

**American Community Survey
Case Study Project: Portland, Oregon**

**Use of the American Community Survey
For Educational Planning in Portland Public
Schools**

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Executive Summary

The U.S. Census Bureau's American Community Survey offers a new approach for providing accurate and timely information for the nation and its communities. This case study describes the usefulness of American Community Survey for educational planning in Portland, Oregon. It discusses a variety of data sources, in addition to the American Community Survey, that are used to examine school enrollment trends for Portland Public Schools. The case study is carried out in two phases. One is an investigation of the demographic factors affecting school enrollment trends over the past ten years. The second is a forecast for school enrollments from the present to 2010.

The American Community Survey (ACS) has four major advantages:

- ACS data are available on a timely basis, providing information that is up-to-date.
- ACS data provide reliable estimates on an annual basis for such large geographic areas as states, and large metropolitan areas and cities. Estimates are available for a wide range of housing, population, and social and economic characteristics. For smaller populations, ACS data can be accumulated over several years in order to make local area estimates.
- ACS data offer significant benefits for local community analysis by providing detailed data for cross-tabulation on a variety of planning topics, such as housing needs, social and economic status of sub-population groups, and transportation assessments. ACS data can be used to prepare tabulations for special administrative boundaries based on census tract information, as illustrated in this case study for educational planning.
- ACS data offer a new and valuable source of information through its micro-level data. Data for smaller population groups, such as racial minorities or immigrants, are expensive to collect because they require large household surveys in order to obtain sufficient numbers for analysis. The American Community Survey provides an invaluable service for many communities by helping them to avoid the high costs of conducting independent surveys.

INTRODUCTION

The U.S. Census Bureau has recently devoted considerable energy to investigating and testing a large, continuous household survey system, called the American Community Survey, as a way of providing timely information for the nation's population. Such a system would provide a possible alternative to information collected once every ten years in the long form of the decennial census. One key concern motivates a high level of interest in the American Community Survey. Census information, whether from the short or the long form, quickly becomes out of date. For example, information on poverty rates for school-age children at the school district level, which is used to allocate compensatory education funds, is available only once a decade.

The U.S. Census Bureau began testing survey operations for the American Community Survey (ACS) in four sites in 1996. One site was Multnomah County, Oregon. Testing of the ACS has continued to date, with proposals to have full implementation of the collection system beginning in 2003 in every county of the United States. The fully-implemented system would collect information from about three million households annually. The ACS would provide data on demographic, housing, social, and economic characteristics every year for all states, as well as for all cities, counties, and population groups with 65,000 or more people. Data would be accumulated over several years to provide estimates for smaller population groups and areas, such as smaller towns, census tracts, and rural areas.

This report highlights the uses of the American Community Survey data for a case study of public school enrollment changes in Portland, Oregon. The two purposes of the case study are to provide:

- (1) an analysis of the demographic factors affecting recent enrollment changes in Portland Public Schools and
- (2) a school enrollment forecast, including demographic information, for Portland Public Schools for the period 2000 to 2010.

The work relies on analysis of recent trends in births, internal and international migration, and the proportion of school-age children and youth enrolling in public schools and how they have affected public school enrollments. For the forecasts, the work examines several factors that are likely to influence the school district's enrollments, including the future number of births, net migrants, and the proportion of school-age children and youth enrolled in the public schools.

Background

Portland is located in Multnomah County, one of the four county sites selected for initial testing of the U.S. Census Bureau's American Community Survey (ACS) in 1996. The survey has continued in Multnomah County from 1996 to the present. Work for the analysis of Portland Public Schools uses ACS data from 1996 to 1998. Data collected in the ACS are similar to that collected in the sample questionnaire of the 1990 and 2000 decennial censuses.

Portland is the largest city in Oregon and the third largest metropolitan area in the Pacific Northwest (Vancouver, British Columbia, Canada and Seattle, Washington are larger). The City of Portland had a population of 529,000 in 2000; Multnomah County had a population of 660,000; and the total metropolitan area included 1.9 million people.

Portland is a regional urban center for employment, culture, commerce and the metropolitan government. The metropolitan population is increasing at a rate of about 1.4 percent per year, or about 50 percent more rapidly than the U.S. overall population. Metropolitan population growth is primarily fueled by net internal migration. About four-fifths of net migrants are from other states, and most in-migrants are from neighboring states, in particular, California. The remaining one-fifth of net migrants are immigrants, most arriving from the former Soviet Union, Mexico, and several Asian countries (the main Asian origin countries are China, Hong Kong, India, Korea, Taiwan, and Vietnam).

The metropolitan population is not ethnically diverse, compared to other cities on the West Coast. About 88 percent of the metropolitan population report themselves as non-Hispanic white. The largest minority groups in the metropolitan area are Latinos/Hispanics (6 percent), followed by Asians (3 percent), blacks (2 percent), and American Indians (1 percent). The metropolitan population, however, is becoming more diverse because many recent in-migrants are Asians and Latinos.

The Portland Public Schools is the largest school district in the state. The district currently enrolls 52,300 students, or three times the size of the second largest district in the state. The Portland Public Schools is distinctive because almost 90 percent of local school-age children and youth enroll in the local public schools, which is a larger percentage than in most large metropolitan areas.

Reasons for Interest in Portland's Public School Enrollments

Enrollments in the Portland Public Schools (PPS) have decreased in recent years. School and other local officials and the public are unclear as to why enrollments have recently decreased. Are declining enrollments due to fewer births, to selective in and out migration, to more students attending private schools or home study curriculum, or to a combination of multiple factors? Regardless of the driving factors, fewer children in the public schools raises important questions about trends for future enrollments, resource planning assumptions, and budgetary assumptions for future revenues.

The study is conducted in two broad phases. First, in conducting a demographic study of the factors affecting PPS' enrollments, we examine the potential effect of several factors. Data from the American Community Survey provide some of the critical data needed for such a study, and this report highlights the uses of ACS.

In the next sections, we describe the uses of different data sources, and highlight the role of the American Community Survey, for the analysis of recent enrollment trends.

Second, after discussion of demographic trends affecting public school enrollment trends, we describe a model for forecasting future enrollment and the results from the model for future enrollments.

The report concludes with an overall discussion of the use of ACS data for school enrollment analyses.

Because this report highlights the American Community Survey as an important data source for several items of analysis, the specific uses of the ACS are described below separately. Several sections (in italics) discuss the uses, advantages, and special features of American Community Survey data in conducting this case study.

RESEARCH QUESTIONS

The first phase of this study involves a detailed examination of demographic factors affecting public school enrollments from the 1990-1 to 2000-1 school years, the most recent school year for which school enrollment data are currently available. The analysis is organized around six major questions:

- What are the enrollment trends for the Portland Public Schools?
- What accounts for overall changes in public school enrollments?
- Do changes in the number of births account for enrollment trends?
- Do changes in migration account for enrollment trends?
- Do changes in the choice of public, private, or home schooling account for enrollment trends?
- What is the role of international migration in overall migration?

We address these questions using data from a variety of local and federal sources. Data for the analysis of recent trends relies on several sources, including the following:

- Portland Public Schools' data furnish information on enrollments for recent decades, including enrollments by grade for the past decade.

- The Oregon Health Division reports birth and death data for the Portland Public Schools' area. Birth and death data are used to calculate fertility and mortality rates for the district.
- Decennial censuses provide population data for 1980 and 1990, by age and sex, that are used to estimate net migration for the school district. 1990 census data provide a base population for an examination of the subsequent demographic changes from 1990 to the present, adjusted for changes in fertility, mortality, and net migration.
- American Community Survey provides population data for 1996, by age and sex, that are used to estimate net migration for the school district. Changes in the 1990 base population are adjusted to the age-sex population data from the American Community Survey in 1996. In addition, the American Community Survey provides information on important population characteristics (for example, immigrants and their characteristics, poverty rates, and prior residence) for the population in 1996, 1997, and 1998.
- Immigration data from the Immigration and Naturalization Service (INS) provide information on legal immigrants and refugees who declare their intention to reside in the metropolitan Portland area. INS data are tabulated by country-of-origin to provide information about the major source countries for recent immigration.
- Private schooling data are available from two sources: the Oregon Department of Education and a survey of local private schools.
- Home schooling data are available from the Multnomah Educational Service Department.

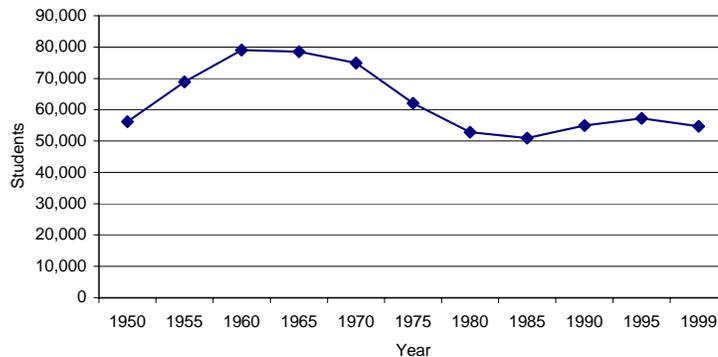
ENROLLMENT TRENDS FOR PORTLAND PUBLIC SCHOOLS

The study of enrollment trends for public schools requires comparable data for a well-defined geographic area over time. In the case of the Portland Public Schools, enrollment data are available for an early autumn date (usually October in recent years) for a consistent residential area since the 1940s. Available enrollment data reveal that enrollments in Portland Public Schools grew rapidly in the post-World War II period, increasing from about 56,000 in the early 1950s to a peak of almost 80,000 in the 1960s (see

Figure 1). During the period of the most rapid growth, enrollments in Portland Public Schools increased by over 2,000 students each year.

With the downturn of births starting in the early 1960s, school enrollments declined from about 1965 to 1985. There was a slight upswing in enrollments in the 1980s and early 1990s, based on a combination of an “echo baby boom” (the children of the larger cohort of baby boomers), families moving into new housing construction in southwest Portland, and younger couples who had moved into the Portland Public Schools area in the 1970s. Enrollment began to decrease in 1997, however, declining by an average of about 800 students in 1997, 1998, and 1999.

Figure 1. Portland Public School Enrollments from 1950 to 1999.



Source: Portland Public Schools, annual October enrollment figures, unpublished data provided by Portland Public Schools.

Enrollment Adjustments

When considering regular enrollments (students enrolled in traditional kindergarten to grade 12, K-12, programs), it is necessary to take into account two other types of students for metropolitan areas. First, regular students exclude students in many types of special programs, such as deaf, blind, autistic, and students with mobility limitations. School enrollment data need to be examined carefully to understand whether students in special programs are included, or excluded, from public school enrollment data. For example, examination of enrollment data for Portland Public Schools (PPS) reveals that some students in

special programs were moved from PPS programs to other programs in the 1990s, creating what appeared to be a decline in enrollment figures. Enrollment figures should be adjusted to take into account changes in the definition of local enrollments.

Second, some students enroll in districts outside their residence. In the case of Portland Public Schools, there is an “in-migration” of about 1,500 students from outside the school district. Most of these students “transfer” into the PPS in order to enroll in special programs. Again, careful examination of changes in the in-flow or out-flow of students is needed in order to develop comparable enrollment trend data.

Once public school enrollment data are adjusted for comparability of definition and residence, they can be checked against self-reported enrollment data from the U.S. Census Bureau’s decennial censuses and the American Community Survey. Our experience with the Portland Public Schools and other school districts in Oregon and Washington suggests that there is usually a difference of no more than 1 to 2 percent in public school enrollment data from school districts and the 1980 or 1990 censuses.

It is more difficult to compare enrollment data from school districts and the American Community Survey because available ACS data are for combined public and private schools. When ACS data for Portland Public Schools for 1996, however, are adjusted to take into account students who are in private schools, we find a high degree of agreement with PPS enrollment data. If enrollments by grade from October 1996 PPS data are translated to single years of age, they differ from ACS age data by no more than 5 percent. Some discrepancies are expected, of course, because the ACS data were collected from January to December, 1996 and the PPS data were collected at a single point of time, when enrollments are typically at the highest level for the year.

Sources of Enrollment Change

From a demographic perspective, there are essentially two sources of change for school enrollments. First, public school enrollments are principally a function of the number of school-age children. Two factors determine the number of school-age children. One factor is the number of births that occur in the local area. The second factor is the level and pattern of net migration for children between birth and the time of their enrollment in school. If no children were to move in or out of an area, then the number of school-age children at age 8, for example, would be a function solely of the number of births eight years ago, with a small decrease due to mortality. The migration of children involves decisions made by parents about the residence for the entire household because children do not choose to move on their own.

Second, not all school-age children attend public schools, so the proportion of school-age children attending public schools is a key element for analysis. We refer to the proportion of school-age children by grade level who attend public schools as the “enrollment rate.”

Migration is a complicated topic for analysis because migration affects the school-age population directly and indirectly. Migration has a direct effect when a school-age child moves into or out of the school district. Migration also has two indirect effects: (a) when pre-school children move in and out and (b) when adults who may later have children move in and out. The departure of pre-school children from the area has a critical effect because it removes children from the possibility of attending the school district. The selective migration of adults can have several effects. If adults with lower long-term fertility move into the area, the adult population increases but school enrollments in the future will not increase because the adults will have fewer children. This is commonly observed in some areas of Portland undergoing gentrification where higher-income professional couples move in. These couples tend to have lower levels of childbearing and tend over the long-run to contribute few children for local school enrollment.

Conversely, if adults who will one day have children leave the area, this out-migration decreases the future population in the area because of both the adults’ departure as well as the absence of their future children.

As in many metropolitan areas, the out-migration of younger couples to suburban areas, prior to eventual childbearing, is a common phenomenon in the Portland metropolitan area.

School Enrollment Model

In order to analyze the complicated interaction of births, in- and out-migration, age composition, and enrollment rates on public school enrollments, we have constructed a demographic model for changes in public school enrollments. For the purposes of this report, we describe the model that we adapted for studying PPS enrollments for the 1990 to 1999 period.

The model starts with the observed 1990 census population living in the PPS area. The population, arranged by sex and age groups, is moved through time, with changes made for the effects of births, deaths, and net migration. The observed 1990 to 1999 fertility rates for the PPS population are used, based on birth data tabulated for the area from birth reports. The observed 1990 to 1999 mortality rates are used, based on death data tabulated for the area from death reports.

Estimating migration rates requires several steps. We begin by calculating the number of people in the 1980 census population that would survive to 1990, called the 1990 projected population, taking mortality into account. We compare the 1990 projected population and the 1990 census population to estimate net migration by age and sex for the 1980 to 1990 period. Next, we move the 1990 census population forward through time to 1996, taking fertility and mortality into account and using the net migration rates estimated for the 1980 to 1990 period. We compare the projected 1996 population, by age and sex, with estimates from the 1996 ACS. We adjust the assumed net migration rates until there was a small difference between the projected and observed age-sex data.

Finally, public school enrollment rates are estimated for 1990, using data from the 1990 decennial census and the Portland Public Schools. Because 1996 ACS data are available, we

were able to “calibrate” the demographic model for that date, comparing the estimated public enrollment figures with observed enrollments. The overall results suggest that there has been relatively little change in public school enrollment figures from 1990 to 1996.

The usefulness of the demographic model is that it allows us to explicate the contributions of several demographic processes during 1990 to 1999. We can illustrate the effects of various demographic contributions of change by examining the dynamics leading to 8th grade students enrolled in Portland Public Schools in October 1999. Actual enrollment data show that 3,431 students enrolled in the 8th grade in October 1999. These enrollments are the net result of a series of processes, including:

- Births. If the resident population were to have replacement-level fertility, or 2.1 births per couple over their lifetime, the number of births that would have occurred in the Portland Public School area 13 to 14 years prior to students entering the 8th grade would have been 6,250. In fact, the number of births that occurred 13 to 14 years prior to the 8th grade was about 5,890, or 360 fewer births than required for replacement-level fertility. This birth deficit eventually leads to declining enrollments unless counterbalanced by other factors.
- Net migration of preschool children. Although some preschool children move into the Portland Public School area, more depart. The overall effect in the 12 to 14 years between birth and the 8th grade is a net out-migration of about 880 children, prior to enrollment in kindergarten.
- Net migration of school-age children. About 750 school-age children move out of the Portland Public School area in the period between kindergarten and the 8th grade.
- Net results of births and migration. The net result of the above factors is that there were about 4,250 children living in the Portland Public School area who might have enrolled in the 8th grade in October 1999, or about 70 percent of the hypothetical number if replacement-level fertility were to exist and if net migration were zero. In other words, about 30 percent fewer students reside in the school district for the 8th grade because of the combined effect of lower fertility and net out-migration.
- Public school enrollment rates. Although metropolitan Portland has relatively high public school enrollment rates, compared to other metropolitan areas, not all school-age children and youth enroll in

Portland Public Schools. About 550 students, or 13 percent of the eligible grade 8 school-age population, enroll in private schools or home schooling programs. In the end, about 3,700 students enrolled in the 8th grade of Portland Public Schools in October 1999, about 60 percent of the original hypothetical 6,250 births that occurred 13 to 14 years prior to 8th grade enrollment.

DO CHANGES IN BIRTHS ACCOUNT FOR ENROLLMENT TRENDS?

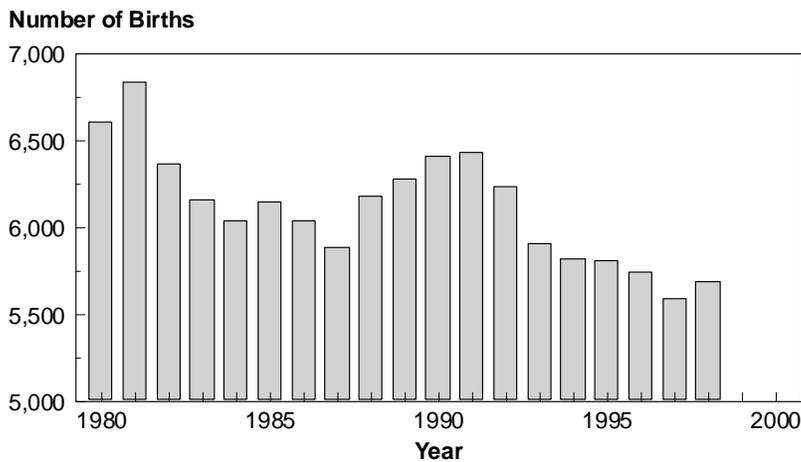
There has been a significant decline in births in the PPS area in the past decade (see Figure 2). After PPS area births peaked at 6,840 in 1981, they declined to 6,408 in 1990. Births then declined by another 715, or 11 percent, between 1990 and 1998. By contrast, the number of births increased about 3 percent in Multnomah County and 10 percent in Oregon during 1990 and 1998.

The number of births in the PPS area is a function of the number of younger adults, especially in the main childbearing years of 15 to 34 years, and how many children younger couples are having. An analysis of trends in the number of births for the PPS area from 1980 to the present leads to the following observations:

- ***1980 to 1990 effects.*** Although the number of women in the childbearing years declined from 1980 to 1990, there were noteworthy increases in the average number of births per woman. Overall, births decreased by 200 in the 1980s. If fertility rates had not increased during the decade, there would have been about 1,000 fewer births. On the other hand, if the number of women in the childbearing years had not decreased, there would have been about 1,200 more births. The overall number of births fell, therefore, primarily because of decreases in the number of women in the childbearing years.
- ***1990 to 1995 effects.*** The total number of births decreased by 596 between 1990 and 1995. Decreases in the number of women in the childbearing years reduced the number of births by about 80. Decreases in fertility, however, played the strongest role, reducing the number of births by about 520 in the five-year period.

- **1995 to 1998 effects.** Total births declined by 218 between 1995 and 1998, according to our estimates for the Portland Public School area. There were slight increases in the number of women in the childbearing years that added about 60 births. These gains were offset, however, by further reductions in fertility that decreased the number of births by about 280.

Figure 2. Trends in the number of births for the PPS area for 1980 to 1998.



Source: Oregon Health Department, annual data files for births for the State of Oregon, unpublished microdata, 1980 to 1998.

Overall, births in the 1990s have been driven primarily by continued decreases in fertility, with fewer children being born to women in the Portland Public School area. There have been slight fluctuations in the number of women in the childbearing years, adding some births in the first half of the decade and reducing the number of births in the second half, but changes in the number of women has not been a major contributing factor to birth changes. The in-migration of new immigrant groups, however, has helped to counterbalance some of the trends in declining births. Foreign-born couples, particularly from Asia and Latin America, have been growing rapidly and have contributed an increasing proportion of births in the Portland Public School area.

For Multnomah County and for Oregon, the number of births grew during the past decade because of increases in the number of young adults. Fertility levels in the state have changed little in recent years, but more births have occurred because there are more young couples.

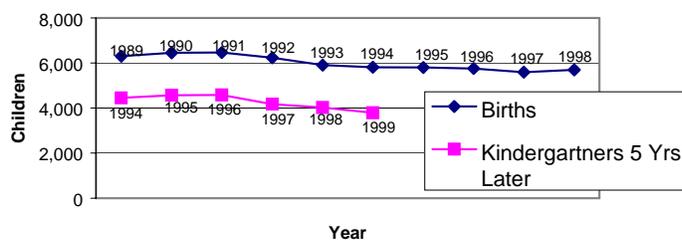
The number of births has obvious consequences for later school enrollments. Figure 3 illustrates the relationship between births in the PPS area, from 1989 to 1998, and the number of kindergarten students who enroll five years after the births. Of course some children leave the area between birth and kindergarten and others do not attend kindergarten. Nevertheless, the decreases in kindergarten enrollments after 1996 can be seen to reflect, in part, declines in the number of births after 1991.

The number of births in the PPS area decreased by over 800 from 6,435 in 1991 to 5,587 in 1997. Smaller cohorts from the 1997 births will lead to declining kindergarten enrollments in 2002, all other factors being equal.

It takes 10 years and more for the full effects of birth changes to alter school enrollments. Although birth cohorts begin to enter kindergarten and the first grade 5 to 7 years after birth, large effects of more or fewer births are not felt until 6 or 8 new birth cohorts have entered school.

Given the birth decreases that began after 1991, what effects have they had on PPS enrollments? To assess this question, we used the demographic model that measures PPS enrollment trends, by grade, for 1990 to 1999.

Figure 3. Relationship of the Number of Births and the Number of Kindergarten Students Five Years Later, Portland Public School Area, 1989 to 1999.



Source: Oregon Health Department, annual birth data, unpublished and Portland Public Schools, annual enrollment data by grade, unpublished.

Analysis using this model shows that birth declines began to affect (a) kindergarten enrollments in 1997, (b) kindergarten and first grade enrollments in 1998, and (c) kindergarten, first grade, and second grade enrollments in 1999. If the number of births had not decreased after 1991, the demographic model suggests that October 1999 PPS enrollments would have been higher by about 400 to 600 students.

DO CHANGES IN MIGRATION ACCOUNT FOR ENROLLMENT TRENDS?

Besides births, migration is the other key demographic process that can affect the population of school age children. Out-migration refers to the departure of people from an area and in-migration refers to the arrival of people into an area. The difference between out and in-migration is net migration, which can be either negative (net out-migration) or positive (net in-migration). Migration can directly affect school enrollments by adding or subtracting school age children to the population. Migration can also indirectly affect school enrollments through the addition or subtraction of pre-school age children and adults who may later have children.

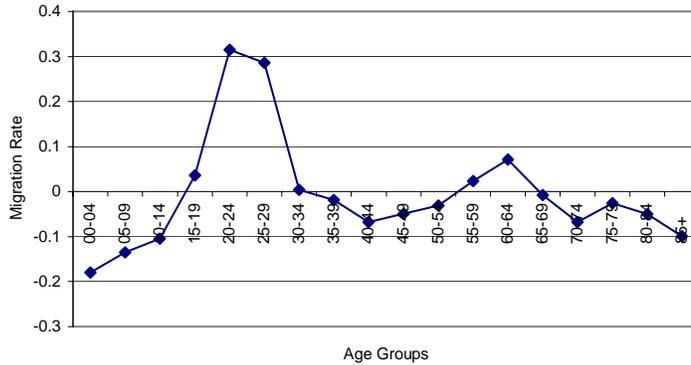
1990 to 1996 Migration Trends

From 1990 to 1996, there was a net in-migration into the PPS area of persons in the age groups between 15 to 34 and 55 to 64 years (see Figure 4, which shows five-year net migration rates for the 1991 to 1996 period). The two groups with the highest in-migration rates were the 20 to 24 and 25 to 29 year-old age groups. Their rates were 31 percent and 29 percent, respectively. The next highest net in-migration rate was 4 percent for the high school age group of 15 to 19 years.

There was a net out-migration of persons aged 0 to 14, 35 to 54, and 65 years of age and older. The net out-migration rates for the age groups 0 to 4, 5 to 9, and 10 to 14 years were all above 10 percent. The corresponding age groups that include the parents of these young out-migrants, 35 to 39, 40 to 44, 45 to 49,

and 50 to 54 year-olds also showed significant net out-migration rates, ranging from 2 percent to almost 7 percent.

Figure 4. Five-Year Net Migration Rates by age for PPS area for 1991 to 1996.



Source: U.S. Census Bureau, 1990 Census and 1996 American Community Survey, microdata files.

1980 to 1990 Migration Trends

Migration patterns in the earlier period of 1980 to 1990 were broadly similar to 1990-1996 trends. There was a net out-migration of persons in the 0-14 age group and a net in-migration of 15-34 year-olds. The net in-migration of adults in their 20s was lower in the 1980s, and the net out-migration of adults in their 30s was higher in the 1980s. The net result was that migration did not increase substantially the younger adult population, aged 20 to 39 years, in the 1980s. Baby boomers born in the PPS area during the 1950s and 1960s, however, provided sufficient numbers to maintain the population of younger adults. By 1990, however, Portland’s baby boomers began to exit the younger adult years. As shown earlier, in-migration of younger adults has been insufficient to offset decreases from the aging adult population in the 1990s.

Age Composition of In, Out, and Net Migrants

The age distributions of in and out migration for the Portland Public School area differ in important ways. We use information collected from the American Community Survey to estimate the age composition for

in-migration between 1991 and 1996. We estimate the number of out-migrants by age by subtracting the number of net migrants from the number of in-migrants (net migrants equal the difference of in and out-migrants, so we can calculate out-migrants from the in and net migration numbers).

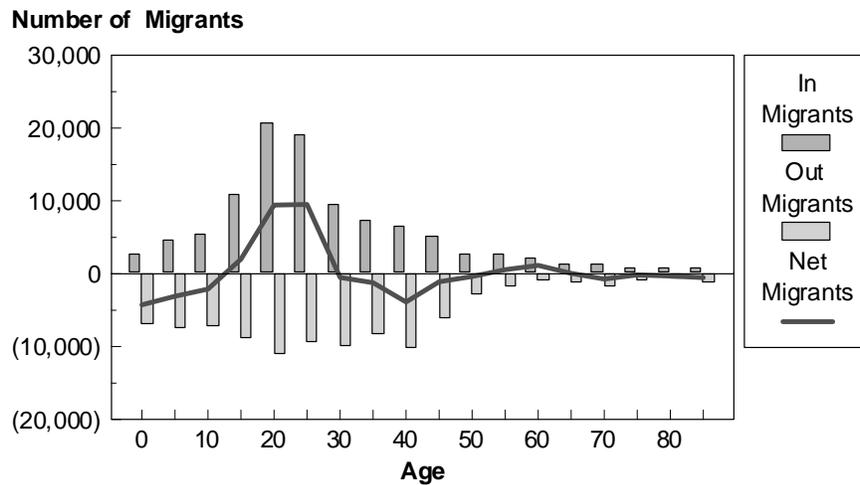
Figure 5 presents information on the age composition for in-migration, out-migration, and net migration. Although there are some in-migrants in the pre-school and younger school age years, the largest numbers occur between 15 and 34 years of age (we lack single year of age data for the 15 to 19 year age group; it is likely that a high proportion of in-migrants in the age group are actually aged 18 and 19 years, and have moved into Portland for educational or employment reasons). Out-migrants for the area, however, are spread out over a broader age distribution, ranging from birth to about age 50.

There are important differences in the characteristics of the in and out-migration streams in terms of children. When younger persons, aged 20 to 34 years of age, move in and out of an area, they are also more likely to take younger children with them. We estimate that there are 6 children, aged 0 to 4 years, for every 100 in-migrants, aged 20-34 years. On the other hand, we estimate that there are 23 children accompanying every 100 out-migrants, aged 20-34 years. The net result is that in the hypothetical situation of 100 young adults moving in and 100 young adults moving out, there is a net out-flow of 17 children (23 minus 6).

The picture is similar for children in the school-age groups of 5 to 14 years. When adults, aged 25 to 44 years, are examined, we estimate that there are 23 school-age children accompanying 100 in-migrating adults, but 39 school-age children accompanying 100 out-migrating adults. The selectivity of these migration flows means that there are about 16 more children leaving the area, even if the numbers of in and out-migrating adults were to be equal.

The result of these in- and out-migration flows is that there is a strong selection of pre-school and school-age children accompanying parents to be participating in net out-migration. The net in-migration to the area is primarily younger adults who typically do not bring pre-school and school-age children with them.

Figure 5. In, Out, and Net Migrants by Age for the Portland Public School Area Population, Estimates for the 1991 to 1996 Period.



Source: U.S. Census Bureau, 1990 Census and 1996 American Community Survey, microdata files.

Evidence from the demographic model constructed for the Portland Public School area suggests that, if anything, there were slight increases in the level of net out-migration for the preschool and school-age population after 1995. If the level and age-sex composition of net migration had not changed after 1995, the model indicates that there would have been about 200 to 400 more students enrolled in the Portland Public Schools in October 1999.

It is difficult to know the reasons for out-migration from the Portland Public Schools area. The location of employment opportunities in metropolitan Portland has been changing and may have affected decisions to move closer to work. Housing prices have increased over the past decade, influencing the relative price of housing in the metropolitan area. Couples seeking larger homes may find more affordable housing outside the City of Portland. Finally, there are many lifestyle factors, including proximity to parks, theaters, rivers, and mountains, that may influence the choice of residence and type of housing.

**DO CHANGES IN CHOICE OF PUBLIC, PRIVATE, AND HOME SCHOOLING
ACCOUNT FOR ENROLLMENT TRENDS?**

Parents can enroll their children in either public or private schools, or may choose to home school their children. Given a specific population of school age children, changes in the relative percentage of children in one schooling option will necessarily affect the percentages of children in the other two options. Public schools have traditionally enrolled the vast majority of American school children. However, some parents are choosing private or home schooling because of perceived advantages of these two options over the traditional public school option.

A previous section described trends for public school enrollment. The sections below review trends for enrollments in private and home schooling.

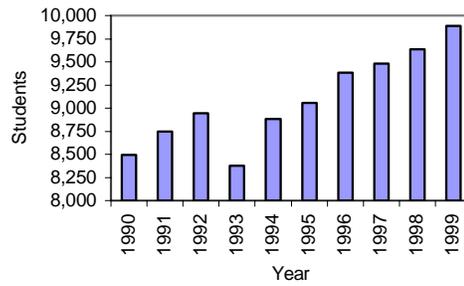
Private Schools

According to reports by private schools, total enrollment in private schools located within PPS boundaries in Multnomah County increased by about 1,300, or 16 percent, from 1990 to 1999 (see Figure 6). At the high school level, private school enrollment in grades 9 to 12 grew by approximately 23 percent during the same period. Private school enrollment increased 16 percent at the elementary and middle grades (this figure refers to preschool to grade 8 -- preschool data are included because private schools are unable to report separately their preschool enrollments; an unknown number of new students in private schools may, in fact, be in preschool programs).

The percentage of students enrolled in private schools located in the PPS attendance area increased from 14 percent in 1990 to 15 percent in 1998. Total private school enrollment increased at a faster rate than total PPS enrollment. This also holds true for the enrollment in grade levels K-8, and 9-12 (see Figure 7).

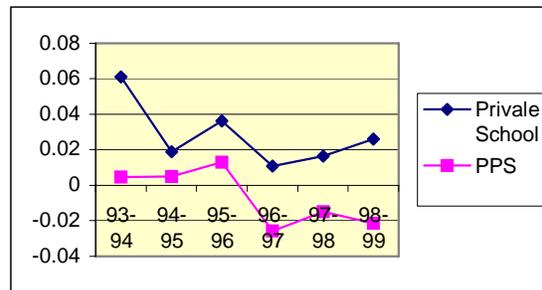
However, for grades 9-12, the rate of increase in private school enrollment has slowed since 1993 and has been similar to PPS enrollment changes. For grades K-8, the rate of increase of private enrollment for all years between 1993 and 1998 has been higher than PPS enrollment, except in 1994.

Figure 6. Private School Enrollment for Schools Located in the PPS Area, 1990 to 1999 (note that origin of the vertical axis is set to 8,000).



Source: Population Research Center, Portland State University, Survey of Private Schools in the Metropolitan Portland Area, 2000, unpublished data.

Figure 7. Annual Percent Enrollment Change for Public and Private School Enrollments, Kindergarten to 12th Grade, 1993-4 to 1998-9.

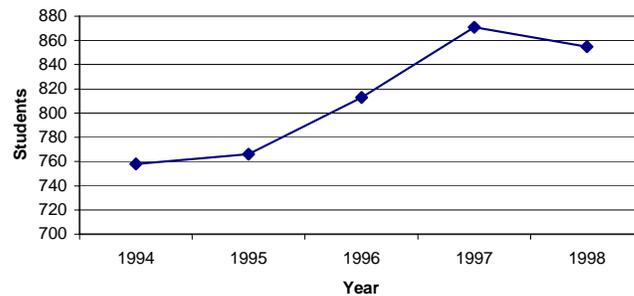


Source: Population Research Center, Portland State University, Survey of Private Schools in the Metropolitan Portland Area, 2000, unpublished data; Portland Public Schools, October School Enrollments, unpublished data.

Home Schooling

The percentage of children in home schooling increased from 760 in 1994 to 870 in 1997, a gain of 110 students or 15 percent, before decreasing from 1997 to 1998 by 2 percent (see Figure 8). The percentage of students in home schooling in the PPS area has been increasing, but is still only about 1 percent of all school-age children.

Figure 8. Number of Students in Home Schooling in PPS Area, 1994 to 1998.



Source: Oregon Department of Education, annual data on numbers of resident school-age children registered for home schooling, unpublished data.

For the 1994 to 1998 period, for which comparable data are available for enrollments, home schooling increased by an average annual rate of 3 percent, private schooling grew by 2 percent, and public schooling decreased by 1 percent.

Public Schooling

We find conflicting evidence on the effects of private and home schooling on enrollments in the Portland Public Schools. The data available from the Oregon Department of Education suggests growth in private and home schooling -- albeit from very low levels for home schooling -- in the PPS area during the 1990s. Trends in the capture rates (or proportion of children enrolled in public schools) for the Portland Public Schools, however, indicate that there was little change between 1990 and 1996. Furthermore, the demographic model constructed for the Portland Public Schools suggests that there have been increases in capture rates between 1996 and 1999. The demographic model points to higher capture rates for the high school years. Because there is conflicting evidence, we advise caution about drawing firm conclusions about the effect of alternative schooling options on Portland Public School enrollments.

There are several reasons why there may be conflicting conclusions about the effects of private and home schooling on public school enrollments. First, it is difficult to maintain comparable data on private schooling. We assign students in private schools to the PPS area based on their reported home address.

But students move year to year. Some students have more than one address, especially if their parents maintain separate households. In short, there may be discrepancies in how many private schools students originate in the PPS area. Second, based on student address data for the Portland Public Schools, we estimate that there are about 1,500 students who reside outside the PPS area. Most of the students who commute into the PPS are enrolled in PPS special education programs. This means that PPS "captures" some students, especially those with special needs, from a broader population. Third, some students may be enrolled in more than one type of schooling: a student could be enrolled, for example, in both home schooling and private schooling programs.

Because of the conflicting evidence and the data limitations, we believe that it is not possible to reach firm conclusions about the recent effects of private and home schooling on public school enrollments. Based on the demographic model, we estimate that the capture rates may have increased, adding 100 to 200 students to Portland Public Schools. Analysis of trends in capture rates by grade for the period after 1995 suggests that capture rates for the Portland Public Schools have decreased for grades 3 to 8 and increased for grade 9 to 12.

DOES RECENT INTERNATIONAL MIGRATION AFFECT ENROLLMENTS AND THE STUDENT POPULATION?

Net migration flows into the PPS area can affect the size of the school age population, as described earlier. In-migrants to the PPS area include domestic or internal migrants (that is, persons moving into the PPS area from other parts of Oregon or another state in the United States) and international or foreign migrants (that is, persons who were born in a foreign country). Domestic migrants may include some international migrants who had lived in another part of the U.S. prior to moving to the PPS area.

In this section, we examine the effect of international migration on enrollments in Portland's public schools and selected characteristics of foreign-born students. We refer to these international migrants as immigrants in our discussion. Of particular interest in the examination of immigrants are the English

language skills of foreign-born students because English language proficiency is critical to academic achievement. We also present findings on the home language backgrounds of school children that are immigrants and who report that they speak a language other than English at home. Because many foreign born migrants come from poorer and less economically developed countries, we also examine the socioeconomic status of foreign born school children in the PPS area.

Data from the American Community Survey are a valuable source of information for analysis of the number and characteristics of smaller population groups. Because immigrant families comprise less than ten percent of Portland families, only a large household survey such as the American Community Survey provides a sufficient sample for separate analysis.

The ACS collects several types of information that are particularly useful for immigration analysis, including country-of-birth, year of immigration, citizenship status, English language proficiency, and home language.

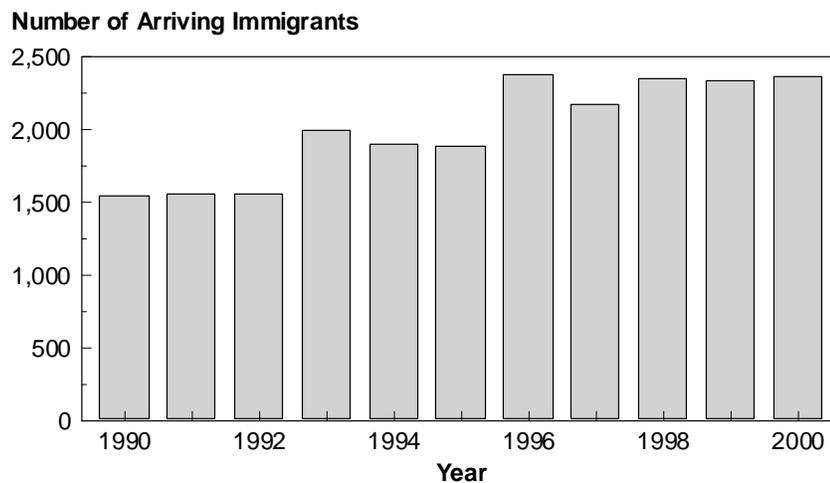
We make extensive use of ACS data for the analysis of immigrant families residing in the Portland Public School area. We aggregated survey data for three years, 1996 to 1998, to increase the number of immigrant families for analysis. Although we did not examine trends over time for the three years of analysis, this is an additional type of analysis that could be conducted using ACS data.

Trends in International Migration to Metropolitan Portland, 1990 to 2000

As shown in Figure 9, there has been an overall pattern of steady increase, with some yearly fluctuations, in the number of immigrants arriving in the PPS area over the last decade. In 1990, about 1,500 immigrants arrived. The annual number of arriving immigrants increased to about 2,300 to 2,400 by 1998. These estimates are conservative because they are based on information reported by the Immigration and Naturalization Service on the number of legal immigrants arriving in the metropolitan area from their

countries-of-origin. Metropolitan Portland also received additional immigrants, who first settled elsewhere in the United States, from other states. Based on responses to the 1990 census question that asked foreign-born residents where they lived five years ago, it is likely that the Portland Public Schools receives about 20 to 40 additional immigrants, arriving from other states.

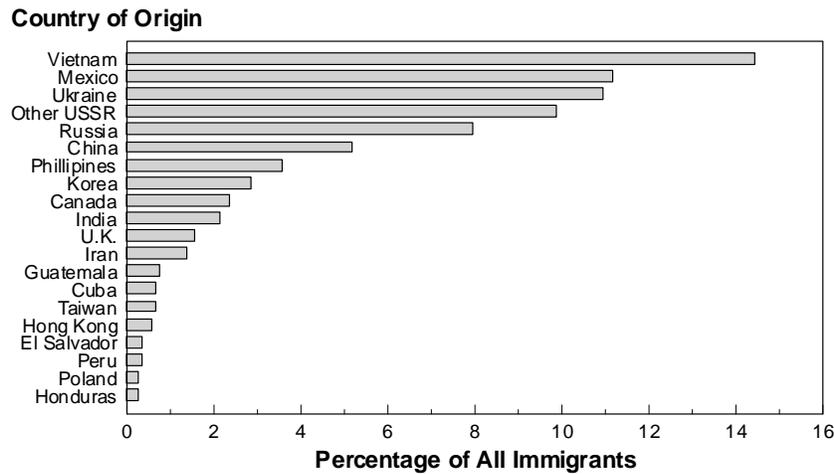
Figure 9. Number of Immigrants Arriving in the Portland Public Schools Area, 1990 to 2000.



Source: Barry Edmonston, Estimates of the Number of Immigrants Arriving in Oregon, Metropolitan Portland, and Portland Public Schools, 1990 to 2000, Population Research Center, Portland State University, unpublished data.

Over half of all immigrants to the PPS area came from just three areas of origin (see Figure 10). Almost 30 percent of recent immigrants were from Russia, Ukraine, and other parts of the former USSR. Another 14 percent were from Vietnam, Cambodia, or Laos, and 11 percent were from Mexico. Other important sources of recent immigrants include China, the Philippines, and Korea. Except for immigrants from the Philippines, it is noteworthy that the majority of recent immigrants may have little or no exposure to the English language prior to immigrating to the United States.

Figure 10. Twenty Leading Countries-of-Origin for Immigrants Arriving in the Portland Public Schools Area, 1990 to 2000.



Source: Barry Edmonston, Estimates of the Number of Immigrants Arriving in Oregon, Metropolitan Portland, and Portland Public Schools, 1990 to 2000, Population Research Center, Portland State University, unpublished data.

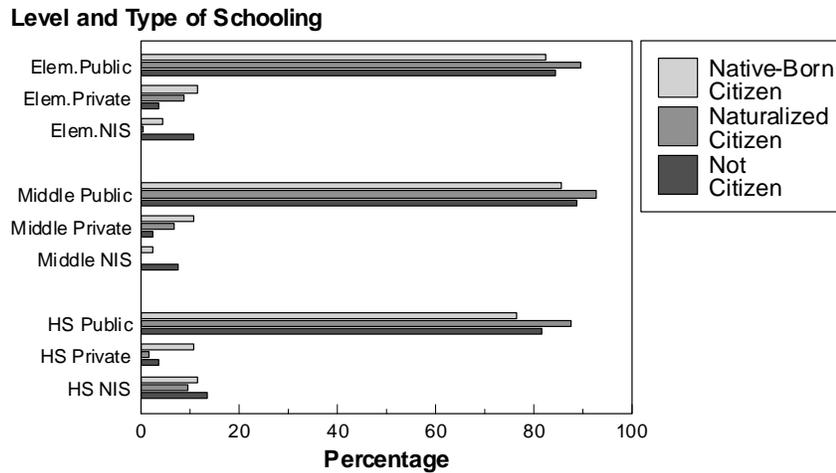
Enrollment in Public or Private Schools, 1996-1998

The next figure shows enrollment rates by level and type of school for native and foreign-born children in the PPS area (see Figure 11). Foreign-born or immigrant children are further divided into those who have become naturalized citizens and those who are not U.S. citizens. Citizenship status of immigrant children reflects two important characteristics: how long they have lived in the U.S., and whether they have become naturalized citizens. Immigrant children who have naturalized are obviously legal immigrants and have resided in the U.S. long enough to qualify for naturalization. Of course, not all immigrant children who are not citizens are here legally – although the majority have probably not lived here long enough to naturalize, or their parents may choose not to acquire U.S. citizenship, they are some who are probably illegal immigrants or the sons and daughters of illegal immigrants.

The majority of school-age children are enrolled in public schools. However, a higher percentage of immigrant children than native-born children are enrolled in public schools at all grade levels. Thus, the public school capture rates among immigrant children are higher. We also note that more immigrant children are not enrolled in school at all grade levels of school. We do not have data to explain why.

Perhaps there is a higher drop out rate among immigrant children. At the youngest ages, immigrant children may not be enrolled because their parents are unfamiliar with the school system, and at the high school age group, some may have already graduated or may have dropped out of school.

Figure 11. Enrollment in Public or Private Schools, or Not In School (NIS), by Nativity, for Students in the Portland Public Schools Area, 1996-1998.



Source: U.S. Census Bureau, American Community Survey microdata files, 1996, 1997, and 1998.

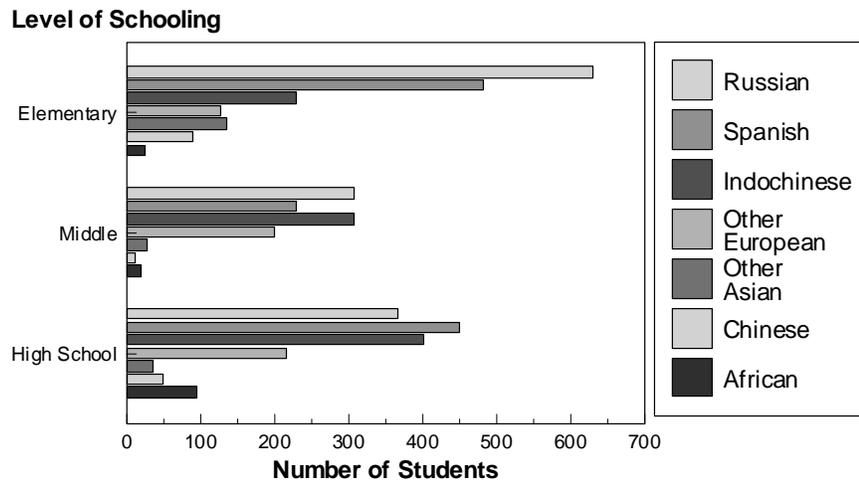
Home Language of Foreign Born Children

Figure 12 shows the home languages of foreign born school children in the PPS area. These children are reported as speaking a language other than English at home. Not surprisingly, the three main non-English home languages are Russian, Spanish, and an Indo-Chinese language (including Vietnamese, Hmong, and Laotian). These home languages reflect the countries of origin of recent immigrants to the PPS area discussed above.

There are some interesting variations by level of schooling. First, there are more elementary school children who speak a non-English language at home. The number of such children who speak Russian and Spanish at home is particularly striking. Second, among high school students, the two largest non-English home language groups speak Spanish and an Indo-Chinese language, followed closely by Russian speakers. The numbers of middle school students who speak a non-English language at home are lower. These

patterns probably reflect the trends in number of immigrants arriving into the PPS area over the last several years. It may be that recent immigrants who arrived in the early 1990s came with young children who are now enrolled in elementary school, and some recent immigrants may be arriving with high school age children.

Figure 12. Home Language of Foreign-Born Students in the Portland Public Schools Area, 1996-1998.



Source: U.S. Census Bureau, American Community Survey microdata files, 1996, 1997, and 1998.

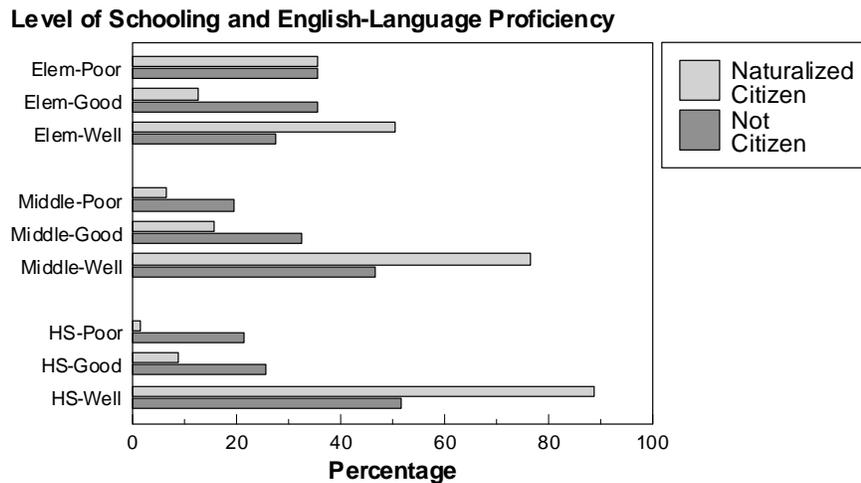
English Language Proficiency of Foreign Born Students

Data on English language proficiency among foreign-born students who speak a language other than English at home are shown in Figure 13. Immigrant students are separated into those who are naturalized citizens and those who are not U.S. citizens (as noted above, citizenship status can be seen as a proxy for length of residence in the U.S.).

It is not surprising that foreign-born students, at all school levels, who are naturalized citizens, speak English well or very well. English language proficiency can be expected to improve the longer children have lived in this country and been exposed to schooling. Thus, more middle and high school students report that they speak English well. An interesting pattern is the fairly high percentage of elementary

school children who speak English poorly (about 40 percent), regardless of citizenship status. With longer exposure to schooling, one can expect these children to improve their English proficiency. However, it is worth noting that there are still between 20 to 40 percent of all foreign-born school children that speak English poorly, with the largest percentage in the elementary school grades.

Figure 13. English-Language Proficiency of Foreign-Born Students, by Level of Schooling and Citizenship, for Students in the Portland Public Schools Area, 1996-1998.



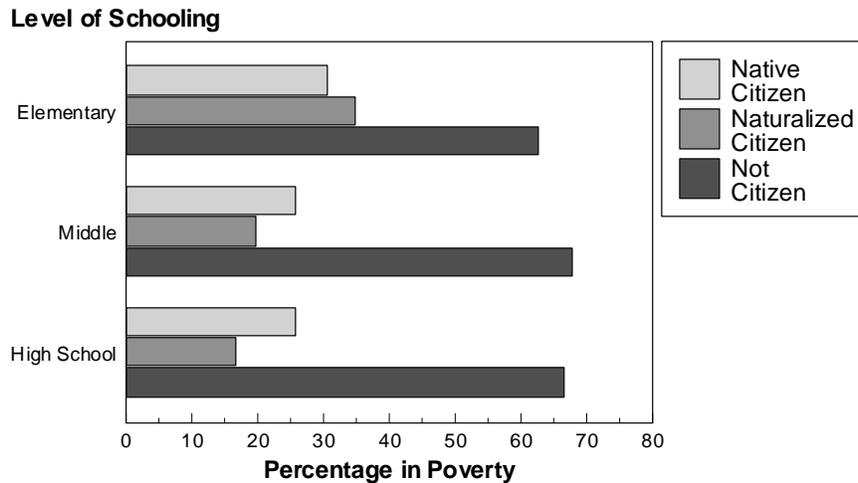
Source: U.S. Census Bureau, American Community Survey microdata files, 1996, 1997, and 1998.

Poverty Status of Foreign Born Students

The majority of immigrants to the PPS area – from Mexico, Vietnam, Cambodia, Laos, and the former USSR – immigrated to the United States under conditions of economic hardship. Many immigrants from Indo-China and the former USSR entered the United States as refugees. Many Indo-Chinese refugees had little schooling in their native countries. Most immigrants from Mexico arrive looking for better economic opportunities compared to poverty and high unemployment in their native country. There are, of course, immigrants who arrive with educational, work, and other qualifications that enable them to blend into the economic mainstream fairly rapidly. However, because the majority of immigrants in the PPS area are from areas with lower levels of economic development, it may be informative to include data on the

poverty status of the children. Poor children have to overcome more obstacles to succeed in school, including fewer resources at home to help them in their school work, parents who may be less educated, and greater demands on their time to contribute to their families' income (for example, through part-time work or helping with a family-based business).

Figure 14. Percentage of School Children Living in Poor Families, by Level of Schooling and Nativity, in the Portland Public Schools Area, 1996-1998.



Source: U.S. Census Bureau, American Community Survey microdata files, 1996, 1997, and 1998.

The percentage of foreign-born children who live in poor families is generally higher than native-born children (see Figure 14). The poverty rate of immigrant children who are not citizens is particularly striking: over 60 percent of all such children are poor. Another significant pattern is the decline in poverty rates among immigrant children who are naturalized citizens from the youngest age groups to the oldest age group. Thus, with longer years of residence in the U.S., immigrant families appear able to improve their socioeconomic status and more are able to move out of poverty.

SCHOOL ENROLLMENT FORECASTS

The second part of this case study involves preparing alternative school forecasts for the Portland Public School area based on the trends discussed above. We provide annual enrollment forecasts by grade for the Portland Public School district from 2000 to 2010. In addition to the future enrollments that are expected

from the continuation of current trends, four additional scenarios are described below. The analysis provides enrollment forecasts for selected grades (K-2, 3-5, 6-8, and 9-12) for each year from 2000 to 2010, although only total enrollments are shown in this report.

Recent annual population growth rates for the Portland Public Schools area have fluctuated in the range of 0.6 to 0.7 percent since 1990. During the period 1990 to 1999, the resident population in the area increased from 398,000 to 421,000, or an increase of 23,000.

Population growth has apparently slacked since 1996, with an annual increase of about 7,500 in the district in recent years. The population growth rate in the school district area is about the same as in the City of Portland.

Most of the land area within the Portland Public Schools area has been developed. There have been, however, some “in-fill” developments with new residential construction. In addition, there have been some conversions of commercial structures to residential housing. In recent years, we estimate that there have been about 1,000 to 1,500 new units added to the housing stock in the Portland Public Schools area.

Forecasting Methods

We rely on two approaches for making district-wide school enrollment forecasts: a cohort-component method and a housing unit method.

Cohort-Component Method. This report primarily relies on a demographic forecasting method called “cohort-component method.” It models future populations and school enrollments as outcomes of demographic events that occur over time. These events include births, deaths, and migration into and out of the school district. The school district population grows when there are births and in-migrants; conversely, the population decreases when there are deaths and out-migrants. These events are more likely to occur in certain age groups, or birth cohorts. For example, people tend to move most often in the ages

18 to 30 years. The elderly are more likely to die than younger persons. The demographic model is based on age-specific rates for births, deaths, and in- and out-migration. The model begins with the resident population in the Portland Public School area in 1990 and moves it through time to the present, and then forward to 2010. By making assumptions about the levels of births, deaths, and migration, we produce a population that serves as the basis for calculating the school-age population and the numbers of children attending Portland Public Schools.

Most school-age children attend public schools; however, some children and youth attend private schools and others may attend schools outside of the district or be home-schooled. The model addresses this issue by calculating the proportion of school-age children captured or enrolled in the public schools, and making assumptions about future capture rates.

The cohort-component method relies on the availability of accurate data on the age and sex composition of the population residing in the Portland Public School area. The most accurate local population data are from the decennial census of population. Data from the 1990 census are used for the basis of the local population in this report. Data for births and deaths are from vital statistics reported for the Portland Public School area from 1990 to 1998, as collected by the Oregon Division of Vital Statistics. Data on net migration for the local area are taken from the 1990 census, the 1996 American Community Survey, and annual population estimates prepared by Portland State University's Population Research Center.

We use the cohort-component method to develop the enrollment forecast for the Portland Public School area, starting with the initial population in 1990. The 1990 census population was organized into five-year age groups (that is, 0-4, 5-9, and so on). Each age group was survived five years at a time, using appropriate survival probabilities by age and sex. These survival probabilities represent the likelihood of people surviving five years, taking mortality into account. The process is repeated for each five-year projection until 2010.

During each five-year period, births occur to the resident population. The number of births in the Portland Public School area is calculated on the basis of the number of women in the childbearing years and the probability that they will have a live birth. The live birth probabilities are determined on the basis of the most recent birth registration data for the Portland Public School area population. Newborns are “survived” into the population aged 0-4 for the five-year projection; afterwards, they survive through time like the rest of the population.

The estimate of in-migration and out-migration rates is a challenge for local population forecasts. In reality, the model is based on net migration rates – the difference between the in- and out-migration rates. If there are more in- than out-migrants, then there is a net in-migration. If in-migrants are fewer than out-migrants, then there is a net out-migration. Net migration rates were calculated first for the Portland Public School area population on the basis of the experience between the 1980 and 1990 censuses. The rates were then adjusted in order to produce a population by age and sex that was as close as possible to the population in the U.S. Census Bureau’s 1996 American Community Survey. The migration data were further modified in order to be as close as possible to current population estimates prepared by the Population Research Center and the actual enrollments experienced by the Portland Public Schools from 1990 to 2000.

Housing Unit Method. Because the cohort-component method does not explicitly account for such events as the construction of new housing in the area, a different version of the model was developed to adjust for the ways in which future housing trends would affect the local area population.

We used data on reports by the City of Portland on the location of new residential housing, demolitions of older housing, and either conversions of commercial structures to residential housing or conversions of residential housing to commercial use for the Portland Public School area since 1990. Based on 1990 census information on the number of residential units, this allows us to make adjustments of housing through 1999.

We made assumptions about changes in the number of persons per housing unit, vacancy rates, and the number of school-age children by housing type (that is, single or multiple unit structures). We also made assumptions about future housing change in the Portland Public School areas and forecast the implications for the number of school-age children. We used the results to double-check the projections that we obtained using the cohort-component method. The forecasts reported in this study rely on the cohort-component method, but they were compared to the housing unit methods to ensure that the two methods produce consistent results.

Demographic Assumptions Under Five Forecast Scenarios

We conduct five forecast scenarios: Recession, Current Trends, Gentrification, Housing Turnover, and Immigration (described in more detail below). The five scenarios make different demographic assumptions for fertility, mortality, and migration. For the “current trends” school enrollment forecast for Portland Public Schools, we assume that current fertility, mortality, and net migration will continue relatively unchanged for the next ten years. This further assumes that there will be about 1,500 housing units added each year within the Portland Public Schools area and that the age-sex profile of net migrants will remain relatively constant

Fertility rates. Fertility rates have been relatively stable in Oregon communities for the past thirty years. There are variations, however, between communities. Based on recorded births for the population living in the Portland Public Schools area, the average number of children born to women in 1990 was about 2.0, or about the same as the average for the state of Oregon. The average number of children born apparently increased slightly, to about 2.04, in 1995. Since 1995, fertility rates have dropped considerably, reflecting the increasing proportion of single persons moving into Portland and the decreasing number of younger couples. The most recent birth data suggest that the average number of children born to women has fallen to about 1.7 in 1998. An overall fertility of 1.7 children is assumed for four scenarios: Recession, Current Trends, Gentrification, and Housing Turnover. For the Immigration scenario, we assume that fertility increases to 2.04 births per woman.

Mortality rates. Survival rates for a population reflect the chances for a birth cohort surviving to the next five-year period. Survival rates are very high for younger ages and almost 100 percent of school-age children survive five-year periods. All scenarios presented in this report make the same assumptions about mortality. Even if we had made different assumptions about the plausible future course of mortality, they would have had only modest effects on the school enrollment forecasts because virtually all school-age children survive from one period to the next.

Migration rates. Each of the five scenarios makes different assumptions about future trends in the volume and composition of net migrants. Migration assumptions are the most difficult to make for a local area population forecast. Migration is affected by employment opportunities, the availability and cost of housing in Portland and in comparison to nearby areas, and a variety of other social and economic factors that influence decisions to move. For this reason, it is important to consider many factors in thinking about the likely future course of migration in the Portland Public Schools area.

We develop estimates for migration rates for the 1990s in the same way for each of the five scenarios. We make an initial estimate of net migration based on a comparison of the population living in the Portland Public Schools area in 1980 and 1990.

American Community Survey data are particularly useful for the preparation of school enrollment forecasts. In this section, the American Community Survey is used for the following key tasks:

- *The estimation of net migration figures by age and sex. Accurate local population forecasts are particularly sensitive to assumptions made about net migration. We base net migration estimates on data from the 1990 decennial census and the 1996 American Community Survey.*
- *We double-check the initial population forecast for the local population by comparing a forecast for 1996 to data from the American Community Survey for comparable areas. This is a very helpful check on the fertility, mortality, and net migration assumptions of the population projection model*

- *The forecast model relies on changes in housing units. Although we have data on changes in residential housing from reports of the City of Portland, we use American Community Survey data for 1996 to double-check the spatial distribution of residential housing in the Portland Public School area.*

Forecast Scenarios

The population residing in the Portland Public School area is diverse and changing. We do not have a magic crystal ball that allows us to predict with any certainty what will happen in the future. For purposes of making enrollment forecasts, we made assumptions about what might happen to enrollments for five scenarios. These scenarios vary greatly. But they do not necessarily include all the complexities of factors that change in the future.

The five scenarios presented here are:

Recession Scenario. This scenario assumes that a prolonged economic downturn occurs that reduces net in-migration to about one-fifth of current levels, that is, from about 3,600 net in-migrants annually to about 700 net in-migrants annually. We assume that the age-sex composition of net in-migrants will remain the same as at present, that fertility and mortality rates will remain unchanged, and that the proportion of school-age children enrolled in public schools will continue at present levels. The assumptions made for this scenario imply that there would be about 300 housing units added annually within the Portland Public School area. This is considerably less than what occurred during the 1990s.

Current Trends Scenario. This scenario assumes that the demographic trends occurring at present will continue unchanged through 2010. The scenario also assumes that the proportion of school-age children enrolled in the public schools will continue at present levels. The demographic assumptions for this scenario imply that there will be about 1,500 housing units added each year in the Portland Public School area. This is within the range of housing changes during recent years.

Gentrification Scenario. This scenario makes the assumption that the age composition of net migrants into the Portland Public School residential area will change, with fewer young adults moving into the area and more older adults leaving the area. The scenario assumes that the overall number of net in-migrants, however, will be roughly the same as in the current trends model. Information for the 1990s suggests that the proportion of school-age children enrolling in public schools decreased in areas experiencing gentrification (residential areas experiencing a relatively rapid increase in family income and housing values). Because of this observation, we assume slight decreases in public school capture rates for the Gentrification Scenario. The demographic assumptions made for this scenario imply that there would be about 1,900 housing units added each year to the existing residential housing stock. This is about 400 to 1,000 more than was experienced during the 1990s in the Portland Public School area.

Housing Turnover Scenario. This scenario resembles the Gentrification Scenario in that it assumes a shift toward more in-migration of younger adults. The difference from the Gentrification Scenario is that it assumes that there are no changes in public school capture rates. This model is consistent with the notion that a greater proportion of older adults may leave the Portland area as the overall population ages and there will be an in-migration of younger adults.

Immigration Scenario. This scenario assumes that there will be a much larger volume of in-migration of the foreign-born into the Portland Public School area. This will have four effects: (a) there will be a greater number of in-migrants than at present; (b) there will be more younger adults entering the population and more older adults leaving; (c) there will be moderate increases in fertility rates; and (d) the proportion of school-age children enrolling in the public schools will increase slightly. At present, immigrants in the Portland Public School area tend to be younger adults, they have slightly higher fertility, and they are more likely to enroll their children in public schools. The demographic assumptions made for this scenario imply that there would be about 1,900 housing units added each year to the existing residential housing stock during the 2000-2005 period and 2,400 units added each year during 2005-2010. This is considerably more additional housing added than was experienced during the 1990s in the Portland Public School area.

Enrollment Forecasts

Five population and housing growth scenarios, as described above, are considered for the enrollment forecasts. Each of the five scenarios makes identical assumptions for trends from 1990 to 2000. They differ only in the assumptions made between 2000 and 2010. As a result, there are no differences in the enrollment trends from 1990 to 2000: each of the five scenarios reproduces the observed enrollment trends for the past decade.

Table 1. Enrollment Forecasts for Kindergarten-Grade 12, Portland Public Schools: Observed Enrollments for 1990 to 2000; Projected Enrollments for 2000 to 2010

<i>Scenario</i>	<i>Year</i>				
	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>
Recession	52,363	54,350	51,234	45,735	40,207
Current Trends	52,363	54,350	51,360	47,627	43,852
Gentrification	52,363	54,350	51,237	48,106	45,162
Housing Turnover	52,363	54,350	51,524	48,880	46,314
Immigration	52,363	54,350	51,640	49,442	51,393

Source: Population Research Center, The Path Ahead: Future Enrollments in Portland Public Schools, 2000 to 2010. Portland, Oregon: Population Research Center, Portland State University, December 27, 2000.

Enrollment forecasts for 2010 vary greatly for the five scenarios: 40,200 for the Recession Scenario, 43,900 for the Current Trends Scenario, 45,200 for the Gentrification Scenario, 46,300 for the Housing Turnover Scenario and 51,400 for the Immigration Scenario (see Table 1).

There were 52,300 students enrolled in Portland Public Schools in the 1999-2000 year. Under all scenarios considered here, there will be decreases in school enrollments. The decreases between 2000 and 2010 range from a high of 12,100 for the Recession Scenario, to 8,500 for the Current Trends Scenario, 7,200 for the Gentrification Scenario, 6,000 for the Housing Turnover Scenario, and a low of 900 for the Immigration Scenario. It seems obvious that public school enrollments are likely to decline in coming years. The extent of the decreases depends upon changes that will only become clearer in the next few years.

The overall enrollment forecasts for each of the five scenarios are as follows:

- **Recession Scenario.** Under this scenario, overall enrollments decrease by more than 1,000 students each year from the present to 2010. Such a scenario would reduce enrollments, dropping total district enrollments by about one-fourth. The effects would be widespread, reducing enrollments in most schools across the district.
- **Current Trends Scenario.** If current trends continue, enrollments would continue to drop by about 600 to 900 students each year. The results suggest that the decline would be fairly even over the coming decade, with only small fluctuations from year to year. Overall, 2010 enrollments would be almost one-fifth smaller than at present.
- **Gentrification Scenario.** Gentrification would bring more young couples into the area, albeit with slight decreases in the public school capture rates. The overall result is enrollments about 1,300 more students in 2010 than under the Current Trends Scenario. However, there would be annual decreases in the range of about 400 to 800 students under the Gentrification Scenario. Enrollments would shift under this scenario, with some modest enrollment gains in areas undergoing gentrification.
- **Housing Turnover Scenario.** Enrollments under this scenario would lead to about 2,500 more students enrolled in the Portland Public Schools in 2010 than under the Current Trends Scenario. Enrollment decreases would be experienced each year until 2010, although the decreases would level off at about 500 to 600 fewer students each year in the latter part of the decade.
- **Immigration Scenario.** This scenario makes the greatest number of assumptions for future changes in the five scenarios considered here. Nevertheless, the Immigration Scenario indicates enrollment declines would continue until about 2005-2006, at which point more children would begin to enroll in the public schools. By the end of the decade, in fact, enrollments would begin to increase by 500 to 600 students annually. Nevertheless, overall enrollments would still decrease between 2000 and 2010.

The overall school enrollment forecasts, from kindergarten to grade 12, for the Portland Public Schools for the five scenarios are as follows:

USES OF THE AMERICAN COMMUNITY SURVEY

This case study highlights the uses of ACS data for school enrollment analysis. It provides several examples of the value of ACS data from a study of Portland Public Schools, including:

- Construction of demographic models: Demographic models of school enrollment analysis and projections require up-to-date estimates of net migration and population composition, by age and sex. ACS data offer such data and, by being more timely, are an important improvement over decennial census information, particularly when analyses are done during years further away from a census.
- Calibration of enrollment estimates: School enrollment data from school districts offer annual information on enrolled students. However, they lack information on the total number of school-age children, including those in private or home schooling programs, as well as school-age youth who are not enrolled in any school programs. ACS data, which are likely to be available in the future with separate tabulations for public and private schools, provide the necessary data for calibrating enrollment models.
- Housing, household, and population trends: A frequent and perplexing trend for school enrollment analysis is the changing composition of a population in terms of housing and household trends. It is rare that trends in housing, household composition, and population are consistent over time for a metropolitan population. In practice, housing vacancy rates change, the mix of owners and renters is altered, and the composition of households in terms of single persons, families with children, and other types of families changes. Having annual estimates of these types of changes provides invaluable information for the analysis of the complex interrelationships of housing, households, and population for school enrollment analysis.
- Migration trends: Movement of pre-school and school-age children directly affect school enrollments by adding or subtracting school-age children to the population. Along with the number of births,

which lead school enrollments by 6 to 7 years, migration is the other critical factor affecting school enrollments. ACS data are helpful in two ways for migration trends. First, ACS provides an annual snapshot of the age composition of the school-age population, thereby helping to understand whether net migration rates by age may have changed in the period between the base year for analysis and the current year. Second, ACS provides information on the age profile and origins of in-migrants (that is, the ACS questionnaire includes a question on where the respondent lived five years ago).

- International migration trends: One of the key areas of information for school enrollment analysis relates to the size and characteristics of immigrant children, both children who are foreign-born as well as native-born children of foreign-born parents. Given the rapid changes in metropolitan populations because of recent immigration, decennial census data are relatively poor indicators of ongoing population shifts. The ACS includes questions about the nativity of children and parents, the language spoken in the home, the English language proficiency of parents, and several related indicators of social and economic status. This information is invaluable for analysis of the effect of international migration on enrollments and the student population.

In sum, ACS data complement currently available data sources in several important ways. First, ACS data are available on a timely basis. Census information quickly becomes out of date. For example, information on poverty rates for school-age children at the school district level (which is used to allocate federal compensatory education funds) is available only once a decade and census data are commonly used to distribute funds up to 13 or 14 years after census data collection.

Second, ACS data provide reliable estimates on an annual (or more frequent basis) for such large geographic areas as state and large metropolitan areas. By cumulating data for several years, the system provides reliable estimates for smaller geographic areas. Once the ACS system is in full operation, small-area estimates could be provided each year on the basis of 5-year cumulated averages.

Third, the American Community Survey offers significant benefits for local community analysis, as illustrated here for educational planning in Portland. Because ACS data are defined for small areas, similar

to decennial census data, tabulations from the ACS can be prepared on a routine basis. Geographic boundaries for ACS data include states, counties, cities, and census tracts, which can be defined for special administrative areas, such as school districts, using census tract boundaries.

Finally, the ACS offers a new and valuable source of information through its microdata. We make use of microdata on immigrant families for analysis of the home language of children in this report, for example. Because of the expense of conducting large local household surveys for smaller population groups, the ACS promises to offer great value for communities throughout the nation, helping them to avoid the high costs of conducting expensive independent surveys in their communities.