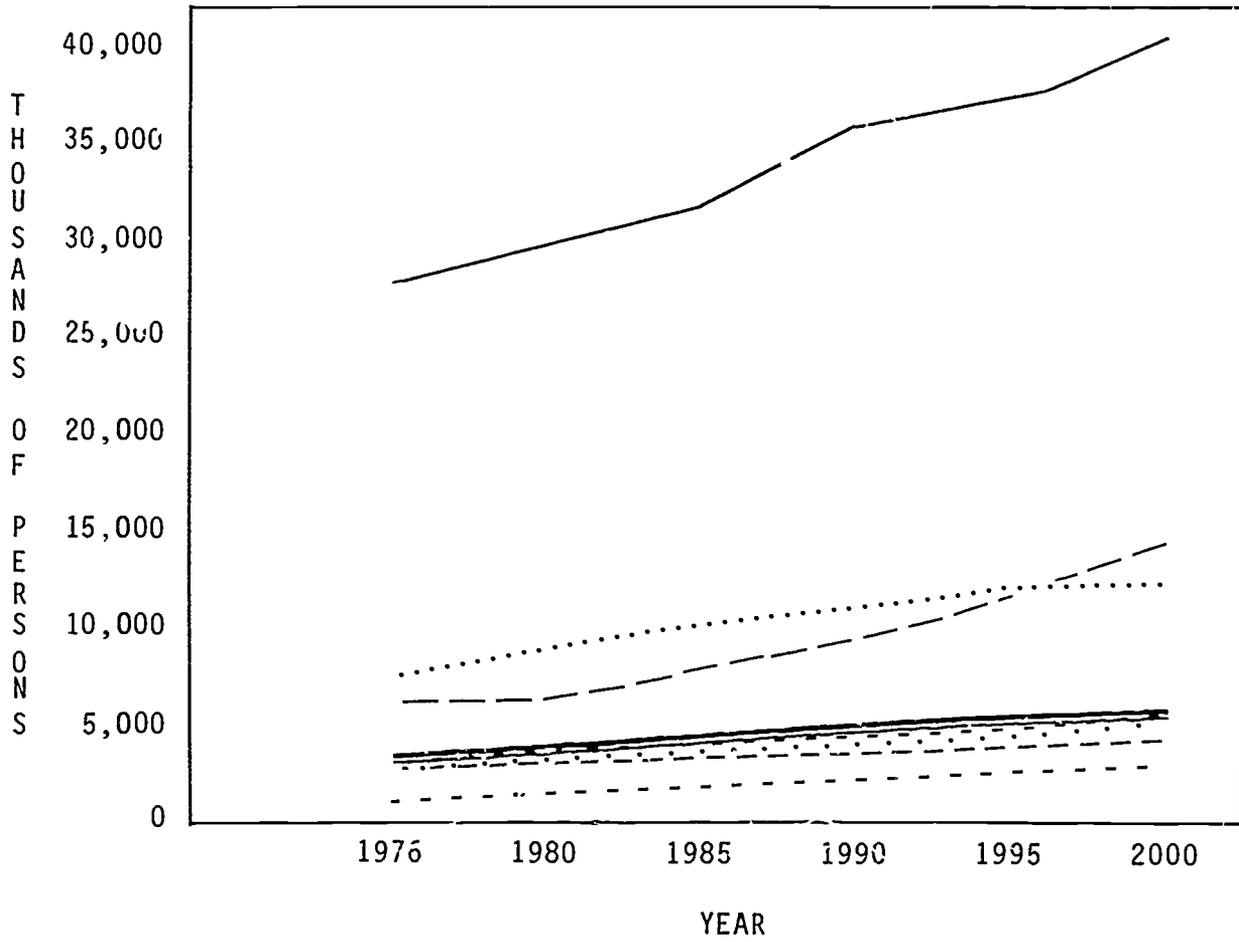
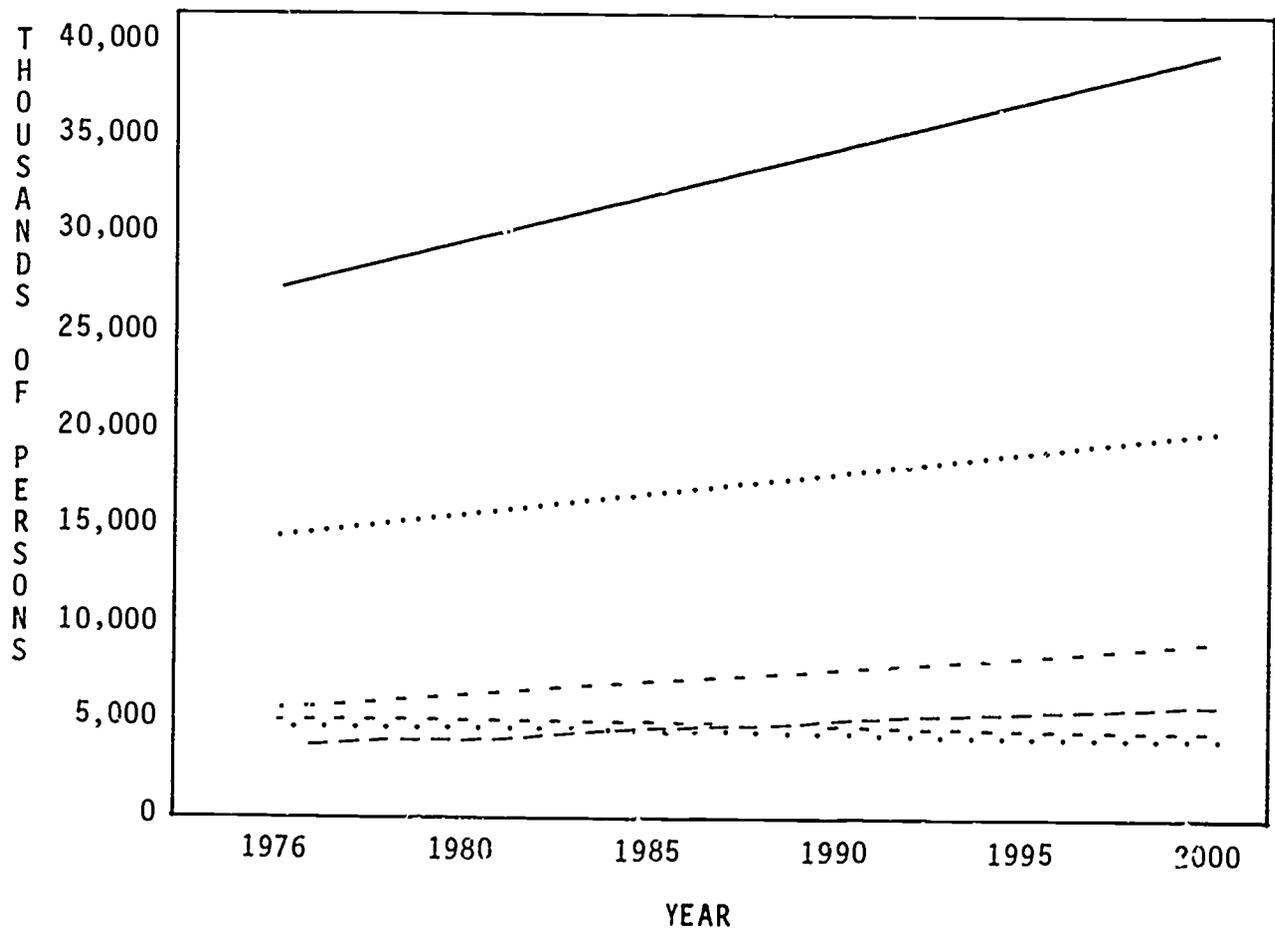


Figure 3. Non-English-Language-Background Projections by Age Group, 1976 to 2000  
(All Ages)



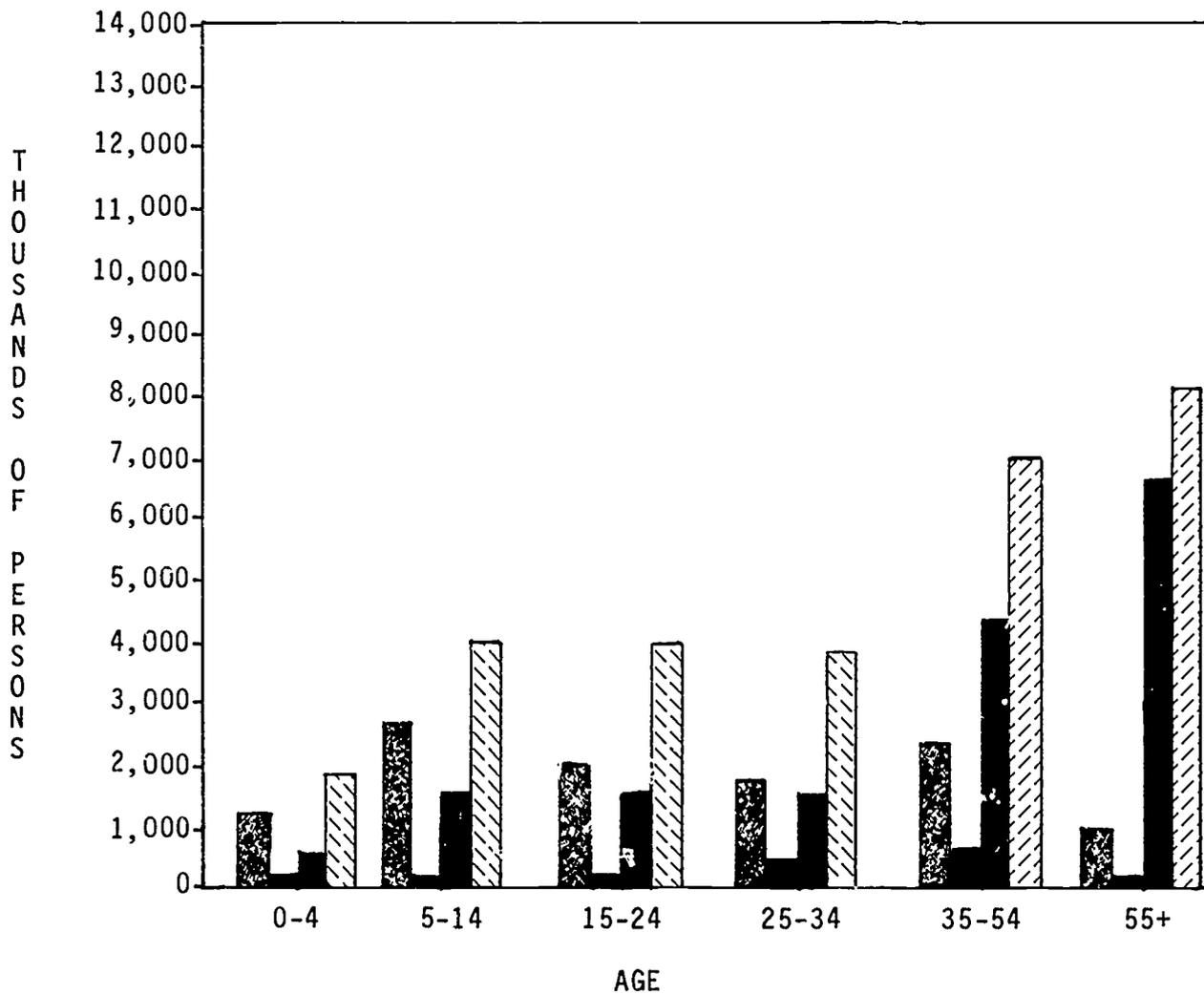
- 0-4
- .-.-.- 5-14
- 15-24
- ===== 25-34
- 35-54
- ..... 55-PLUS
- ===== TOTAL

Figure 4. Non-English-Language-Background Projections by Major States, 1976 to 2000 (All Ages)



- - - - - CALIFORNIA  
 - . - . - . NEW YORK  
 - - - - - TEXAS  
 . . . . . REMAINDER  
 \_\_\_\_\_ TOTAL

Figure 5. Non-English-Language-Background Projections by Language Group and Age Group, 1976 (All Ages)



SPANISH  
 ASIAN  
 NON-SPANISH/NON-ASIAN  
 TOTAL

Figure 6. Non-English-Language-Background Projections by Language Group and Age Group, 1980 (All Ages)

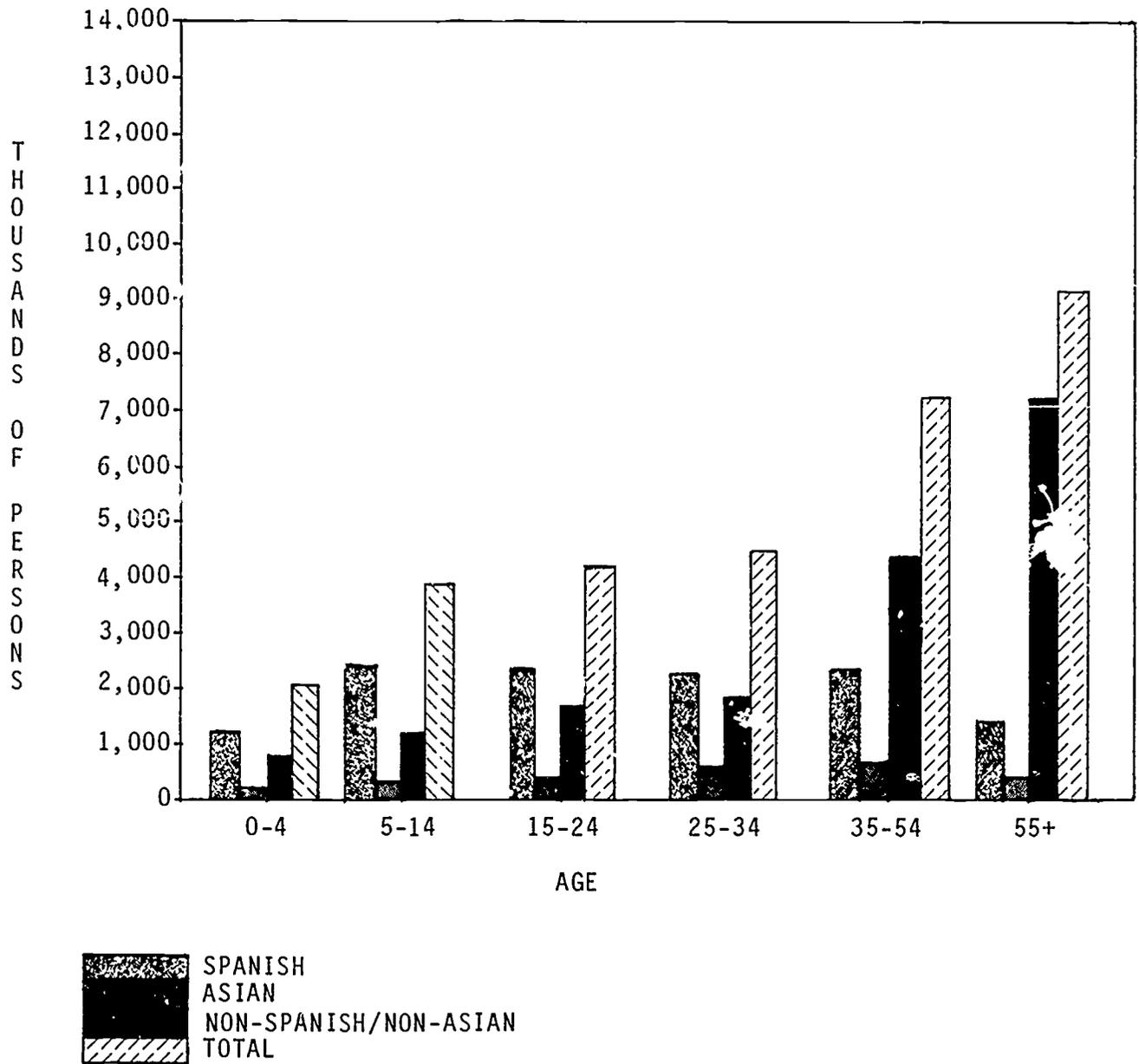


Figure 7. Non-English-Language-Background Projections by Language Group and Age Group, 1985 (All Ages)

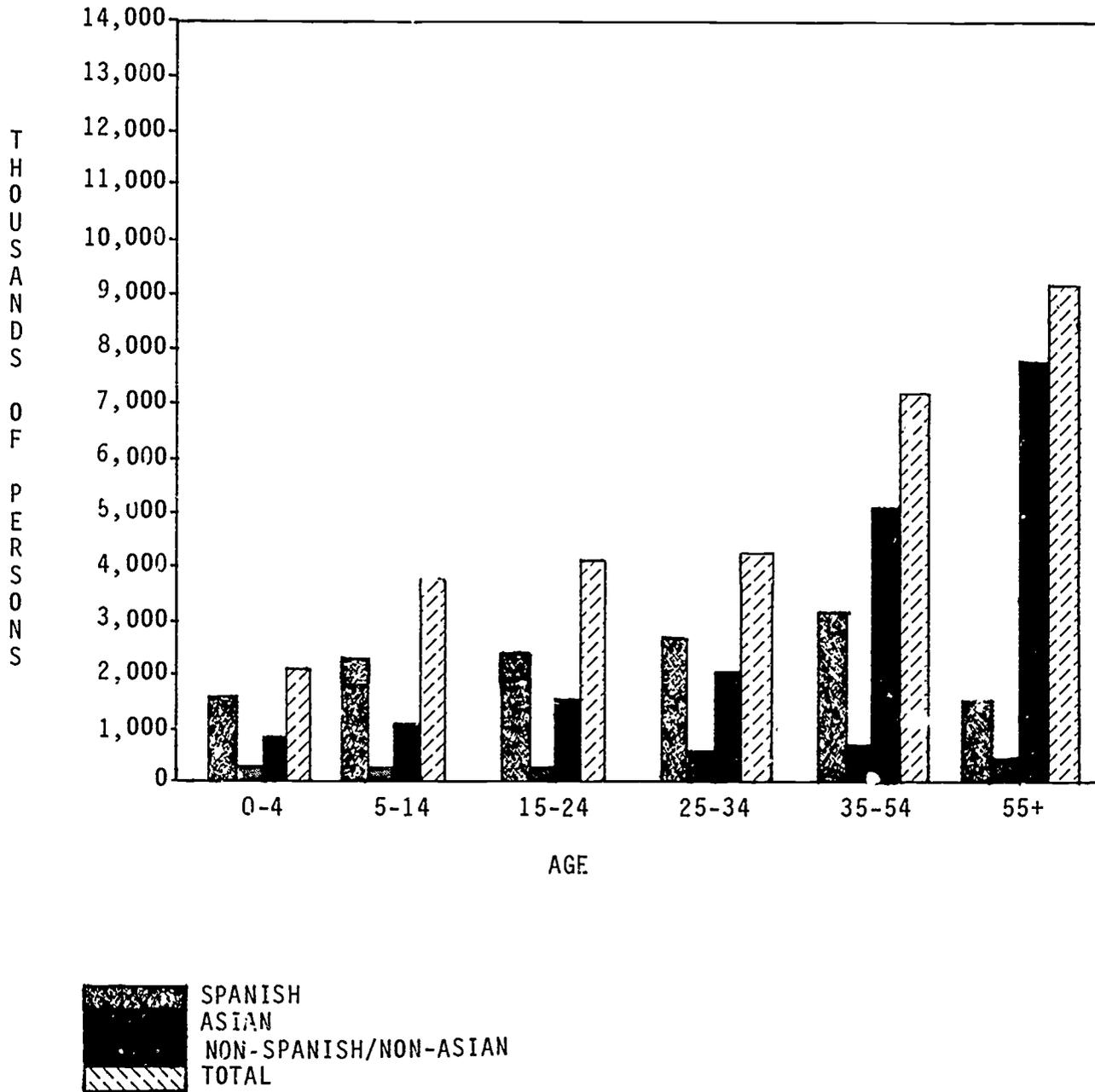
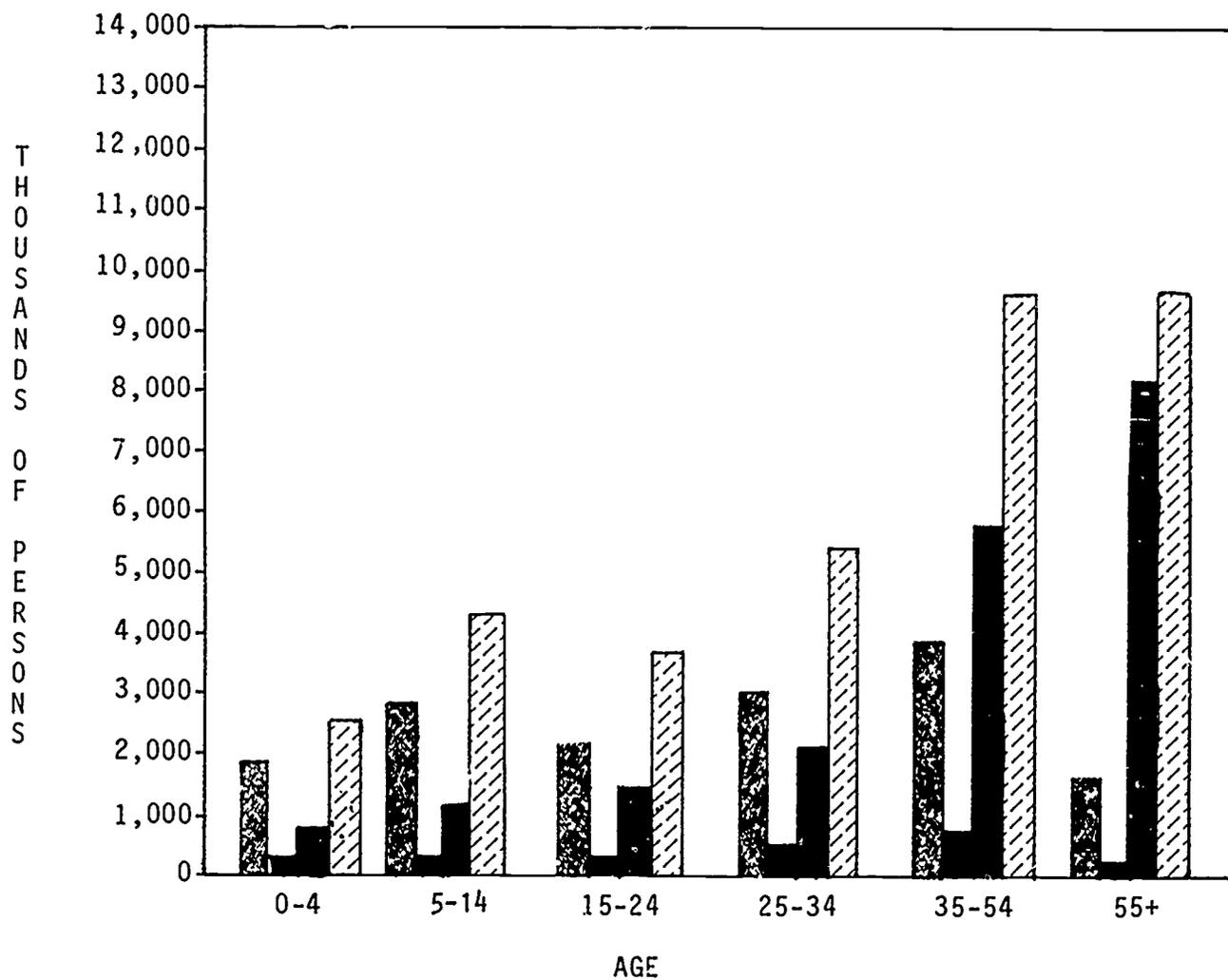


Figure 8. Non-English-Language-Background Projections by Language Group and Age Group, 1990 (All Ages)




 SPANISH  
 ASIAN  
 NON-SPANISH/NON-ASIAN  
 TOTAL

Figure 9. Non-English-Language-Background Projections by Language Group and Age Group, 1995 (All Ages)

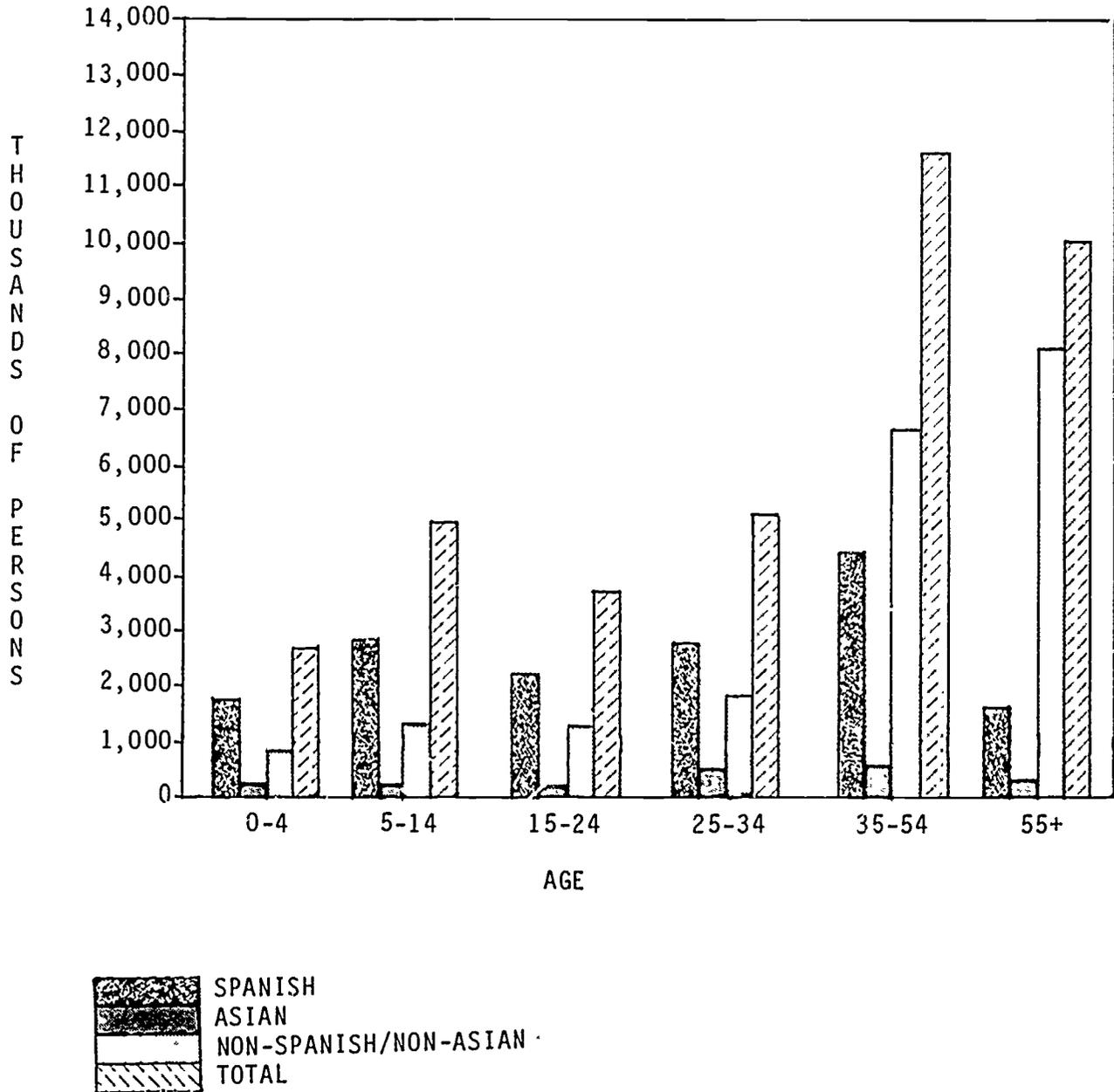
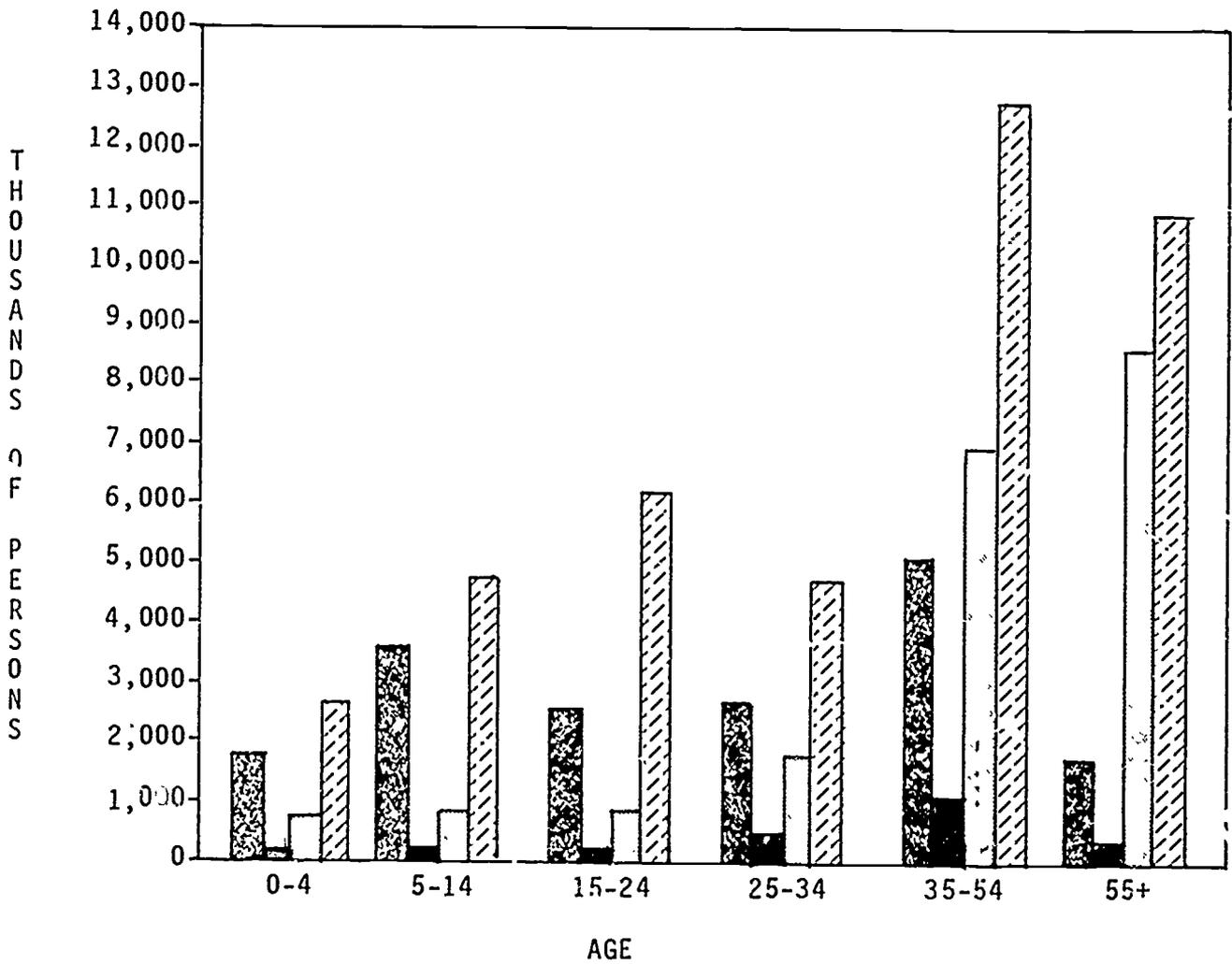


Figure 10. Non-English-Language-Background Projections by Language Group and Age Group, 2000 (All Ages)




 SPANISH  
 ASIAN  
 NON-SPANISH/NON-ASIAN  
 TOTAL

Figure 11. Non-English-Language-Background Projections by Language Group and Major States, 1976 (All Ages)

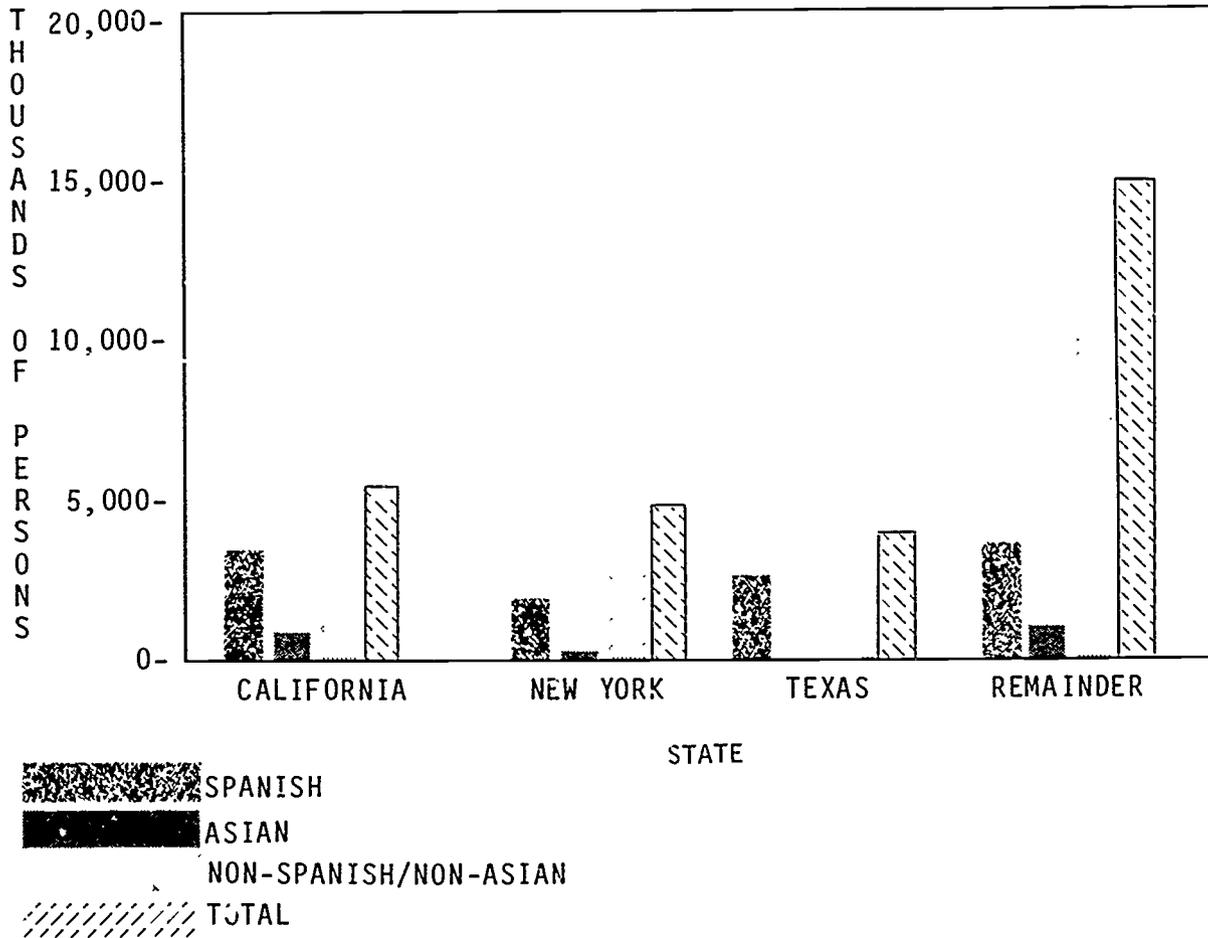


Figure 12. Non-English-Language-Background Projections by Language Group and Major States, 1980 (All Ages)

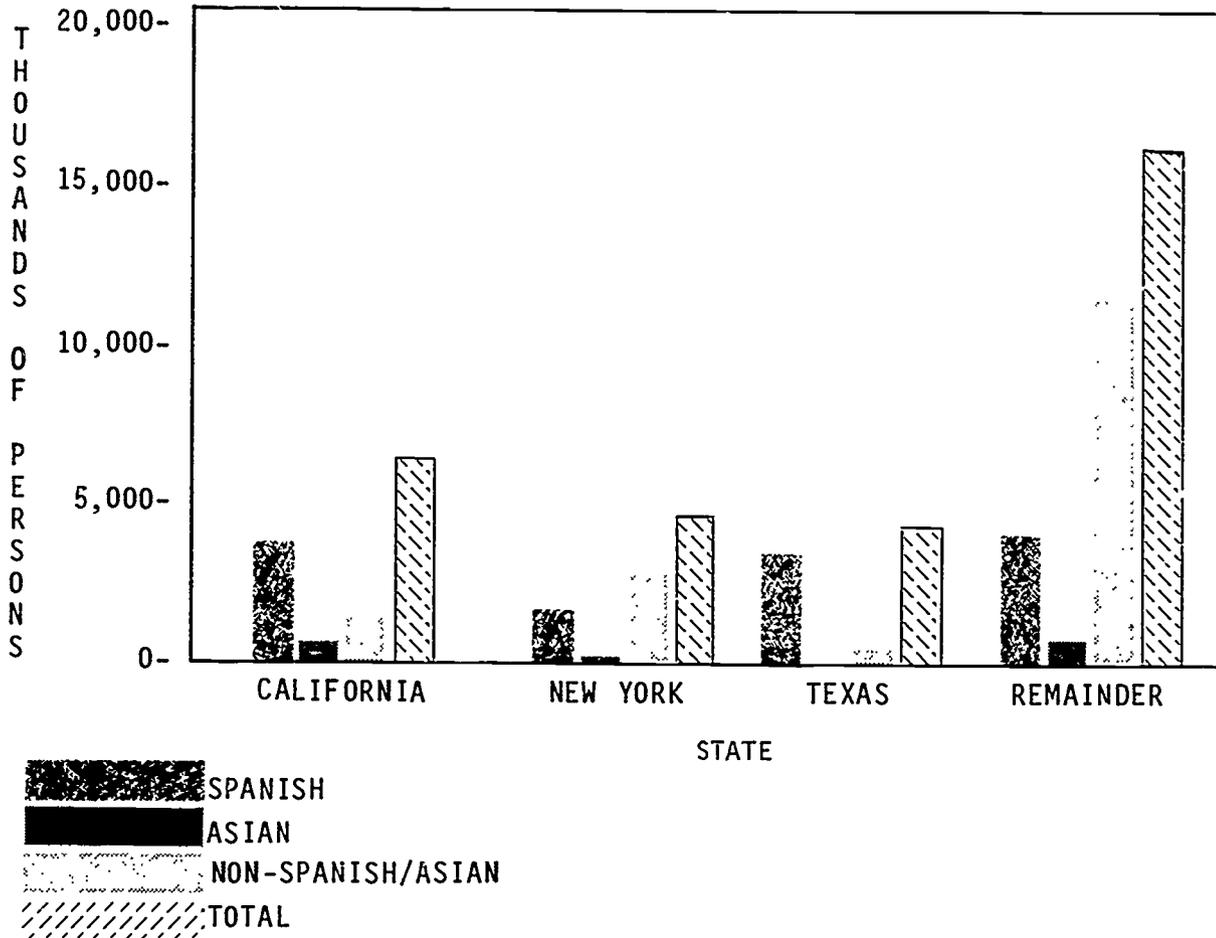


Figure 13. Non-English-Language-Background Projections by Language Group and Major States, 1985 (All Ages)

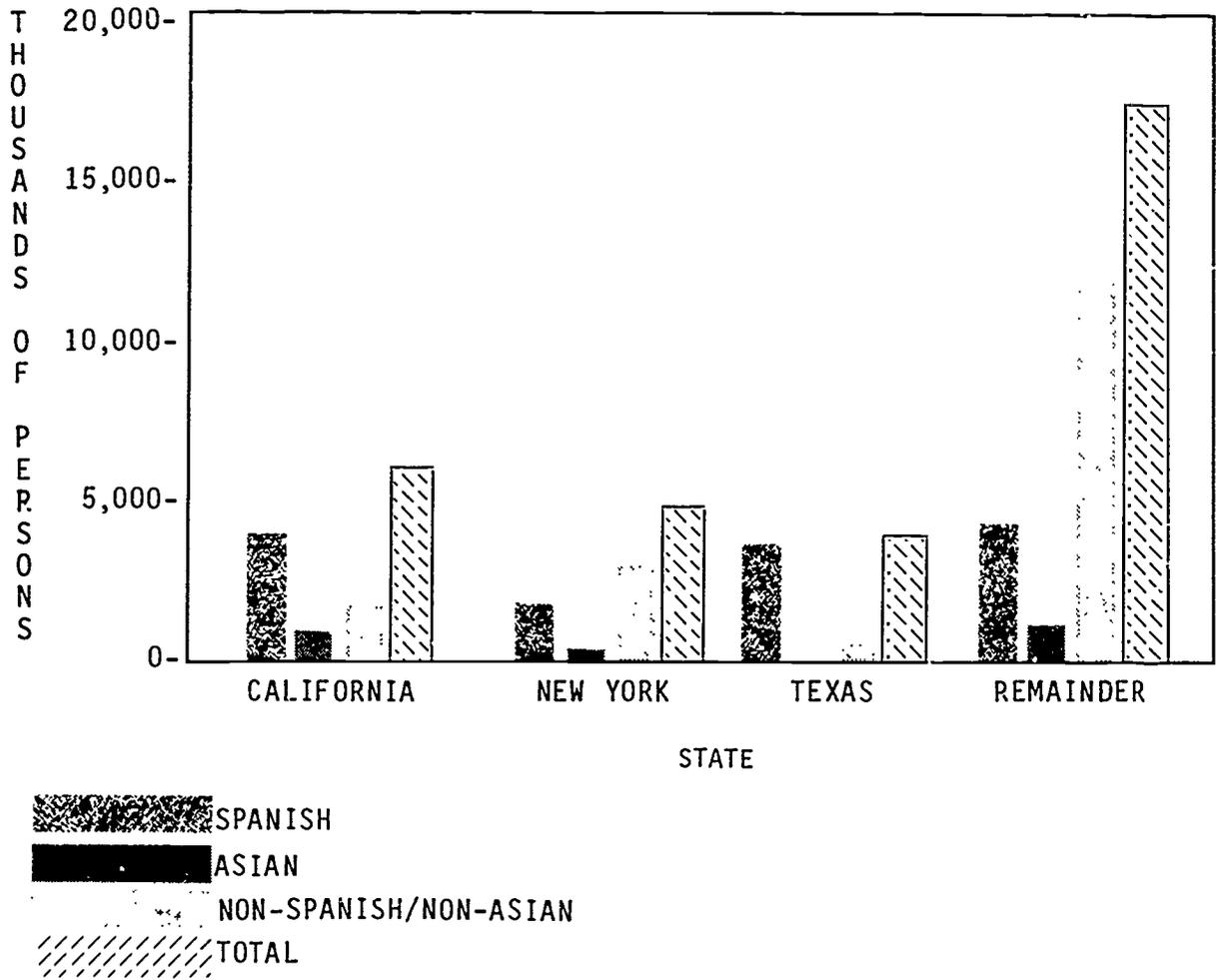


Figure 14. Non-English-Language-Background Projections by Language Group and Major States, 1990 (All Ages)

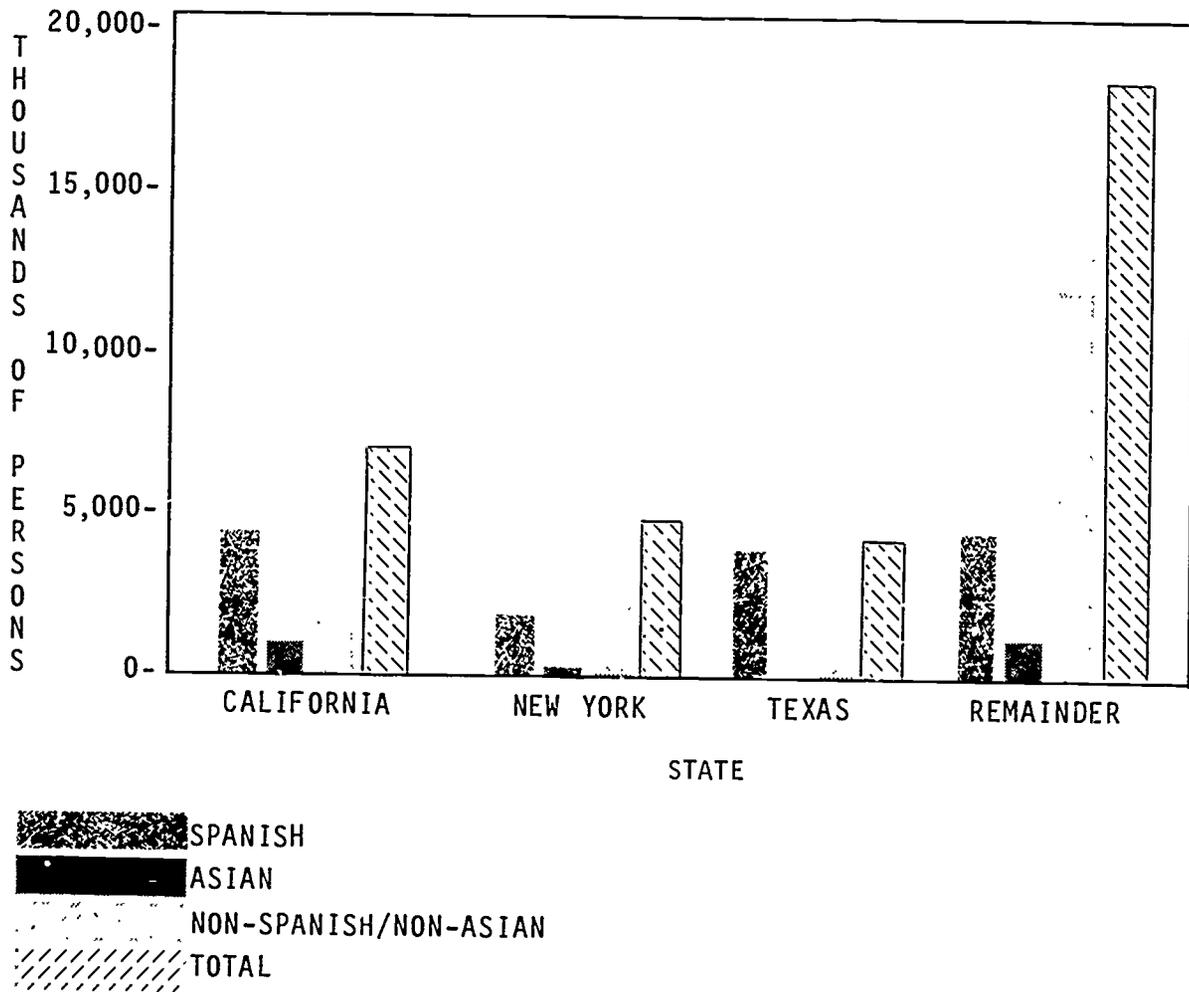


Figure 15. Non-English-Language-Background Projections by Language Group and Major States, 1995 (All Ages)

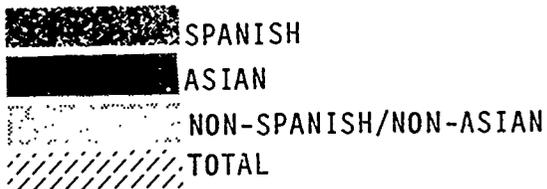
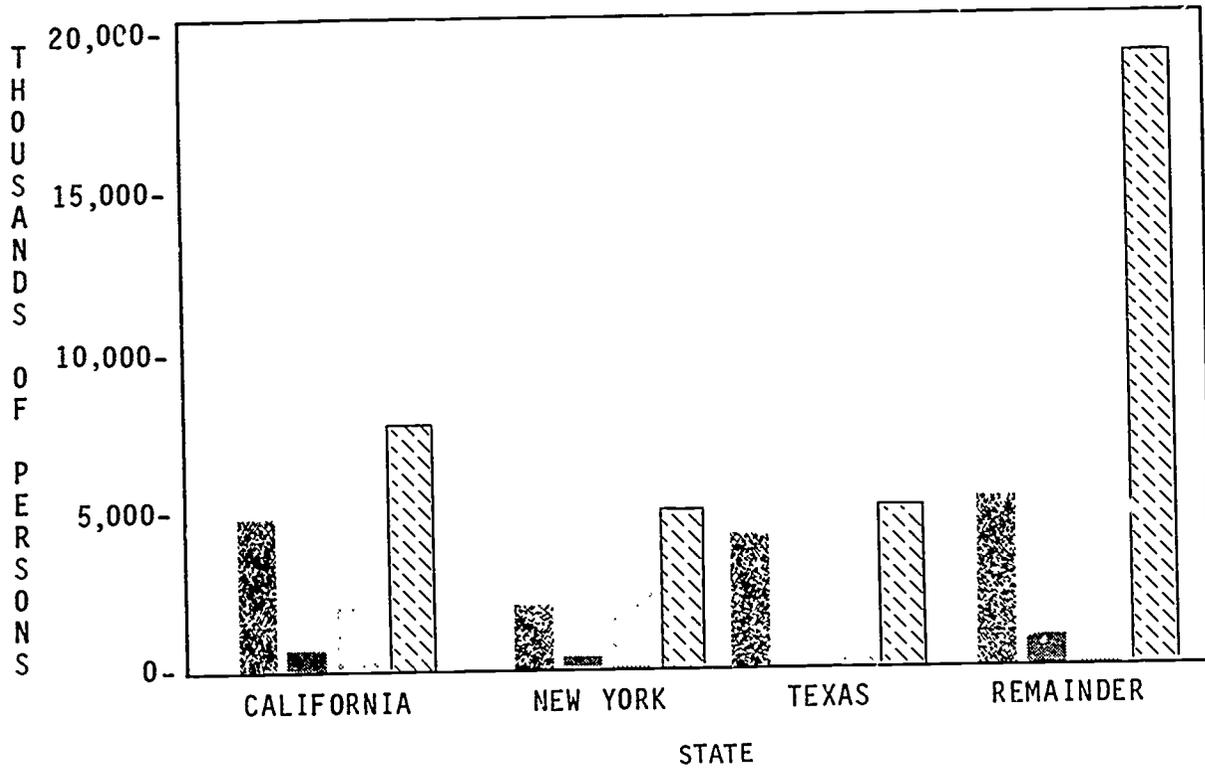


Figure 16. Non-English-Language-Background Projections by Language Group and Major States, 2000 (All Ages)

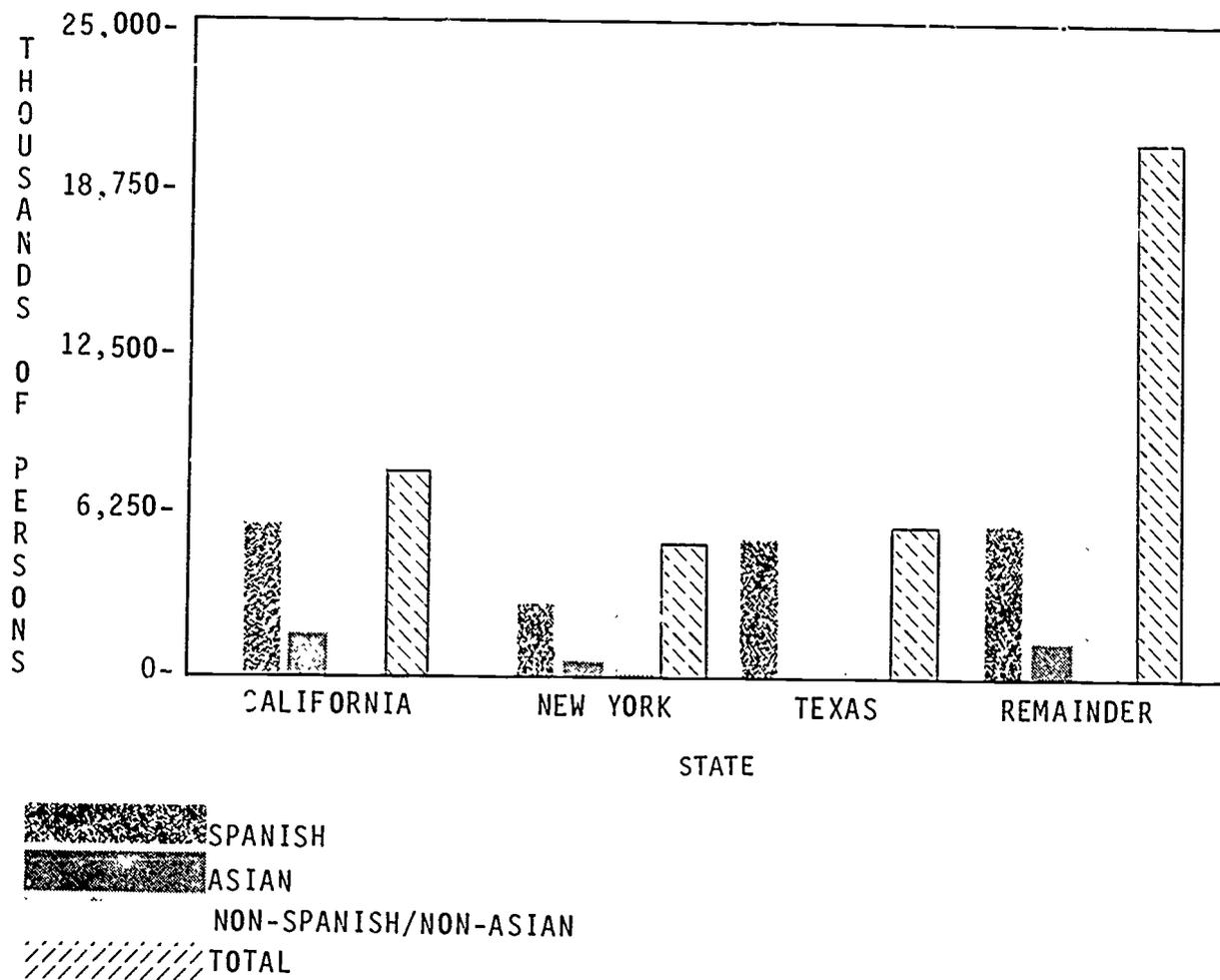


Figure 17. Limited-English-Proficiency Projections by Language Group, 1976 to 2000  
(Ages 5-14)

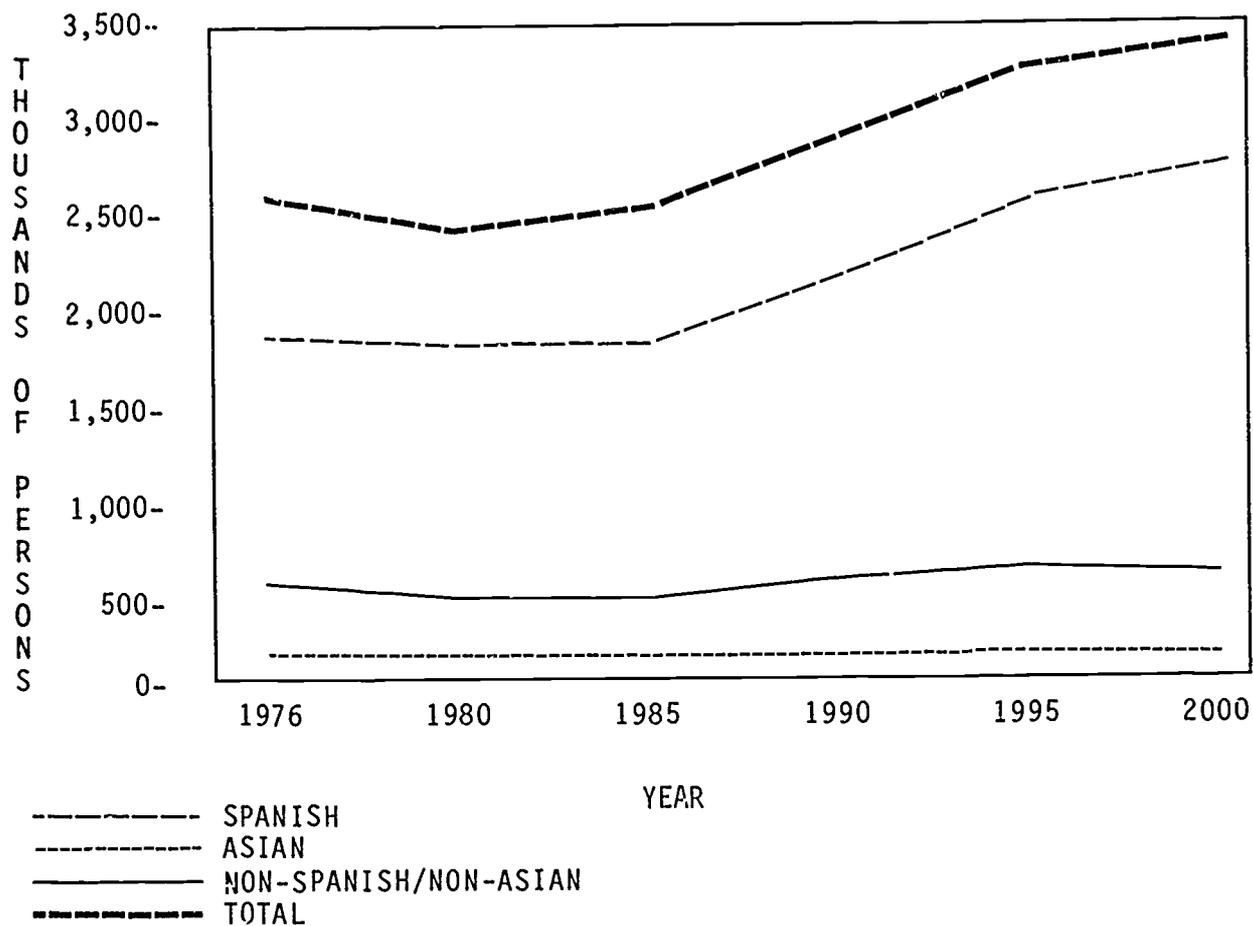


Figure 18. Limited-English-Proficiency Projections by Age Group, 1976 to 2000 (Ages 5-14)

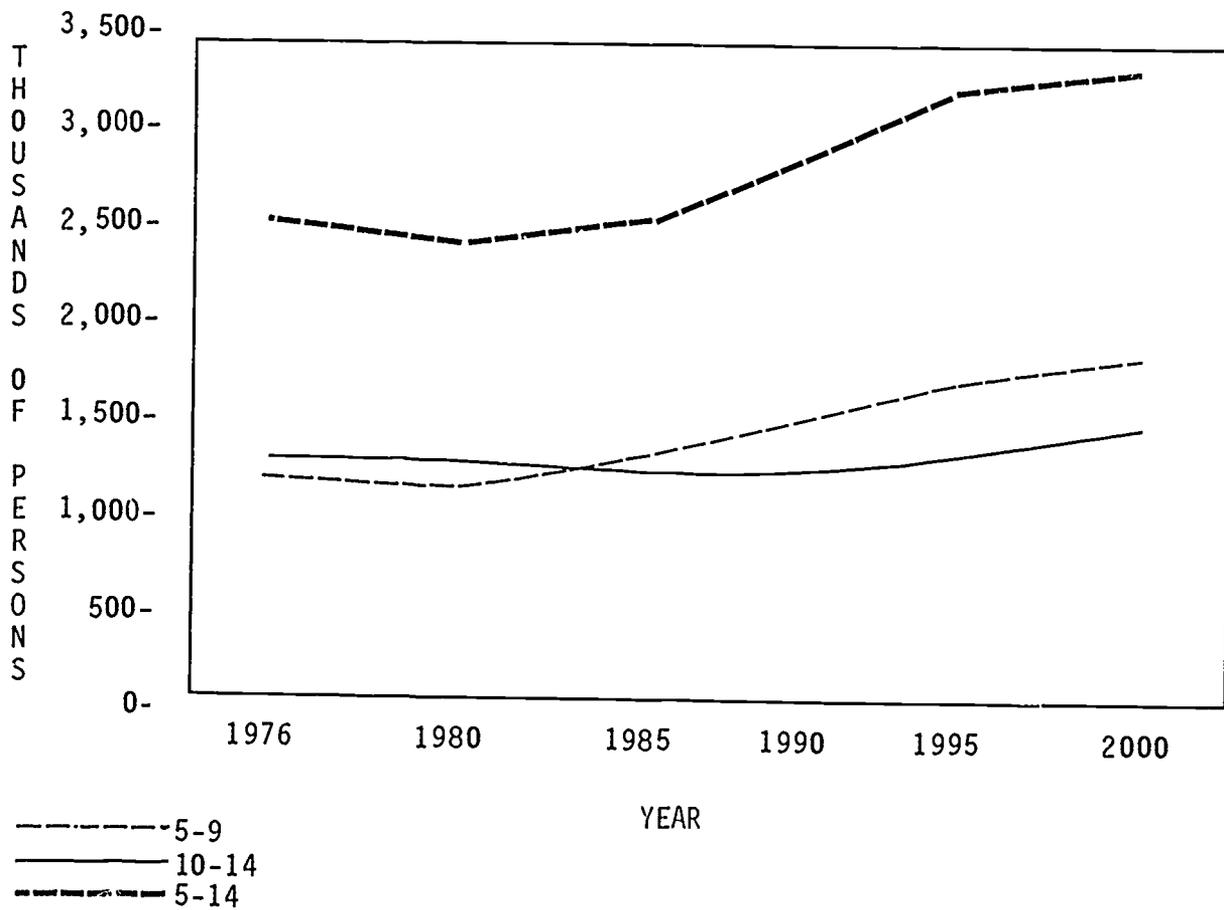


Figure 19. Limited-English-Proficiency Projections by Major States, 1976 to 2000 (Ages 5-14)

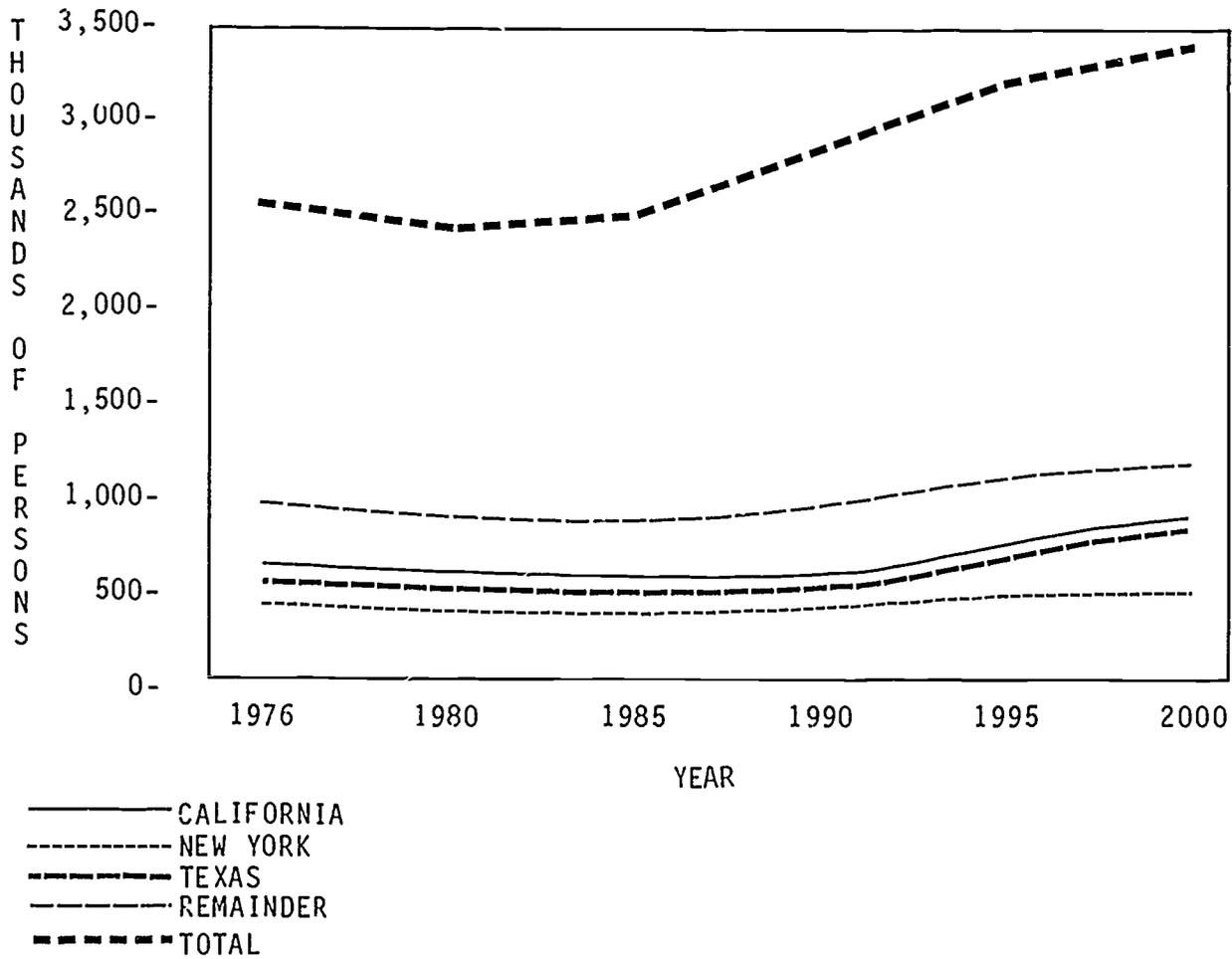


Figure 20. Limited-English-Proficiency Projections by Language Group and Age Group, 1976 (Ages 5-14)

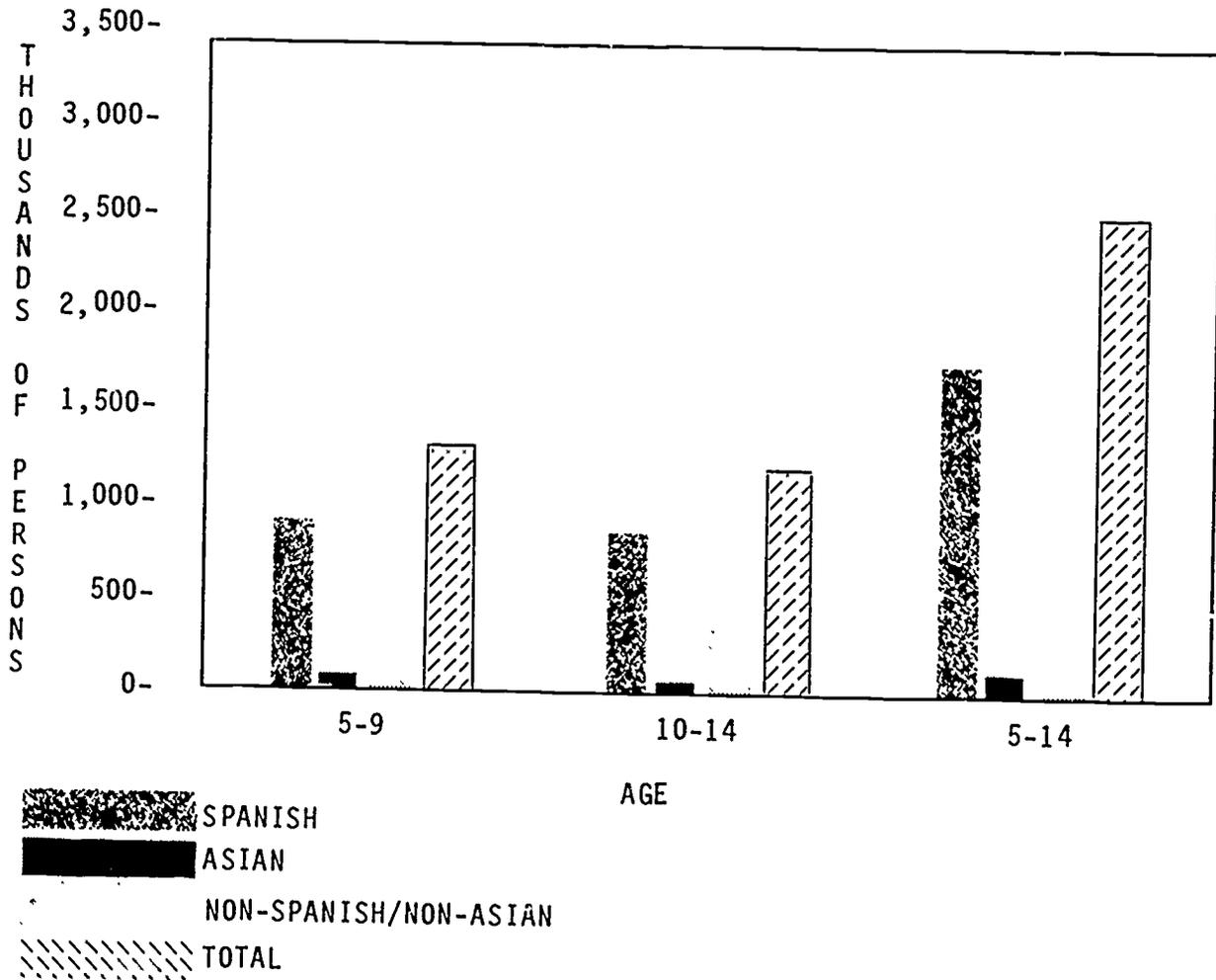


Figure 21. Limited-English-Proficiency Projections by Language Group and Age Group, 1980 (Ages 5-14)

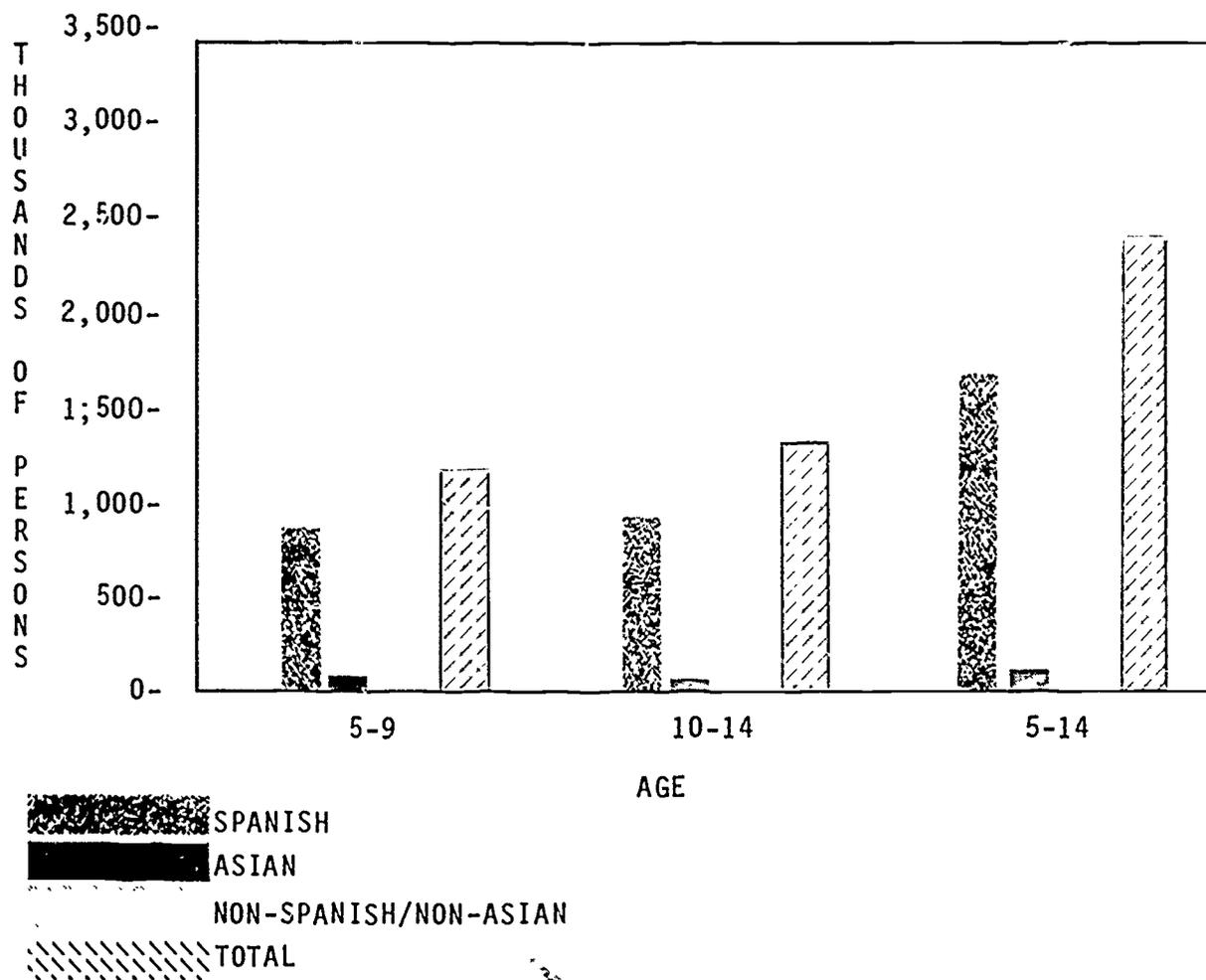


Figure 22. Limited-English-Proficiency Projections by Language Group and Age Group, 1985 (Ages 5-14)

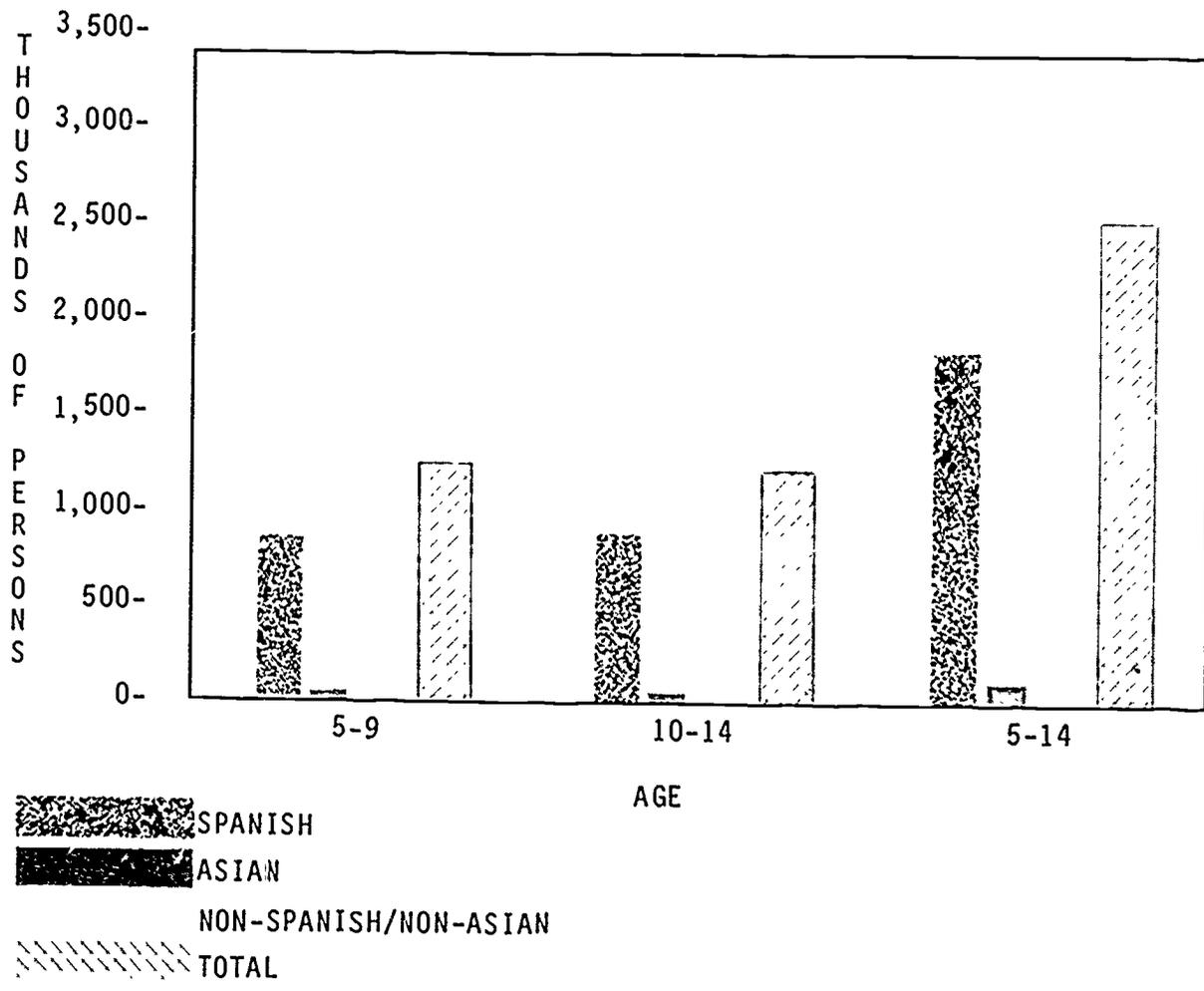


Figure 23. Limited-English-Proficiency Projections by Language Group and Age Group, 1990 (Ages 5-14)

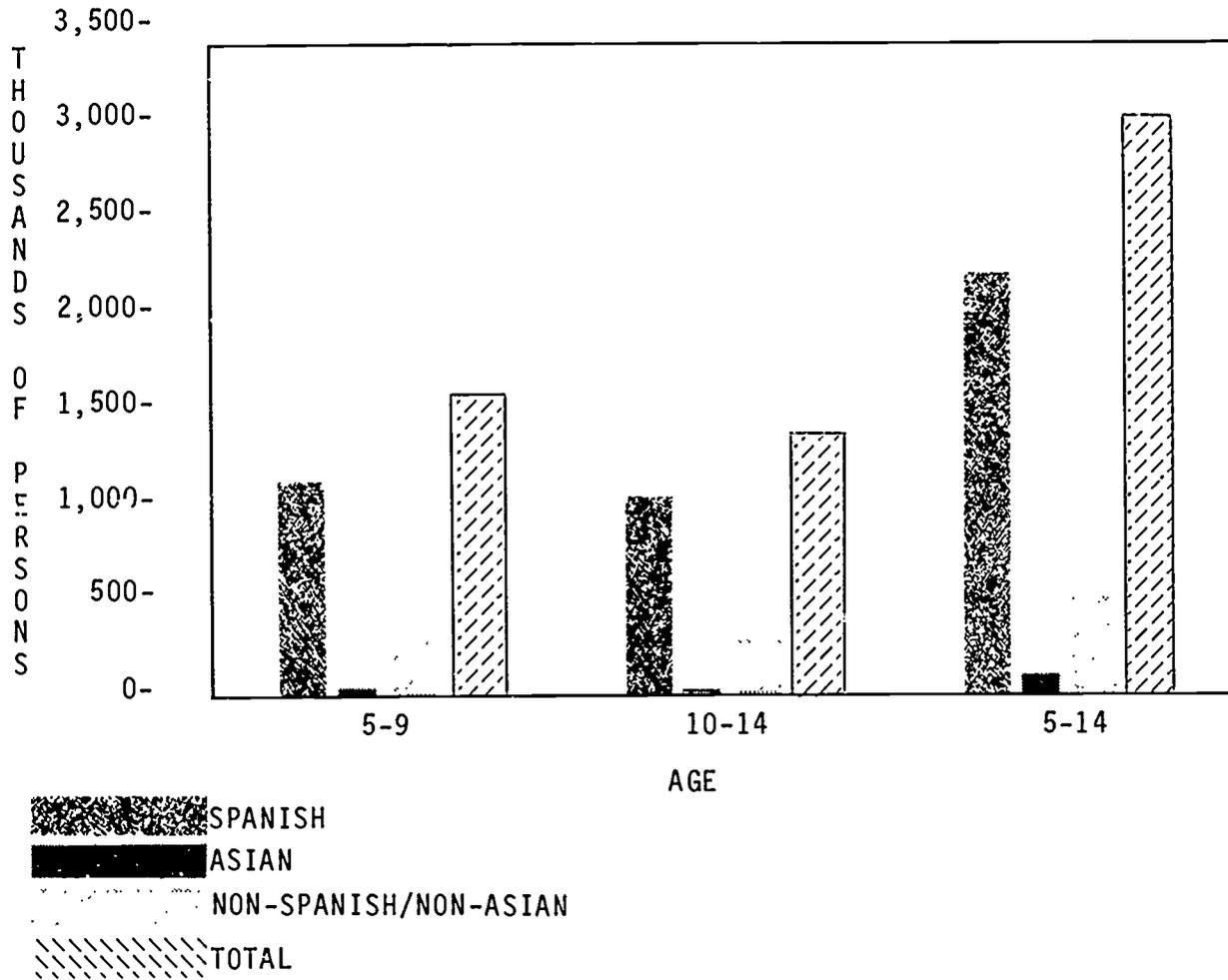


Figure 24. Limited-English-Proficiency Projections by Language Group and Age Group, 1995 (Ages 5-14)

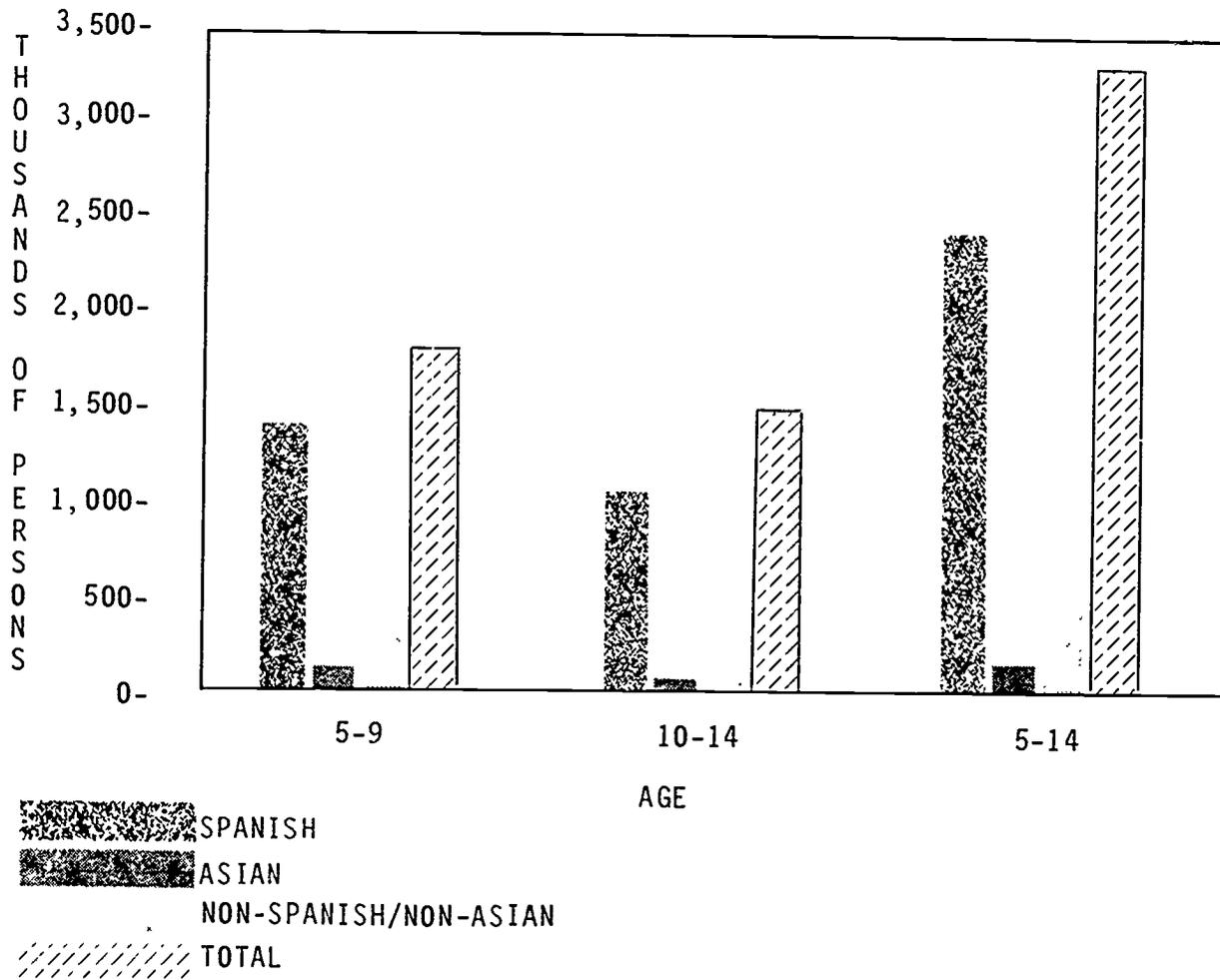


Figure 25. Limited-English-Proficiency Projections by Language Group and Age Group, 2000 (Ages 5-14)

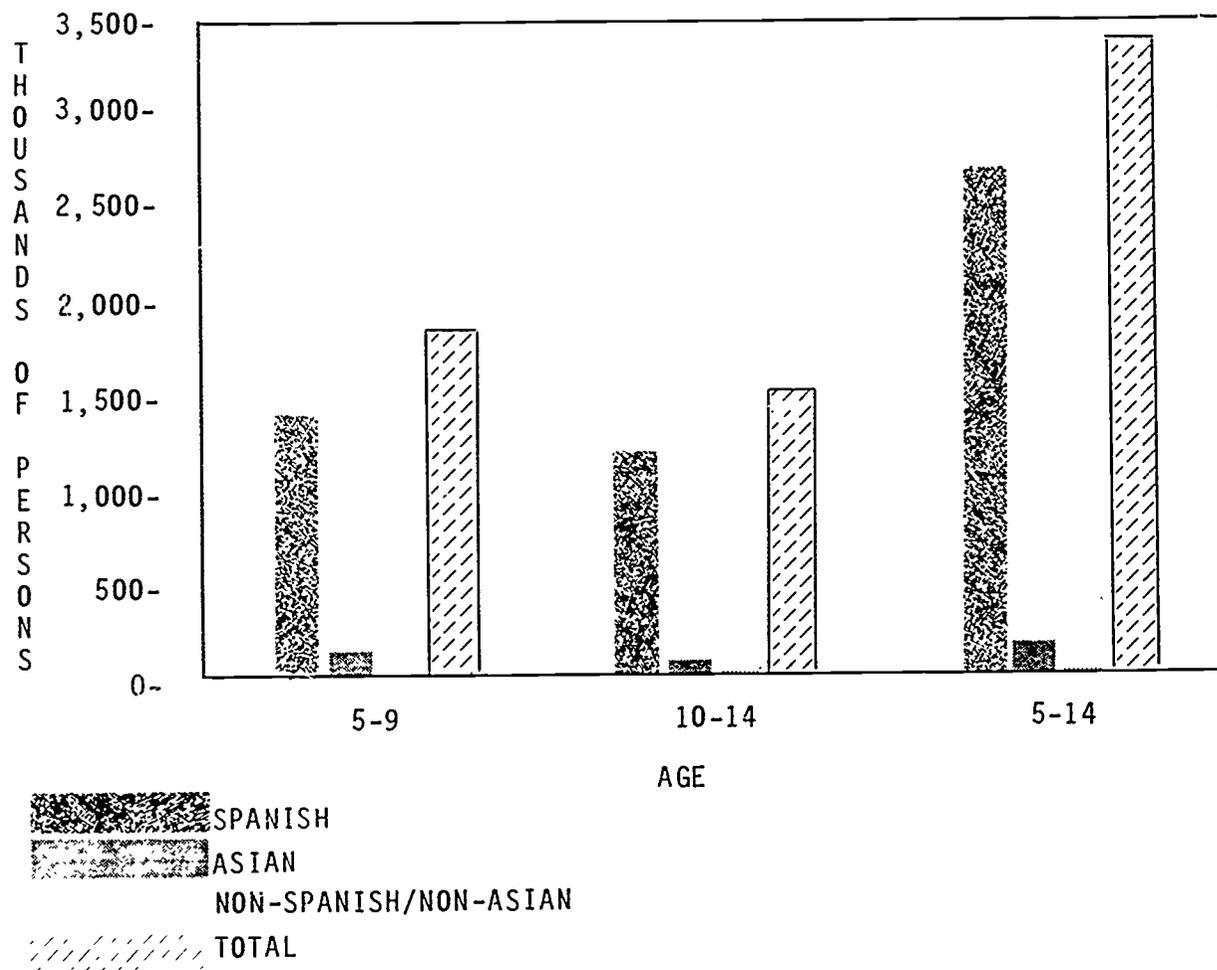


Figure 26. Limited-English-Proficiency Projections by Language Group and Major States, 1976 (Ages 5-14)

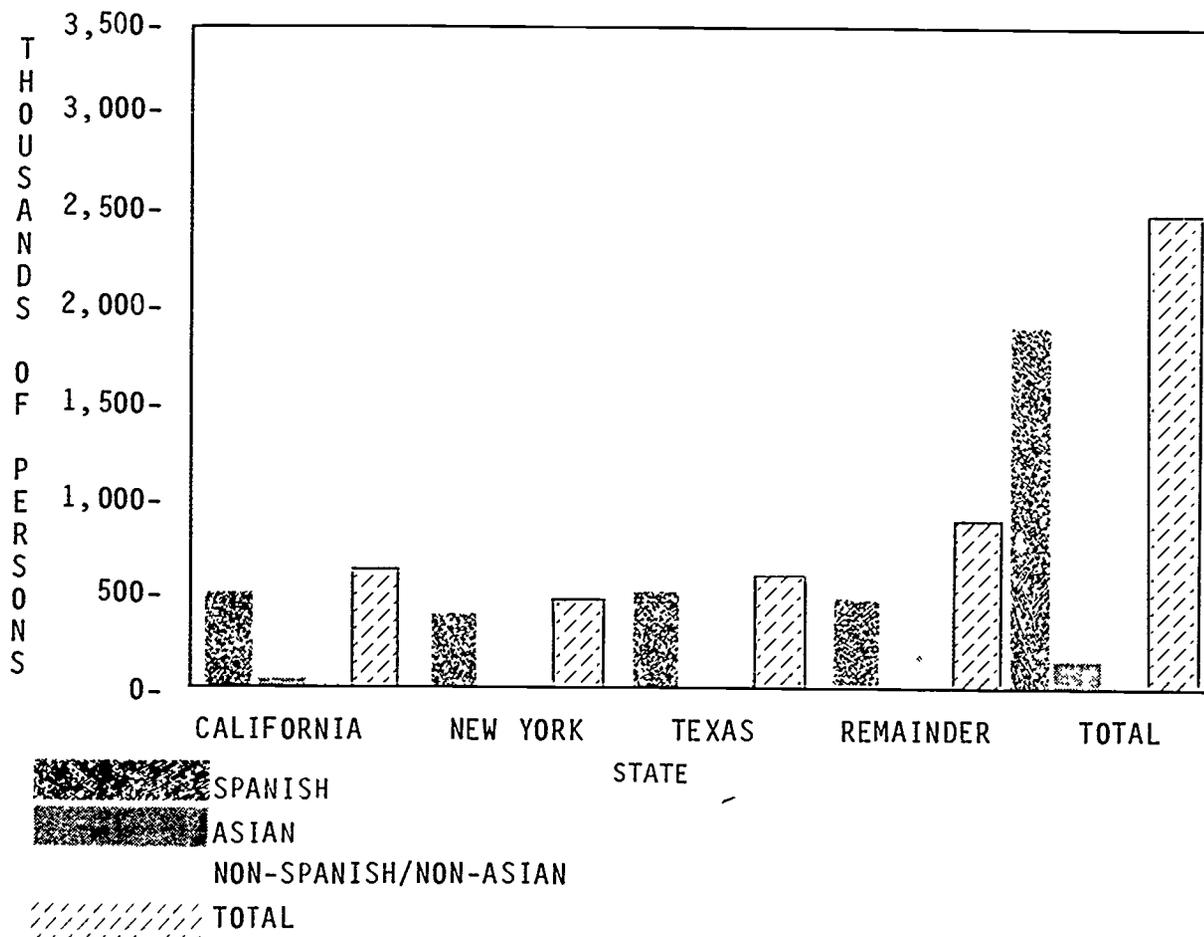


Figure 27. Limited-English-Proficiency Projections by Language Group and Major States, 1980 (Ages 5-14)

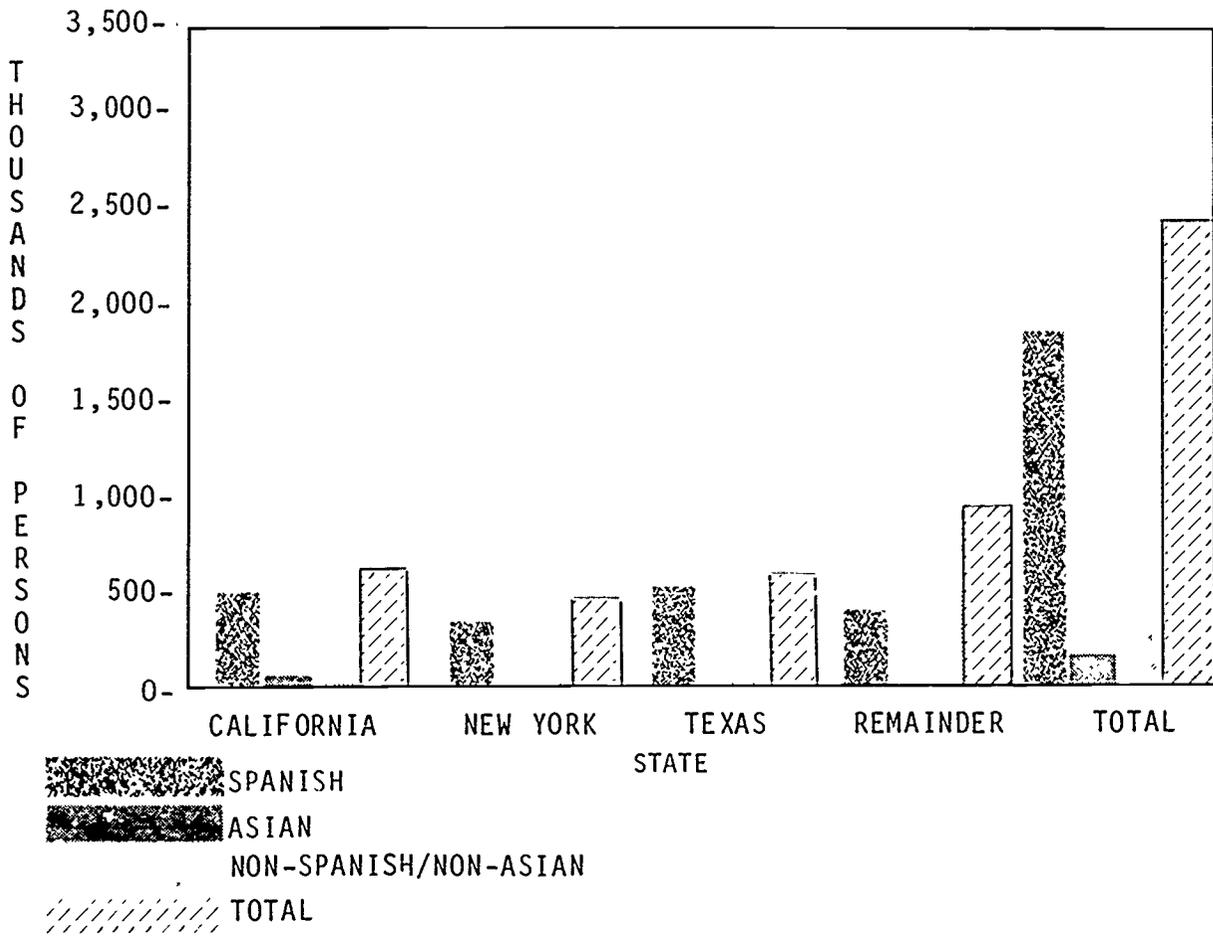


Figure 28. Limited-English-Proficiency Projections by Language Group and Major States, 1985 (Ages 5-14)

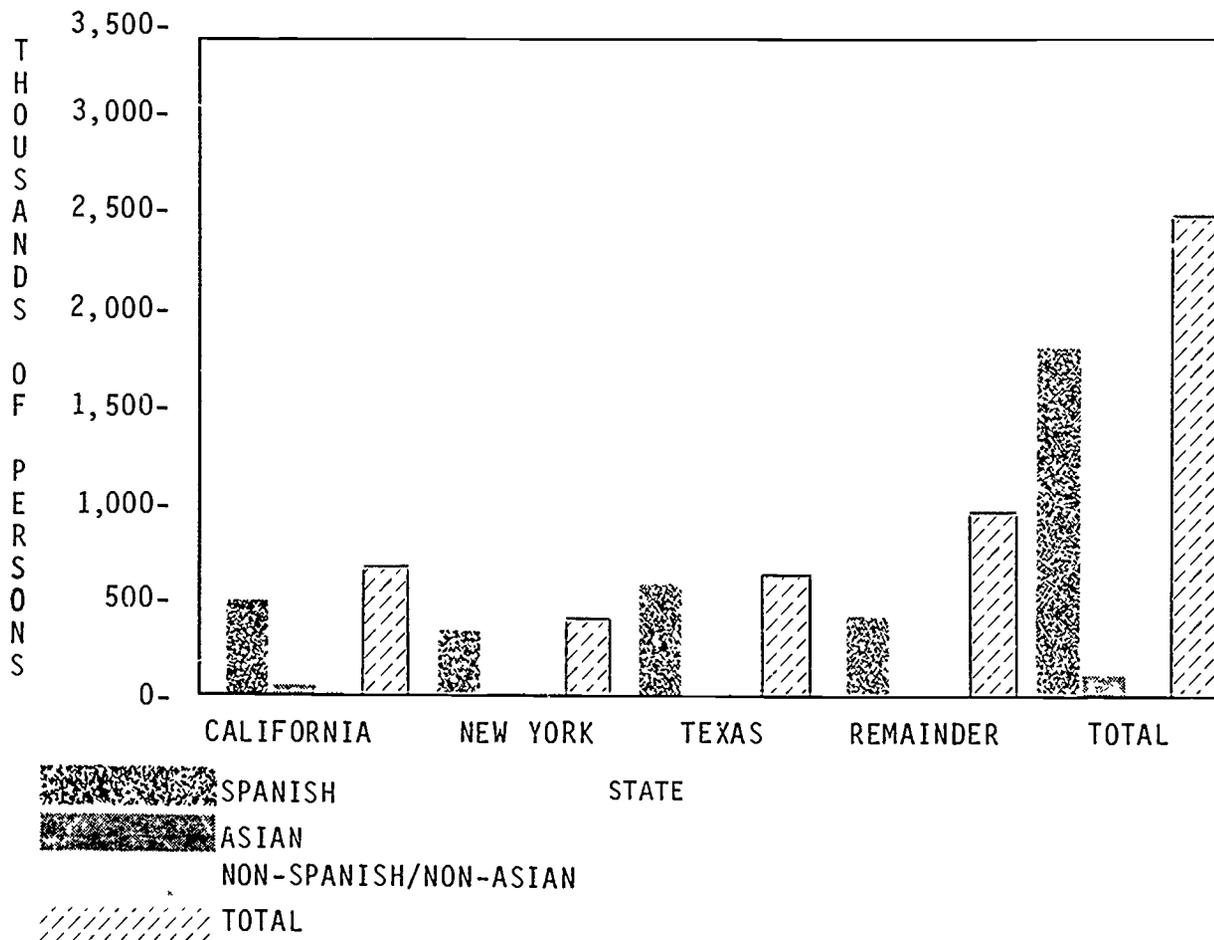


Figure 29. Limited-English-Proficiency Projections by Language Group and Major States, 1990 (Ages 5-14)

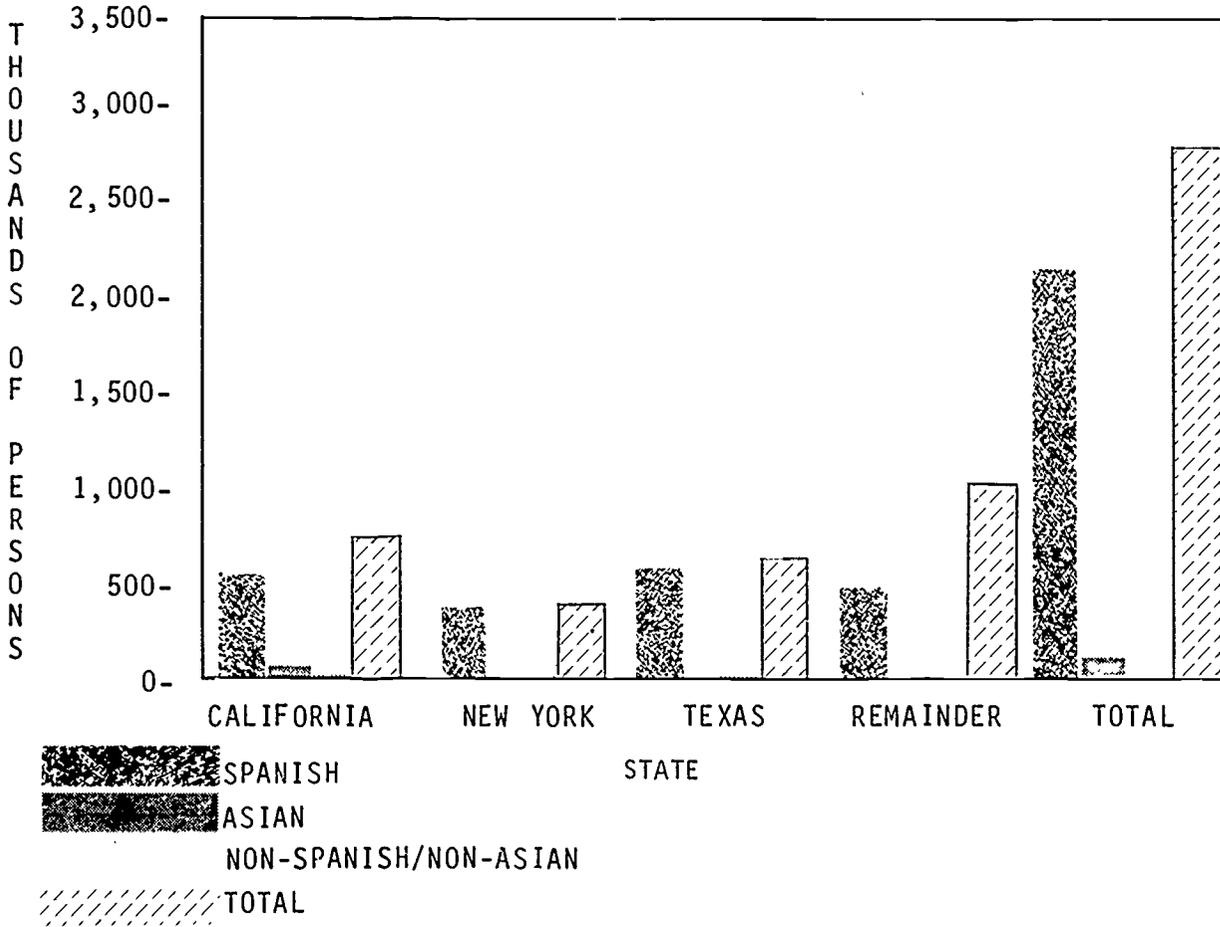


Figure 30. Limited-English-Proficiency Projections by Language Group and Major States, 1995 (Ages 5-14)

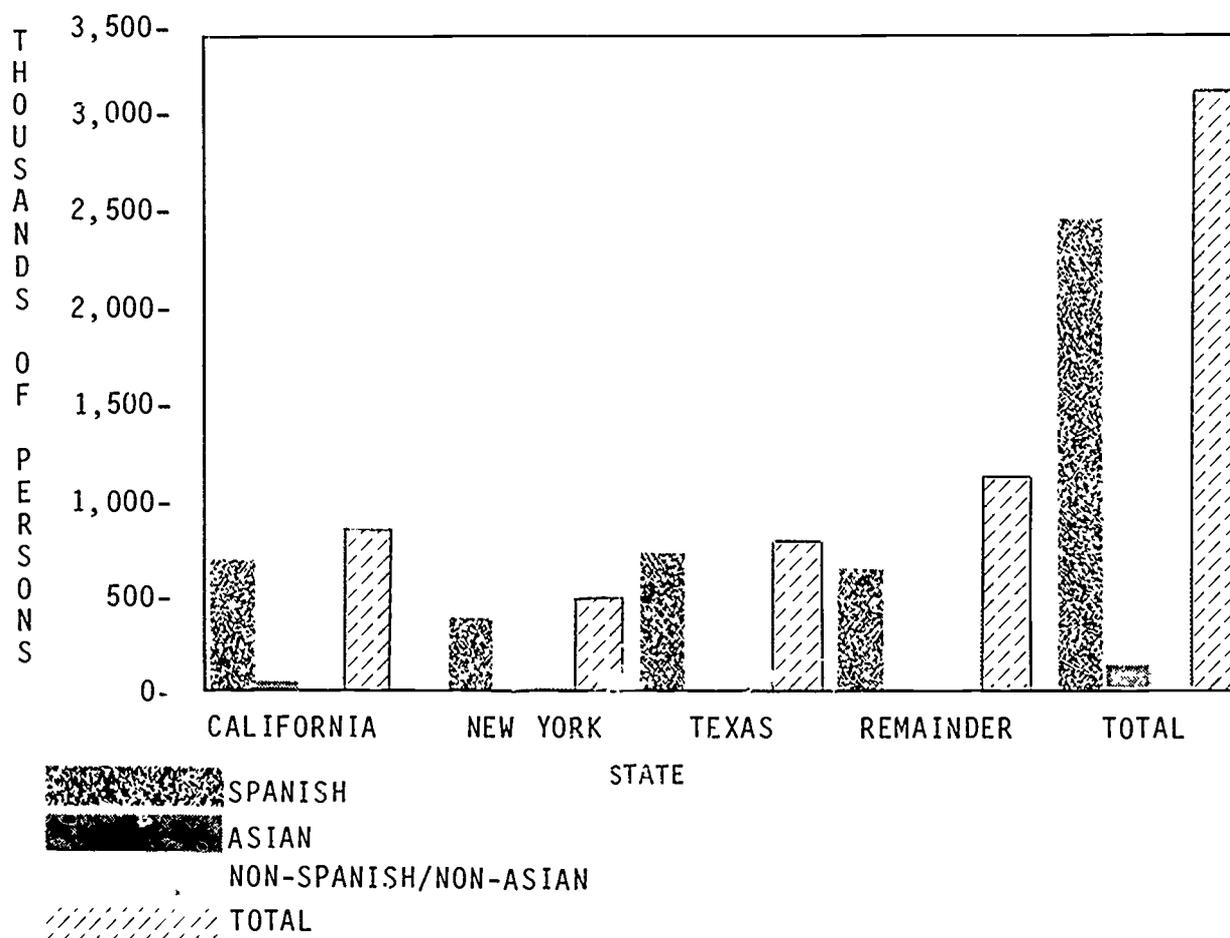


Figure 31. Limited-English-Proficiency Projections by Language Group and Major States, 2000 (Ages 5-14)

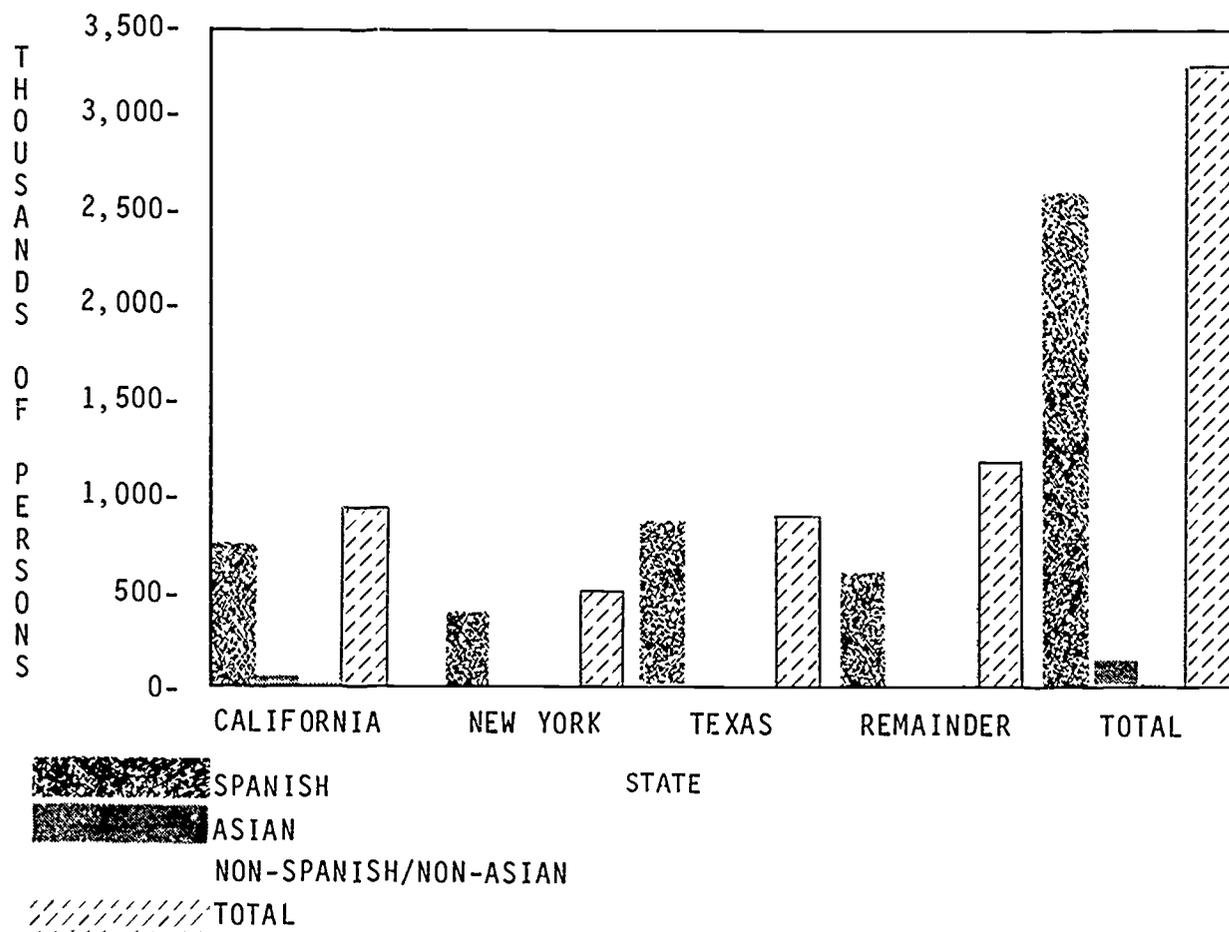
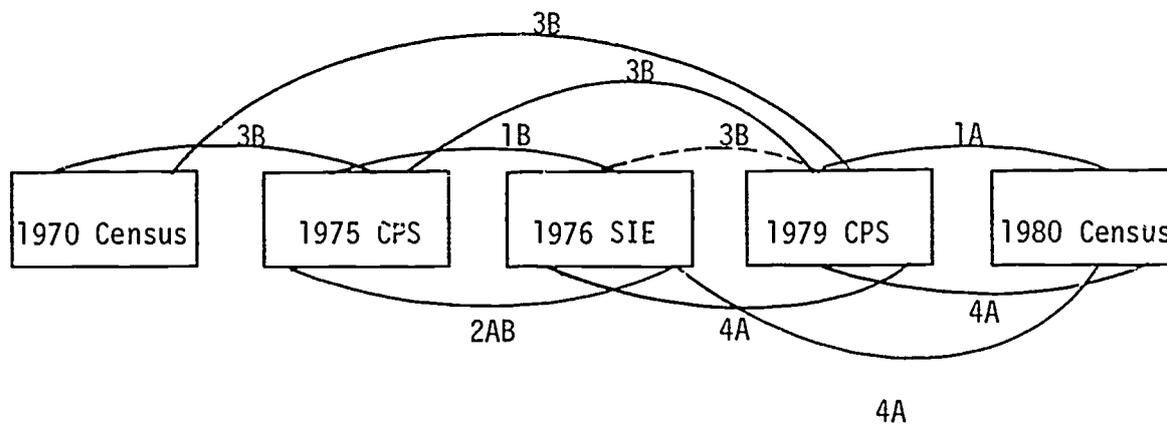


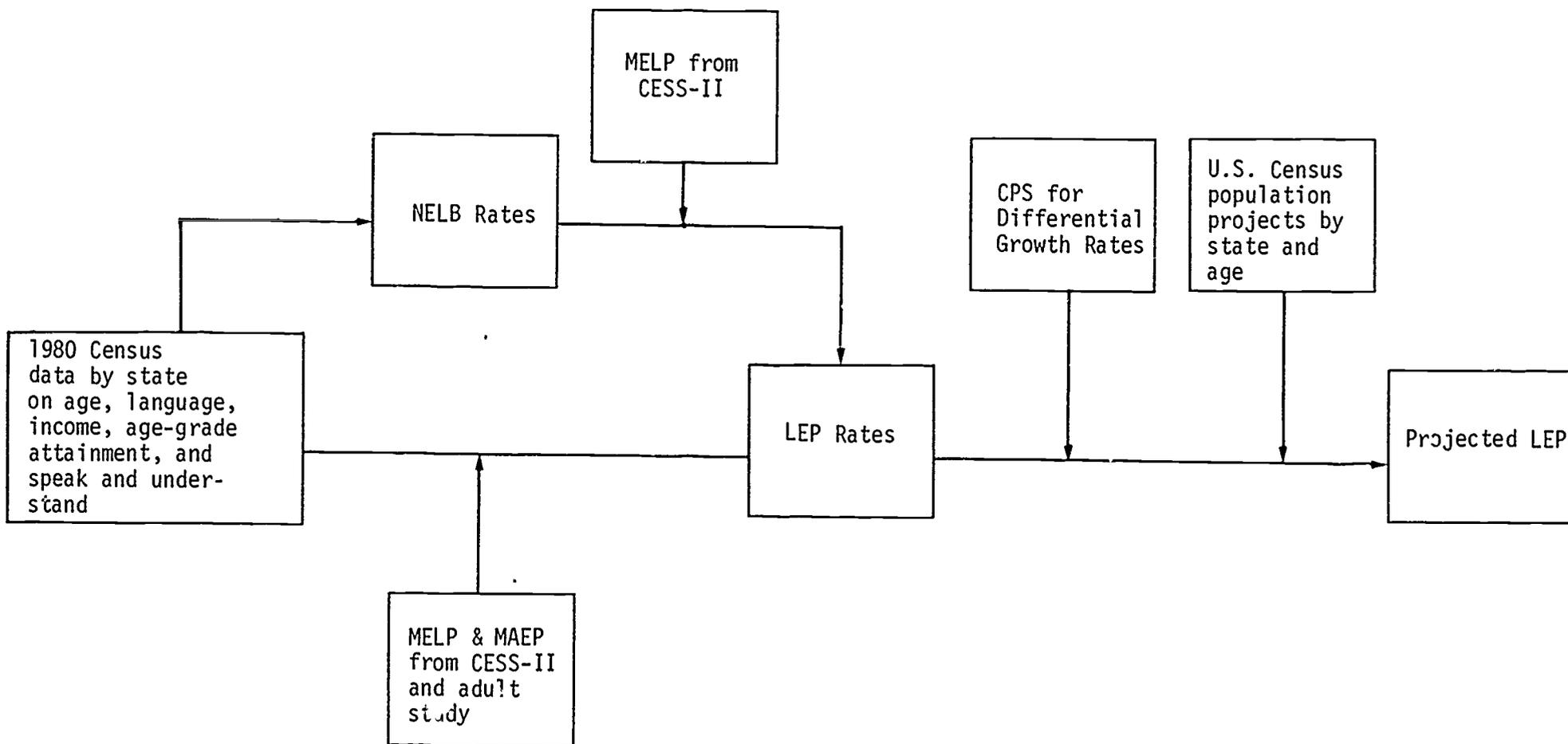
Figure 32. Using the 1979 November CPS to Link the 1980 Census with Previous Language Data



Legend:

- 1A = Individual language at home
- 1B = Usual individual language
- 2AB = Usual and other household language
- 3B = Mother tongue
- 4A = English speaking ability

Figure 33. Projecting LEPs with 1980 Census Data and CESS-II



## Appendix F:

# Projection Methodology Based on Other Data Sets

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The development of improved projection approaches to be used with future data sets was an integral part of this study. The technique and data that generated the study's results can be improved upon. Equally important, changes in future data sets will necessitate changes in the operational definitions of non-English language background (NELB) and limited English proficiency (LEP). This discussion focuses on other data sets, particularly the all-important *1980 Census of Population* and the various approaches to using it to develop estimates of the NELB and LEP populations; then deals with methodological changes and refinements, particularly those using sociolinguistic knowledge to improve the projection model; and closes with a suggested sequence of future research and with alternative paths according to the availability of special studies.

### Other Data Sets and Their Uses

This section examines: (1) data sets for estimating the LEP population; (2) characteristics of the 1980 census; (3) linking the 1980 census with previous studies via the November 1979 CPS; (4) using the 1980 census with a new calibration study (CESS-II); and (5) using the 1980 census calibrated with the original CESS.

#### Data Sets for Estimating the LEP Population

*The Survey of Income and Education (SIE)* was not a satisfactory basis for making detailed estimates and projections of the LEP population by age and language at the state level. Certain large language groups, most notably Spanish, had sufficient sample bases in some states to provide good estimates; but most language groups did not, especially when narrow age bands were considered. The SIE was inadequate even for Spanish in states with large Hispanic populations when descending below the state levels to the Standard Metropolitan Statistical Area (SMSA) and county levels. Therefore, the 1980 census should be taken as the next basis for estimating the NELB and LEP populations, especially below the state level. *The 1980 Census of Population, whatever its faults, will surely be the basis of most demographically determined social policy over the next decade. This is not just a legal mandate; the decennial census stands alone in its capacity to provide detailed social statistics at the local level.*

#### Characteristics of the 1980 Census

The language questions in the 1980 census were asked on the "long form," the question-

naire sent to one-in-six households that provided the bulk of the social statistics collected in censuses. Sampling error was not a problem with long form items in the census, except for the very small geographic units. Other sources of error, including the minority undercount problem, plague censuses. Aside from their scope, the most salient difference between censuses and surveys like the SIE and the *Current Population Surveys* (CPSs) was how they collected information. About 90 percent of all census questionnaires are filled out and returned by mail. By contrast, the CPS and SIE were done entirely by interview, with a large portion of CPS conducted by telephone. There have been different results from similar language questions asked on surveys and censuses. For example, the Spanish mother tongue question in the 1969 CPS and the 1970 census produced estimates of 6.7 million and 7.8 million Spanish mother tongue individuals. Subsequent studies indicated that the 1970 census figure was more accurate. In the same two studies, the similar Spanish origin questions produced similar results (about 9 million each).

For purposes of estimating NELB and LEP populations, the major difference between the 1980 census and the 1976 SIE was the format and wording of the language questions. Earlier studies had separate questions on household and individual language use (although the latter question was asked only in non-English households). The studies also contained a variety of questions on language use and proficiency. By contrast, the 1980 census contained only two questions about language:

- (1) Does this person speak a language other than English at home? (if yes) What is that language?
- (2) How well does this person speak English? very well/well/not well/not at all

These questions, never used before the 1980 census, will provide the first modern census (as opposed to survey) data on language use and ability in the United States. The 1980 census would seem to be the obvious basis for validating the 1976-based projections, for estimating LEP on the basis of 1980 MELP measures, and for establishing new projections. One of the Title VII Part C studies, Survey of Language Minority Households with Limited English Proficiency, was designed to recalibrate the MELP and use the 1980 census for determining LEP rates of children and adults. The difficulty was that the language questions on the 1980 census were not exactly the same form as the CESS and SIE language questions.

There was no clear basis for saying the 1980 census language questions were better or worse than the CESS and SIE questions, or those in other surveys. Although it was not clear whether the 1980 census language questions would produce NELB or LEP rates substantially different from those of CESS or SIE, the wording and format were different. The essential differences relevant to language questions were:

- (1) Current usual and other home language (the NELB definers) were derived rather than asked directly on the 1980 census.
- (2) Previous individual language questions were domain-free; the 1980 census question specified "at home." If *individual* language was used as a basis for a MELP, this could affect results.
- (3) Previously, the ability to speak English question was asked of persons in households where a language other than English was spoken as the first or second language. In the 1980 census, it was asked only of individuals who indicate speaking a language other than English at home on an individual basis. This question can provide no potential MELP for children who resided in non-English environments but who were themselves to speak only English at home.

#### Linking the 1980 Census with Previous Studies

The November 1976 CPS contained several questions on language; most importantly, it contained the questions asked in the 1980 census. The 1979 CPS and 1980 census results will be more closely comparable than were the 1969 CPS and 1970 census results with respect to NELB data. This is because adjustments made during the 1970s improved the CPS sampling frame considerably.

In addition to its preview function, the November 1979 CPS was relevant to this study of NELBs for two reasons. First, the CPS contained sufficient other language and language-related questions not in the 1980 census, which made it a good database for the study of language maintenance. Second, these questions (and their correlates) could be used to link or "cross-walk" the 1980 census language questions with results of previous language questions.

In addition to the 1980 census language questions, the 1979 CPS contained the following language questions:

- (1) Was a language other than English spoken in . . . 's home when . . . was a child? (if yes) What was that language?
- (2) Can . . . read and write that language (home language other than English)?
- (3) Does . . . read and write English? easily/with difficulty/not at all (Asked only of those with less than five years schooling in English).

There also were questions about the individual's country or state of birth, year of immigration (if foreign born), naturalization (if foreign born), ethnic ancestry/origin, and country of birth of the individual's father and mother. This was the most complete set of language-related background questions found on any major national data set containing language questions. It was the *only* data set after the 1970 census that inquired into parents' countries of birth—essential information in any study of language maintenance. Current language data of the sort being collected in the 1980 census have a certain usefulness in determining social policy. However, the policy utility is greatly enhanced if the language data can be meaningfully compared with previous data and if intergenerational patterns can be clarified.

The process of using the November 1979 CPS as a link was not a simple one. Only one question was directly shared between 1979 CPS, 1980 census data sets, and the 1976 SIE—English-speaking ability. That question was not directly comparable since it was not asked to the same population.

Lacking direct comparability on language-use questions from one data set to another, it was important to compare results via surveys that provided common linking questions. In the case of the 1980 census and the 1976 SIE, this process became quite complex. It was important to have a comparable mother tongue question from data set to data set so that ratios of language questions to a constant mother tongue question could be compared. However, the 1980 census had no mother tongue question, and the 1976 SIE mother tongue question is substantially different from that used in any other data set. Therefore, comparison of these two data sets involved using the results of the 1975 to 1979 CPSs. Figure 32 (see Appendix E) shows the linkages that can be followed between these data sets. The 1980 census and the 1979 CPS asked the same individual language spoken at home question. The 1979 CPS and the 1975 CPS asked the same mother tongue question. Finally, the 1975 CPS and 1976 SIE asked the same usual and other household language questions. In other words, to compare the results of the 1980 census question on individual language spoken at home and the 1976 SIE's usual and other household language questions, data must be examined from the 1980 census to the 1979 CPS to the 1975 CPS to the 1976 SIF.

#### Using the 1980 Census with a New Calibration Study (CESS-II)

The simplest way to deal with problems created by the new form of language questions was to replicate the SIE-CESS process using the 1980 census as the starting point, and fielding an "CESS-II" study designed to calibrate it with an appropriate test of English proficiency; the U.S. Bureau of the Census was conducting such a study in 1983. One advantage of this path was that it allowed for a complete rethinking of what should go into such a test, how the sampling should be designed, how LEP/non-LEP cutting points should be determined, and how a MELP should be constructed.

Figure 33 (see Appendix E) outlines the procedure for using a new CESS. This actually would be two studies, one for children and another for adults. For clarity, Figure 33 (see

Appendix E) shows only one. In this procedure, the principal difference would be in the greater number of state by age by language categories that could be estimated for 1980 and therefore projected. Although the term NELB was still used, in 1980 the operational definition of NELB individuals would be in terms of their own reported home language or in terms of the home language behavior of the others with whom they shared a household. For children ages 0-14, the commonly reported adult language in the household would probably be the most meaningful language context measure and also the closest approximation to the earlier NELB concept.

The required new approach to defining non-English households and individuals determined the sampling procedure for a CESS-II study. Assuming focus continued to be on children, the reported home language of parents and/or the majority of adults in the home provided a definition of non-English households, while not as broad as the SIE-CESS definition, still broad enough to include most children who have limited English proficiency due to their non-English language backgrounds. It was not known how the results of this approach compared with the previous reliance on general household language questions without actually carrying out a truncated version of the linkage study previously discussed.

As in this study, a critical component of the projection methodology was the use of some differential growth rate for the language minority population. This meant a revised Hispanic growth rate and perhaps adjustments for other rapidly growing groups such as the Indochinese. The use of a new CESS allowed definition of a MELP involving more of the variables considered important for determining LEP in particular, nativity and recency of arrival for non-natives.

## Possible Changes in Projection Methodology

This section covers possible changes in projection methodology, such as using a full cohort component model and accounting for generation and intermarriage as factors in language shift.

### Using a Full Cohort Component Model

There is little likelihood language-specific birth rates, death rates, and net migration rates essential for a full cohort component model will be available in the near future. It is unlikely that full information will be available for surrogate categories approximating the language minority (for example, those of Korean or Spanish origin).

The large Spanish language minority was probably one for which the best vital statistics could be estimated from surrogate categories. Even if vital statistics were available for them, it was unlikely that generally agreed-upon immigration data would be forthcoming.

Categories like NELB and LEP are not inherently the sort of "natural" populations meant to be projected by cohort component models. These models presume that individuals who are born or who migrate into a population remain there unless they die or migrate out. Language shift occurs through intermarriage and intergenerational changes, and is not covered by the cohort component model.

### Accounting for Generation and Intermarriage

This section discusses intermarriage and generational change, and suggests ways to take these factors into account.

The two key traits in this study—use of a language other than English and limited English proficiency—were intrinsically inappropriate to project by ordinary demographic techniques because they were intergenerationally unstable. A population's current rates of non-English use and limited English proficiency reflect a variety of factors, including endogamy rates and generational makeup.

Historically, non-English-speaking immigrants in the United States have shifted to English in a fairly consistent pattern. The first (immigrant) generation becomes sufficiently proficient in English to carry out its economic roles but usually continues to primarily speak its mother tongue at home. Factors such as age at immigration and place of settlement affect this generalization, but overall it is sound. The first generation passes its language on to its children (the second generation) who usually are raised speaking primarily a language other than English at home, at least in their early years. With few exceptions, the second generation becomes more fluent in English than in the mother tongue, especially in the absence of a variety of settings in which to use it. The result is these individuals are generally unable (and/or unwilling) to pass their mother tongue on to the third generation, which is usually raised monolingually in English.

There has been considerable discussion in recent years about whether this historical norm was applicable to today's U.S. language minorities. There has never been a comprehensive study of intergenerational language maintenance and shift in the United States, but evidence suggests most groups closely follow this pattern. Spanish appears to be somewhat more maintained intergenerationally, but the difference seems to be more of degree than of kind. In urban populations, intergenerational shift among Hispanics is marked. A study of the Los Angeles Mexican American population indicates 91 percent of the first generation homes are primarily Spanish-speaking, while only 25 percent of the second generation and 20 percent of the third generation homes are Spanish-speaking (Lopez, 1978). Nationally, these differences may not be quite so great since Puerto Rican and nonurban Texas Hispanics maintain Spanish somewhat more effectively than those in Southern California.

How was this knowledge built into a projection model? If a cohort component model was possible, then a redefinition of the concept of outmigration could include language shift—or a separation of births according to the parent's generation. An alternative would be to assign rates of non-English use by generation then make projections about the changes in the generational makeup of future language minority base populations. The rates could be determined from the November 1979 CPS as could the current generational composition. These generational data are not available from the 1980 census and are also absent from the 1975 CPS, and 1975 SIE; but they will be available in the CESS-II.

The most challenging problem in this approach was to project the generational makeup of base populations for language minorities. Cambodians in the United States today are overwhelmingly first generation and non-English speaking. To take a less extreme example, the U.S. Hispanic population today is about 25 percent first generation, 25 percent second, and 50 percent third generation (based on the 1970 Census of Population). In twenty years those proportions can change considerably and in either direction. Current events in Central America could lead to a larger proportion of first generation Hispanics.

Both generational makeup and generation-specific rates of language maintenance and limited English proficiency deserve further investigation as possible refinements of projection models. Both could be allowed to vary and remain constant in various combinations in a series of illustrative projections.

Another factor not directly considered in the current methodology was the effect of intermarriage. In the United States and most other countries intermarriage between members of socially dominant and socially subordinate language groups produces monolingual households in the dominant language. In many such cases the subordinate language individual is already bilingual and usually well along the way toward shifting to the dominant language.

Table 21 (see Appendix D) shows exogamy rates for selected groups from the 1970 census. (Such statistics are available only for certain racial groups and for Hispanics.) Note, that while exogamy for Whites or Blacks is 1 percent or less, it is 18 percent for all Hispanics and significant for Japanese and Chinese.

The second part of Table 21 (see Appendix D) indicates that exogamy rates are changing, at least for Hispanics. (No time series data for Asians are available). It shows that,

comparing marriages in the 1940s with marriages in the 1960s, exogamy among Hispanics has increased about 50 percent. The corresponding figure for the Mexican origin population is over 100 percent.

It seemed advisable to investigate intermarriage further, particularly in terms of how it varied with generations and over time. It may well be that generalizations made about the relationship between intermarriage and language maintenance are too simplistic. Further study will be a contribution to the continuing problem of operationally defining ethnic and language minority population in the United States.

### Summary and Recommended Sequence

This appendix has discussed other data sets and how they might be used. Focus was on the *1980 Census of Population*, which was unique in providing information on current language use at both local and national levels. Since the language questions in the 1980 census were new and unfamiliar, the researchers recommend that (1) a new CESS-like study be carried out, and (2) every effort be made to compare and even calibrate the 1980 census with earlier data sets. Calibration can be carried out via the November 1979 *Current Population Survey*, which includes the 1980 census language questions and other questions relevant to language use. It is doubtful the 1980 census can be precisely calibrated with earlier studies, including the 1978 CESS; however, useful comparisons can be made. The November 1979 data set should provide a preview of the 1980 census results and is an ideal data set for the analysis of generational patterns in language maintenance and exogamy among language minorities. The analysis of the November 1979 data should be carried out whether or not a new CESS is planned.

## Appendix G:

# Language Questions on Censuses and National Surveys

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This appendix discusses the types of questions asked in censuses and national surveys from 1969 to 1980.

The November 1969 Current Population Survey was the first large national survey containing questions about language use. Since then five additional large data sets have been (or soon will be) collected that contain information on language. The content and wording of language questions have varied considerably, and noncomparability is a serious problem. Perhaps the greatest disappointment, especially for future generations of analysts, was the incomparability of the 1970 and 1980 census: in 1970 mother tongue was asked; in 1980 it was current language spoken at home. Table 22 (see Appendix D) compares data sets in terms of availability and question format. Table 23 (see Appendix D) is a key to question types. If two data sets are indicated to have Type A of a particular question, the questions in both are essentially or totally identical. The exact wording of each question in each data set is presented in Tables 24 through 30 (see Appendix D).

There were considerations other than question wording that effected comparability. The most important difference was between censuses and surveys. Censuses are largely self-administered; surveys generally rely upon interviewers. A special problem with Hispanic data for 1969 (and perhaps other data sets) were that non-English mother tongue responses were much less common than they should have been. There were severe problems in assessing intragenerational and perhaps intergenerational language maintenance. Analysts have pointed to problems or potential problems with certain other questions in particular surveys. Perhaps the greatest general problem is the absence of validation studies for virtually *all* language questions. The best that can be achieved at this time is consistent data sets and time in question wording and field work procedures. Table 22 (see Appendix D) gives some indication of the current state of consistency.

### Key to Question Types

#### 1. Current Individual Language

- A = Does this person speak a language other than English at home? If yes, what is that language?
- B = What language does this person usually speak?
- C = Does this person speak any other language often? If yes, what other language does this person speak?

D = Does this person speak any other language? If yes, what other language does this person speak?

2. Current Household Language

A = What language is usually spoken in this household?

B = Is any other language spoken in this household?

3. Mother Tongue

A = What language was usually spoken in this person's home when he/she was a child?

B = What language other than English was spoken in this person's home when he/she was a child?

4. Speak and Understand Language Ability

A = How well does this person speak English?

B = How well does this person understand spoken English?

C = Can this person speak and understand his/her non-English mother tongue?

D = Does this person have difficulty in speaking or understanding English?

5. Read and Write Ability

A = Can this person read and write his/her (non-English) mother tongue?

B = Can this person read and write his/her current home language?

C = Can this person read and write English?

D = Can this person read and write the language he/she usually speaks at home? (should be similar to B)

6. Background Questions Relevant to Language Maintenance

*Note:* The letters refer only to presence of item, not its exact wording.

A. Person's birthplace

B. Year of immigration, if foreign born

C. Naturalized or not, if foreign born

D. Father's birthplace

E. Mother's birthplace

F. Ethnic Ancestry/Origin

## Current Individual Language Questions

### November 1979 Current Population Survey

None

### 1970 Census

None

### July 1975 Current Population Survey (2 questions)

"What language does . . . usually speak?" (Q. 45)

"Does . . . speak any other language?" (if yes) "What other language does . . . speak?" (Q. 46 and 47)

**FILTER:** These are asked only of individuals in homes where non-English is the usual or second ("any other") language of household. (Q. 37 and 38)

Spring 1976 SIE (2 questions)

“What language does . . . usually speak?” (Q. 51)

“Does . . . speak any other language often?” (if yes) “What other language does . . . speak?” (Q. 51A and 51B)

FILTER: These are asked only of individuals in homes where non-English is the usual or second language of household (Q. 24a, b, e) OR non-English usually spoken in home when . . . a child (Q. 49) OR . . . foreign born (Q. 48)

November 1979 Current Population Survey

“Does . . . speak a language other than English at home? (if yes) “What is that language?” (Q. 30 and 31)

FILTER: None

1980 Census

“Does this person speak a language other than English at home?” (if yes) “What is this language?” (Q. 13a, b)

FILTER: None

*Note:* The census, unlike the surveys, is largely self-administered and requires writing in the language.

## Current Household Language Questions

November 1969 Current Population Survey

“What language is now usually spoken in . . . 's home?” (Q. 39)

1970 Census

None

July 1975 Current Population Survey (2 questions)

“What language is usually spoken by the people who live in this household?” (Q. 37)

Is any other language spoken by the people who live in this household?” (indicate) (Q. 38)

Spring 1976 SIE (2 questions)

“What language do the people in this household usually speak here at home?” “Do the people in this household speak any other language at home?” (if yes) “What is that language?” (Q. 24a, b, e)

November 1979 Current Population Survey

None (but can theoretically be derived from individual question—Q. 30 and 31)

1980 Census

None (but can theoretically be derived from individual question—Q. 13a, b)

## Mother Tongue Questions

November 1969 Current Population Survey

“What language, other than English, was spoken in . . . 's home *when he was a child?*” (Q. 42)

### 1970 Census

"What language, other than English, was spoken in . . . 's home when he was a child?"

### July 1975 Current Population Survey

"Was a language other than English usually spoken in . . . 's home when . . . was a child? (if yes) "What was that language?" (Q. 41 and 42)

### Spring 1976 SIE

"What language was usually spoken in . . . 's home when . . . was a child?" (Q. 49)

### November 1979 Current Population Survey

"Was a language other than English spoken in . . . 's home when . . . was a child?" (if yes) "What was that language?" (Q. 36 and 37)

### 1980 Census

None

## Language Speak and Understand Ability Questions

### November 1969 Current Population Survey

"Can . . . speak or understand that language (mother tongue indicated in 42 . . . non-English only) now?" Yes/No (Q. 44)

### 1970 Census

None

### July 1975 Current Population Survey

"Does . . . have any difficulty in speaking *or* understanding (4 Yes possibilities by degree of difficulty and No) (Q. 49)

FILTER: Asked only of those who indicate they speak non-English as usual or second language.

### Spring 1976 SIE (2 questions)

"How well does . . . understand English?" (5 alternatives)

"How well does . . . speak English?" (5 possibilities) (Q. 53 and 54)

FILTER: Asked only of those who indicate they speak non-English as usual or second language.

### November 1979 Current Population Survey

"Does . . . speak English/very well/well/not well/not at all?" (Q. 47)

FILTER: Asked only of those who speak non-English at home.

### 1980 Census

"How well does this person speak English?" (4 alternatives as in 79 CPS) (Q. 13c)

FILTER: Asked only of those who indicate they speak non-English language at home.

## Read and Write Questions

### November 1969 Current Population Survey (3 questions)

"Can . . . read and write that language?" (current home language) (Q. 40)

"Can . . . read and write English?" (if current home language non-English) (Q. 41)

"Can . . . read and write that language now?" (mother tongue) (Q. 43)

All three are simple Yes/No.

1970 Census

None

July 1975 Current Population Survey

None

Spring 1976 SIE

None

November 1979 Current Population Survey (2 questions)

"Can . . . read and write that language?" (language . . . speaks at home, excluding English) (Q. 32)

"Does . . . read and write English?" easily/with difficulty/not at all (asked only of those with less than five years schooling in English) (Q. 35)

1980 Census

None

### Miscellaneous Language Questions

November 1969 Current Population Survey

No additional questions

1970 Census

No additional questions

July 1975 Current Population Survey (2 questions on schooling)

"Since September 1974 has . . . received any instruction in learning to read or speak the English language?" (Q. 50)

FILTER: Any difficulty with English indicated in Q. 49

"Since September 1974 was . . . taught in a language other than English in that school? Do not include foreign language classes." Yes/No; if yes indicate language (Q. 53 and 54)

FILTER: Asked only of those enrolled in 1974-1975

Spring 1976 SIE (questions on schooling and on domain-specific language use)

"Did . . . attend school before coming to the U.S. (mainland)?" (If yes)

"For how many years did . . . attend school outside the U.S. (mainland)?"

"In what language was . . . taught subjects such as arithmetic, science, history?" if English: "For how many years?" (Q. 48c-f)

FILTER: Asked only of foreign born (Q. 48)

"What language does . . . usually speak to . . . 's best friends?"

"What language does . . . usually speak to the children in the (Q. 55 and 56) household?" (asked only if children under 14 in household)

FILTER: only for those who speak non-English as usual or second language

"How often does . . . read an English-language newspaper?" (Q. 57)

November 1979 Current Population Survey

None

1980 Census

None

**Background Questions Relevant to Language Maintenance**

November 1969 Current Population Survey

Person's birthplace country/state

Father's birthplace

Mother's birthplace

Person's origin/descent

1970 Census

Person's birthplace

Father's birthplace

Mother's birthplace

Person's origin/descent

Person naturalized or not (FB)

July 1975 Current Population Survey

Person's birthplace

Year of immigration if FB was 14-plus

(no parental data, but are two generation homes)

Person's origin/descent

(citizenship not asked)

Spring 1976 SIE

Person's birthplace

Year of immigration (but not citizenship)

(no parental data, but are two generation homes)

Person's origin

November 1979 Current Population Survey

Person's birthplace

Year of immigration

Naturalized or not

Person's ancestry

Father's birthplace

Mother's birthplace

1980 Census

Person's birthplace

Year of immigration

Naturalized or not

Person's ancestry (also Spanish origin direct)

(parental BP data not collected)

## Appendix H:

# Publications in the Area of Limited English Language Proficiency and Related Topics

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