OCCUPATIONAL LABOR SHORTAGES: CONCEPTS, CAUSES, CONSEQUENCES, AND CURES

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CHAPTER 1:
CONCEPTUAL BASIS FOR IDENTIFYING AND MEASURING OCCUPATIONAL LABOR SHORTAGES

Three general issues regarding labor shortages have been widely discussed by economists and policy makers. First, because of recent declines in the U.S. birth rate, some analysts are concerned that there will simply be too few workers to maintain growth in the American economy (Levitan and Gallo, 1989). Second, there has been a growing concern that there is or will be a serious mismatch between the skills of the American labor force and the needs of employers, resulting in a serious "skill gap" characterized by unfilled vacancies in many high-skill occupations along with high unemployment for less-skilled workers. Finally, there has long been concern that shortages sometimes develop and persist in specific occupations, leading to inefficiencies in the U.S. economy. It is this third topic, occupation-specific shortages, that is the subject of this study.

This section begins with a brief overview of the concept of occupational labor shortages, focusing on alternative definitions that have been used to identify occupational-specific labor shortages. This is followed by a discussion of the causes and consequences of occupational labor shortages. The section concludes with a discussion of the implications of occupational shortages.

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1 This section is largely based on work originally presented in Barnow (1996) and Trutko, Barnow, Chasanov, and Pande (1993).
2 See, for example, Commission on Workforce Quality and Labor Market Efficiency (1989) and Johnston and Packer (1987). For a critical review of this literature, see Burt S. Barnow and D. Lee Bawden (1991).
3 For a discussion of how employers in Great Britain distinguish between skill shortages, skill gaps, and hard-to-fill vacancies, see Green, Machin, Wilkinson (1998).
A. **Background on Labor Shortages**

The term "labor shortage" has no universally agreed upon definition. It sometimes refers to a shortfall in the total number of individuals in the labor force, and sometimes denotes the possible mismatch between workers and jobs in the economy. Even when the term is used to refer to a particular occupation, a number of definitions have been proposed and used. In this report, the following definition of labor shortage is used: "A market disequilibrium between supply and demand in which the quantity of workers demanded exceeds the supply available and willing to work at a particular wage and working conditions at a particular place and point in time."\(^4\)

This definition considers a shortage as a *disequilibrium* condition where the amount of labor that workers are willing to supply is less than employers are willing to buy at the prevailing wage. A market is said to be in equilibrium when the amount of labor that workers (i.e., sellers) are willing to provide at the market price is equal to the amount that firms (i.e., purchasers) wish to buy at the market price. When the quantities that workers wish to provide and firms wish to buy are not identical at the prevailing price, the market is said to be in a disequilibrium situation.

If the quantity of labor offered exceeds the quantity that firms wish to purchase, there is a surplus, and if the quantity of labor desired by firms exceeds the amount workers offer at the prevailing price, there is a shortage. In general, the quantity that workers are willing to provide is an increasing function of the wages (i.e., price) they can obtain, and the relationship between the amount that workers are willing to provide at various prices, with other factors held constant,\(^4\)

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\(^4\) This definition, which was provided by the U.S. Department of Labor in a Request for Proposals (RFP) for a study of labor shortages, is essentially identical to the definition used by Franke and Sobel (1970) in their study of labor shortages: "a situation existing over an extended period of time in which employers were unable to hire at going wages or salaries sufficient numbers of qualified persons to fill positions for which there were budgeted funds and for which personnel were required to meet existing demands for services."
Exhibit 1-1: Illustration of a Labor Shortage

is referred to as the labor supply curve. Exhibit 1-1 shows a typical upward-sloping supply curve for labor. As the wage rate is increased, more workers are willing to enter a particular occupation and current workers are generally willing to provide more labor.

In Exhibit 1-1, the amount of labor that employers will wish to hire at alternative prices is indicated by the downward-sloping demand curve. Demand curves slope down because as the price of a factor increases, the employer will generally substitute other factors of production for the factor whose price has increased. In addition, higher factor prices will generally lead to

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5 Technically, the supply curve for labor may be "backward bending," which means that at very high wages workers actually reduce the amount of labor they are willing to supply. We do not consider this concept further in our discussion because it is unlikely to be relevant in a study of labor shortages. Labor supply could also be perfectly inelastic, where an increase in the wage rate does not result in an increase in labor supplied. For highly skilled workers, this is often the case in the short run.
higher product prices, which in turn will lead to a reduction in the quantity of the product demanded and the factors of production.

The point labeled E in Exhibit 1-1 is the market equilibrium point. If the wage is equal to $W_E$ then the quantity of labor that workers are willing to supply at that wage ($Q_E$) is exactly equal to the quantity of labor that employers will wish to hire. The market is said to be in equilibrium because the quantity supplied is equal to the quantity demanded.

If, for some reason, the prevailing wage rate in the market is $W_0$ rather than $W_E$, then the quantity of labor that workers are willing to supply is equal to $Q_S$—the point on the supply curve corresponding to $W_0$. Employers, however, would like to hire $Q_D$ at that wage rate. The difference between the amount of labor that employers wish to hire and the amount that workers are willing to provide ($Q_D - Q_S$) is the amount of the shortage. In the next section we discuss how such shortages might arise.

Economists and other analysts have proposed several alternative definitions of occupational shortages. Although these definitions are generally not used in this report, it is important to note that others use the term differently. It is particularly important to keep the definition in mind when interpreting other studies of shortages.

1. **The Social Demand Model**

Some analysts consider a shortage to be present if the number of workers in an occupation is less than what is considered the socially desired number. Under this definition, a shortage of engineers exists if the analyst making the determination concludes that society would be better off if there were more engineers. This type of definition does not imply that the labor

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6 There are different definitions of labor surpluses as well. For example, the Bureau of Labor Statistics concludes that the nation has a surplus of college graduates while John Bishop concludes that there is a shortage. For a review of this issue see Barnow and Bawden (1991).
market is in disequilibrium; instead it describes a situation where the person who claims there is a shortage does not like the market's results. Arrow and Capron (1959) explain the problem with this definition as follows:

In particular, careful reading of such statements indicates that the speakers have in effect been saying: There are not as many engineers and scientists as this nation should have in order to do all the things that need doing such as maintaining our rapid rate of technological progress, raising our standard of living, keeping us militarily strong, etc. In other words, they are saying that (in the economic sense) demand for technically skilled manpower ought to be greater than it is -- it is really a shortage of demand for scientists and engineers that concerns them.

For example, in the late 1980s, the Secretary of Health and Human Services' Commission on Nursing (1988) stated in an assessment of the labor market conditions for registered nurses that: "In the most general terms, a registered nurse [RN] shortage exists when the supply of RNs is insufficient to meet the 'requirements' for RNs. RN requirements can be defined based on either economic demand or clinical need." The Commission rejected the use of clinical need for defining a shortage because they concluded that there is no objective method of quantifying the degree of the shortage and relating it to specific factors.

The fact that we do not use this type of definition for a shortage does not mean we believe that it is unimportant for the nation to consider whether it is satisfied with market-produced results. Quite the contrary, it is important for society to consider whether or not the market solutions are desirable, and, if not, to take appropriate actions. One concern in this report is with the operation of labor markets and the reasons why labor markets sometimes fail to achieve equilibrium, and actions that can be taken to improve their efficiency; however, in some of the occupations examined, there is evidence of a potential social demand shortage, and we identify the potential problems even if an economic type of shortage does not exist.
2. The Blank-Stigler Model

One of the first major studies of occupational shortages was conducted by David S. Blank and George J. Stigler (1957). Blank and Stigler define a shortage as follows: "a shortage exists when the number of workers available (the supply) increases less rapidly than the number demanded at the salaries paid in the recent past." Blank and Stigler then argue that to alleviate the shortage, wages in the occupation must rise, and some of the work formerly performed by the occupation with the shortage will now be performed by others.

The Blank-Stigler shortage concept is illustrated in Exhibit 1-2. Initially the market is in equilibrium at E with wage rate $W_E$ and $Q_E$ workers. If demand increases, the demand curve will shift to the right to the line $D_1$. A shortage will result if the wage remains at $W_E$ because employers will wish to hire $Q_1$ workers—but only $Q_E$ workers will be available at that wage.
Market pressures will then lead to an increase in the wage, and equilibrium will eventually be restored with a new wage of $W_2$ and $Q_2$ workers.

There are several problems with the Blank-Stigler model. First, as discussed below, an increase in demand is only one of the possible causes of a shortage. Thus, the Blank-Stigler model ignores other possible causes of occupational shortages. Second, Blank and Stigler indicate that a shortage can be identified by rising wages in the affected occupation. Wages may not rise, however, because of market imperfections such as controls on wages or imperfect information.

3. The Arrow-Capron Dynamic Shortage Model

Kenneth J. Arrow and William W. Capron (1959) developed an alternative model of occupational shortages. Their definition, which they refer to as a dynamic shortage, is based on the premise that "a steady upward shift in the demand curve will produce a shortage, that is, a situation in which there are unfilled vacancies in positions where salaries are the same as those currently being paid in others of the same type and quality."

The Arrow-Capron model is also illustrated in Exhibit 1-2. Like the Blank-Stigler model, the Arrow-Capron model is characterized by increased demand. However, Arrow and Capron note that markets are characterized by a "reaction speed," and that institutional arrangements (such as long-term contracts) and the time it takes for information to spread will affect the time required for employers to adjust wages. Thus, Arrow and Capron conclude that shortages will be characterized by vacancies. In Exhibit 1-2, the number of vacancies initially resulting from the increase in demand will be equal to $Q_1 - Q_E$. If demand continues to grow, then the market may not achieve equilibrium. The Arrow-Capron dynamic shortage model is consistent with the general model used here, but it may be considered a specific case.
4. Harrington and Sum Definitions of Shortages

In addition to the definitions presented above, several other definitions for shortages have been proposed. Paul E. Harrington and Andrew M. Sum (1984) review several other possible definitions of occupational labor shortages, and two of them are briefly discussed below.

a. The Rate of Return Model

The "rate of return model" is based on the application of internal rate of return analysis to alternative occupations. The costs of investing in a particular occupation are defined as the sum of the direct costs for higher education, training, and supplies, plus the indirect costs of foregone wages that are incurred during periods of training. The benefits are the earnings typically derived from the occupation each year. The internal rate of return is then calculated by finding the interest rate that equates the present value of the costs and benefits. Occupations with shortages are thus defined as those occupations with higher than average rates of return.

Harrington and Sum note that the rate of return approach is "beset with numerous methodological and measurement difficulties." One important problem is that we cannot observe the future earnings streams from various occupations. Relying on cross-sectional or historical data may provide a misleading picture of what the earnings will eventually be. In addition, the returns to various occupations may differ for reasons having little to do with a shortage. For example, some occupations may pay higher wages because they have high health or safety risks—what economists refer to as compensating differentials.

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7 Formally, the internal rate of return is found by solving the equation $0 = (W_0 - C_0) + (W_1 - C_1)/(1+I) + (W_2 - C_2)/(1+I)^2 + ... + (W_n - C_n)/(1+I)^n$, where $W_t$ represents earnings in year $t$, $C_t$ represents costs incurred in year $t$, and $I$ is the internal rate of return that is solved for.
b. \textbf{The Monopsonistic Labor Model}

A market where there is only one buyer for a particular good or type of labor is referred to as a monopsony. The monopsonist differs from an employer in a competitive labor market because the monopsonist can set the wage rather than act as a price taker. The situation for a monopsonist is illustrated in Exhibit 1-3. Because the monopsonist is the only buyer for the occupation of interest, the monopsonist observes the labor supply curve for the occupation; this is in contrast to an employer in a competitive market who can hire all the labor desired at the market wage. Because the monopsonistic employer must pay all workers the same wage, the monopsonist faces a steep upward sloping marginal labor cost curve -- if an additional worker is hired, wages must be increased for all currently employed workers as well as the marginal worker. Exhibit 1-3 also illustrates the marginal revenue product curve for the firm. To maximize profits, the monopsonist employer will hire labor until the marginal labor cost is equal
to the marginal revenue product, corresponding to the point X in the figure. The wage paid by
the monopsonist will then be $W_M$ and $Q_M$ workers will be hired. Note that the number of
workers hired is less than in a competitive market ($Q_E$), and the wage is lower than the
competitive wage ($W_E$).

The monopsonist might consider the resulting situation to be a shortage because the
monopsonist would like to hire more workers at the monopsony wage. However, because the
monopsonist faces an upward sloping labor supply curve, the wage must be increased to attract
additional labor into the occupation. Ehrenberg and Smith (2009) conclude that the labor
shortage faced by a monopsonist is "more apparent than real" because the monopsonist is hiring
the quantity of labor desired at the wage offered. In addition, Ehrenberg and Smith point out that
monopsony situations are likely to be very rare.

5. Butz et al. Concepts

Butz et al. (2003) describe five possible meanings of an occupational shortage:

- If production is lower than in the recent past;
- If competitors’ share of total production is growing;
- If production is lower than what the people doing the producing would like;
- If less is produced than the nation is deemed to need; and
- If production is not meeting market demand, as indicated by a rising price.

Although all of these concepts may signify a problem from some perspective, only the final
definition corresponds to the economic concept of an occupational shortage. Although the first
three concepts listed by Butz et al. may well be cause for concern for a firm, they are more
indicative of a shortfall in desired production than any type of occupational shortage. The fourth
concept, producing less than the nation is deemed to need, corresponds to the social demand concept of a shortage introduced by Arrow and Capron (1959).

6. Summary of Shortage Concepts

Some of the labor shortage concepts that have been proposed, such as looking at the total amount of labor supplied and the potential economy-wide mismatch between employer needs and worker qualifications are important, but they are not relevant to the study of occupational shortages. Like the Secretary of Health and Human Services' Commission on Nursing concluded, the social demand concept is difficult to apply because there is no objective way of determining the optimal number of workers in various professions.

Definitions proposed in the 1950s by Blank and Stigler (1957) and by Arrow and Capron (1959) are closer to the concept of a labor shortage that is used here. The principal advantage of these definitions is that they provide relatively straightforward tests for the existence of a shortage -- rising relative wages in the case of the Blank-Stigler definition and increasing vacancies in the case of the Arrow-Capron definition. However, these definitions are too narrow to capture all the types of shortages of interest. Both the Blank-Stigler and Arrow-Capron definitions do not include in their definitions labor market situations classified as shortages by the other definition, and both omit situations where excess demand results from market imperfections. The more general definition employed here covers such cases.

The use of a broad definition does have some disadvantages. As Franke and Sobel (1970) note in using a similar definition, "The definition is neither altogether concrete and precise nor is it susceptible to precise measurements." However, we also concur with Franke and Sobel's conclusion that: "Viewed in the context of a study whose purpose is to examine the
degree to which labor market institutions respond to and facilitate adjustment to varying degrees of labor market tightness, the definition is, however, meaningful and operational.

B. Causes of Labor Shortages

There are several reasons why it is important to address the causes and consequences of labor shortages. First, because we have adopted a fairly broad definition of a shortage, we will have no single indicator that a shortage exists. By reviewing the economic theory of the causes and consequences of shortages, we will be aware of the appropriate market signals to look for in assessing whether or not a shortage exists. This is especially important because under certain conditions, various interest groups have incentives to argue that a shortage is present or absent. For example, employers and trade associations sometimes have an incentive to claim that there is a shortage to increase immigration quotas for particular occupations, giving them access to a broader pool of applicants. At other times, employers might find it in their interest to claim there are no shortages in order to gain better leverage in contract negotiations with their workforce.

Another important reason for analyzing the causes and consequences of shortages is to help identify and assess potential public and private policies for dealing with shortages. Being able to identify causes will help interested parties focus on the relevant developments in labor and product markets. Understanding the consequences will help us to assess what interventions, if any, are appropriate by government, employers, and workers.

Before turning to the causes and consequences of labor shortages, it is useful to note some of the dimensions of shortages:

- **Geographic scope of the shortage.** Depending on the occupation and the nature of the market, labor markets can be national or regional in scope. Similarly, a particular occupation may have a nationwide shortage, or the shortage may be confined to a few labor markets or a single region of the country (e.g., the shipyard industry on the Gulf Coast).
● **Longevity of the shortage.** As will be discussed below, various forces act to bring markets into and out of equilibrium. Thus, shortages can be relatively brief, lasting for a few weeks or months, or prolonged, lasting for one or more years.

● **Severity of the shortage.** Unlike the two dimensions discussed above, it is not easy to develop good measures of the severity of a shortage. Conceptually, we can measure the severity of a shortage in terms of the magnitude of the changes in wages required to restore equilibrium or in terms of the number of workers needed to alleviate the shortage. There are several difficulties with these concepts. First, we do not generally observe the supply and demand curves for specific occupations. Thus, we cannot directly estimate the size of the employment or wage gap of a shortage. Second, even if we could measure supply and demand, it would not be easy to classify a particular gap as large or small, especially when comparing across occupations—occupations vary significantly in their normal vacancy rates and wage dispersion. Thus, a high vacancy rate for one occupation with a shortage may be characteristic of another occupation in equilibrium.

● **Sub-specialty shortages.** Up to this point we have considered occupations as if they are uniform. For some occupations this may be correct, but for others there may be differentiation by sub-specialty (e.g., emergency room nurses), years of work experience, or specialized training. In such cases, a shortage may exist for the entire occupation or only for workers with selected characteristics. For example, training for engineers has changed considerably over the past 20 years, and older electrical engineers may not be good substitutes for new engineers who have more training in designing integrated circuits. Likewise, new tool and die makers may not be good substitutes for experienced tool and die makers who have gained additional skills through their work. The key determinant of whether there can be shortages for some parts of an occupation is whether all workers within the occupation are reasonable substitutes for each other. If not, a shortage can exist within an occupation while other subcategories are in equilibrium or even in surplus. As will be shown below, sub-specialty shortages can be difficult to document because labor market trends are only captured at a broader level. For example, the Standard Occupational Classification (SOC) system in the United States considers all computer programmers to be in a single occupation. However, when employers have an opening it will be for a programmer who can write code in a particular language, such as HTML, and a COBOL programmer would not meet those needs. Thus, looking at data for all types of programmers combined could mask the presence of a shortage of a particular type of programmer.

For an occupation to have a shortage, two conditions are necessary. First, the occupation must be in disequilibrium, where the number of workers employers wish to hire exceeds the number willing to work at the prevailing wage. Second, the market must adjust slowly, if at all,
with the achievement of equilibrium requiring a substantial period of time. We first discuss the reasons why markets are sometimes in disequilibrium. We then examine the adjustments that employers make to alleviate the disequilibrium, followed by a discussion of the reasons why disequilibria may persist. We then discuss the consequences of prolonged shortages.

C. Reasons Why Occupational Labor Markets Are in Disequilibrium

Labor shortages can result from a number of different causes. In this section, we discuss the reasons why the labor market for a particular occupation might leave an equilibrium situation where the market wage equates supply and demand.8

**Increase in the Demand for Labor.** Exhibit 1-4 illustrates how a labor shortage can result from an increase in the demand for labor; several variants of this scenario were discussed previously. Suppose that the labor market is initially in equilibrium at point E. If the demand for labor increases, the demand curve will shift to the right. If the supply curve remains the same and the prevailing price (wage) remains at \( W_E \) employers would like to hire \( Q_D \) workers, but only \( Q_E \) will be available. Thus, there will be a shortage of \( Q_D - Q_E \) workers.

The demand for labor by employers can increase for several reasons. Perhaps the most likely reason for an increase in the demand for labor is an increase in the demand for the goods or services produced by employers (e.g., a substantial expansion in contracts to shipyards for construction and/or repair of ships). An increase in the demand for the product can result from an increase in the number of consumers, an increase in the income or wealth of consumers, a change in the composition of the population of buyers, or changes in the tastes of consumers.

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8 For a similar discussion of the issues raised here, see Burke (2005).
Another reason for an increase in the demand for labor is an increase in the prices of substitute factors of production. For example, in a hospital the demand for nurses might increase if the wage rates of doctors and/or nurses' aides increases. The demand for a given type of labor will also increase if the price of a non-labor factor (e.g., raw materials or machinery) increases and the labor can be used as a substitute in the production process. Both the Arrow-Capron and Blank-Stigler labor shortage models discussed previously are demand-driven shortage models. The Arrow-Capron dynamic model is somewhat more complex because it deals with a situation where demand continually grows more rapidly than supply.

An increase in demand for labor in a particular occupation does not necessarily lead to a shortage. If the supply of labor to an occupation can respond to the increased demand, the result will be a new equilibrium with more workers employed and a higher wage rate than at the previous equilibrium, as is illustrated in Exhibit 1-4. An increase in demand will almost
certainly require some time for the market to reach a new equilibrium, but if vacancies persist for a sustained period, the occupation can be characterized as experiencing a shortage. Reasons why occupational labor markets may adjust slowly are discussed below.

**Decrease in the Supply of Labor.** A decrease in the supply of labor to a particular market can also create a labor shortage. This situation is illustrated in Exhibit 1-5. Once again suppose that the market is originally in equilibrium at point E. If the labor supply curve is shifted to the left, indicating fewer workers available at each wage rate, there will be a labor shortage if the prevailing wage remains at $W_E$. Employers will still be trying to hire $Q_E$ workers, but only $Q_S$ workers will be available after the supply decreases. Thus, there will be a shortage of $Q_E - Q_S$ workers.

The labor supply curve for the labor market in question might shift for several reasons. One potential cause is a decrease in the size of the population that works in the relevant jobs. For example, as the baby boom generation has aged, employers who generally hire youth as they complete high school have suddenly faced a much smaller supply of entry-level workers from the so-called "baby-bust" generation, whose population is much smaller.

The supply curve might also shift to the left because wages in other occupations have risen, making employment in the market of interest less attractive, or because non-work opportunities, such as welfare, crime, and retirement, have become more attractive. Finally, the labor supply curve for an occupation might shift to the left because of restrictions on entry into the relevant labor market. Such restrictions may be implemented by the government (through

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9 This is the situation that occurred in the U.S. labor market for shipfitters in the 1990s. Because shipfitters and oil pipeline workers use many of the same skills, an increase in demand for pipeline workers by the oil companies led to a decrease in the supply of shipfitters. See Trutko and Barnow (1998).
licensing requirements and restricting the number of licenses granted), by professional organizations that set standards for practice, by labor unions, or by training institutions (e.g., universities, community colleges).

**Restrictions on Prices.** Although most prices are determined competitively by markets in the United States, in some industries the price of labor or the price of the final product is regulated. For example, cities generally regulate the price that taxi drivers can charge. In such instances, the supply curve is truncated at the regulated price. This situation is illustrated in Exhibit 1-6. The wage rate is restricted to be no higher than $W_M$ so the supply curve at higher wages is indicated by a dashed line. The labor that will be supplied at that wage is $Q_S$. At that wage, however, the demand is for $Q_D$ workers, so there is a shortage of $Q_D - Q_S$ workers. An example of this type of shortage during some periods is the U.S. government's market for entry-level Ph.D. economists. The federal government traditionally hires entry-level economists at the
GS-12 pay level, and agencies are generally not permitted to pay a higher wage rate. Sometimes the market wage for entry-level economists is higher, so in many government agencies there is sometimes a shortage of entry-level Ph.D. economists.

More commonly, the government regulates the prices of products and services rather than labor. In industries where labor comprises a relatively small share of the product's price, such as in the generation of electric power, the product price regulation is not likely to cause a labor shortage. In very labor-intensive industries, however, output price regulation can be tantamount to regulating the price of labor. Examples include the health care industry in general and the home care industry in particular. A large share of the U.S. health industry is financed by the Medicare and Medicaid programs. In the case of Medicare, the federal government limits the reimbursements that providers can obtain for treating covered elderly patients. State governments provide similar regulation under Medicaid programs for the poor. By restricting the charges that providers can make, the providers face limits on what they can pay workers and still cover their costs.
D. Adjustments to Occupational Shortages by Employers

This section describes some of the actions that firms are likely to take to deal with labor imbalances. Because employers will note the problems first, as they are unable to fill vacancies at current wage rates, employers will likely take actions to deal with the unfilled positions. Some actions are more costly or less reversible than others, so employers are likely to undertake these actions first. The potential actions that employers can take are listed roughly in order of desirability from the employer's point of view. In particular cases, of course, some of the potential actions may be inapplicable or employers may undertake the actions in a different order. Note that all the potential actions employers can take are the opposite of the actions that lead to vacancies: increasing supply, decreasing demand, and increasing wages. Finally, many of the actions described below may be undertaken by employers for reasons other than trying to fill vacant positions.

**Increase Recruiting Efforts.** A logical first step to fill vacancies is to increase recruiting efforts. Although employers will incur short-term costs in expanding recruiting, there are no long-term or permanent costs involved. Recruiting can be increased through several approaches:

- **Increased advertising in the usual outlets.** For example, employers who advertise in newspapers can increase the frequency of the advertisements or the size of the advertisements to attract more attention to vacancies.

- **Advertise in other media.** To reach a wider audience of potential employees, firms can expand their advertising campaigns. Firms that traditionally recruited through newspaper advertisements can add other newspapers in the community, radio, and television. Use of job fairs is another such technique. Over the past decade, employers have increasingly advertised available positions over the Internet, using the company’s website, trade association websites, and other more generalized job search websites (such as Monster.com, CareerBuilder.com, and CareerLink.com).

- **Expand the recruiting area.** Employers who believe that the problem is local rather than regional or national can increase the geographical scope of their
recruiting efforts. For example, a firm having difficulty recruiting shipfitters in Louisiana might expand its recruiting efforts to other nearby areas along the Gulf Coast (e.g., Texas, Mississippi, and Florida) and, if necessary, in other parts of the country or the world. Some occupations, generally those with highly skilled jobs, already have national labor markets. For these firms, and for firms recruiting for occupations with a national shortage, the only way to increase the recruiting market is to recruit abroad. The extreme case of expanding the recruiting area is to recruit immigrants either for temporary or permanent jobs. Because the number and characteristics of immigrants that can be admitted is determined by law, individual employers may be limited in the extent to which they can make use of this option.

- **Use public and private employment agencies.** Firms that do not already do so can make use of public and private employment agencies. Public agencies, referred to as the employment service or job service, are free to both workers and employers. In some states, the employment service may tend to specialize in serving particular types of workers, but all employers can list their openings with the employment service. Private employment agencies charge a fee to either the worker or the firm, with the fee based either on the time spent by the agency or as a percentage of the hired worker's salary.

- **Pay recruiting bonuses to employees who bring in new workers.** For many employers, current workers are often the best source of potential new hires. Employees are likely to be hesitant to recommend individuals who are unqualified, and the candidates they recommend are likely to know more about the work and working conditions than other job candidates. Thus, for many firms current employees are a major source of job applicants. To encourage workers to assist in the recruiting process, employers sometimes offer a bonus for referring qualified applicants or applicants who are hired.

**Increase Use of Overtime.** A relatively simple solution to the problem of filling vacancies is to have current employees work more hours. Employers who anticipate that the problem will not last for a substantial period of time are likely to use this approach. If the workers are exempt from the overtime provisions of the Fair Labor Standards Act (FLSA) and do not receive a premium for hours in excess of 40 hours per week, overtime may actually save money relative to hiring additional workers. Even for non-exempt workers, overtime may be less expensive because many fringe benefits (such as health insurance, unemployment insurance, and workers compensation) are fixed per worker, and the firm will not experience any increase in
costs for these benefits when current employees work additional hours, and other costs (such as recruitment and training) can be avoided.

As a long-term measure, however, increased use of overtime may not be a viable option. For workers not exempt from the FLSA, the employer must pay a premium of at least 50 percent for overtime work, which gives employers a strong financial incentive to try other means to deal with vacancy problems. In addition, many workers prefer not to work overtime, so increased use of overtime may lead to employee dissatisfaction and increased turnover, thereby exacerbating the vacancy problem instead of reducing it.

**Reduce Minimum Qualifications for the Job.** Another method of filling vacancies is to reduce the minimum hiring standards for the occupation. At first this may appear damaging, but this is not necessarily the case. The firm may have set the minimum hiring qualifications higher than necessary when labor was abundant. For example, a firm may have required a college degree for sales workers when a high school diploma would have been adequate. For professional jobs, the firm may have selected graduates from the most prestigious schools, or have had a minimum grade point average or test score cutoff, and these requirements may not be necessary.

If the productivity of less qualified workers is lower, the firm may be able to train the workers to reach the productivity levels of the more qualified workers after a reasonable period of time. When a firm reduces the minimum hiring qualifications, the labor supply is effectively increased, and the firm may be able to reduce the wages offered or at least avoid increasing wages.

**Restructure Work to Use Current or New Employees in Other Occupations.** If employers have difficulty filling vacancies with workers in one occupation, it is sometimes
possible to restructure the work to make use of workers in other occupations. For example, hospital services are performed by workers in a number of occupations, e.g., physicians, nurses, nurse's aides, and orderlies. Although some duties cannot be readily reassigned (only physicians can perform major surgery), nurses can perform some of the testing, and care-taking functions can be assumed by virtually any of the staff. Likewise, some engineering tasks can be performed by drafters, and some tasks performed by teachers can be performed by aides.

For several reasons, firms will not always make use of this option. For example, hospitals are unlikely to use physicians to perform care-taking tasks because physicians are so costly that other measures will generally be less expensive. In addition, assigning what is perceived to be low-level work to employees may hurt morale and productivity. Finally, reassigning tasks may involve considerable expense and disruption because of training and rescheduling that must be conducted.

In some cases, complex jobs can be decomposed into simpler tasks that can be handled by less skilled workers. For example, a tool and die maker's work could be split among metal workers who possess some, but not all, of the skills of a tool and die maker. In general, shortages are more likely to occur for high-skill occupations than low-skill occupations.

**Substitute Machinery and Equipment for Labor.** Employers can sometimes alter the production process to replace workers with equipment. As technology has advanced in recent years, the types of tasks performed by machines have also changed. Formerly, machines typically replaced humans in unskilled tasks such as lifting and moving. More recently, computer-based technology permits machines to perform more sophisticated tasks including voice recognition, drawing, designing, and (to some extent) teaching. Artificial intelligence
"expert system" models even permit computers to substitute for professional judgment under certain circumstances.

There are obviously limits to how much technology can substitute for labor, and in many situations technology will be used to substitute for labor for reasons other than difficulty in filling job openings. However, substituting technology for labor is sometimes a viable method of dealing with difficulty in filling vacancies.

**Train Workers for the Jobs.** For some occupations, training is traditionally performed by employers, either formally through apprenticeship or other training programs, or informally through on-the-job training. For many other occupations, however, training for entry-level jobs is performed by other means—typically colleges and universities for professional occupations, and vocational schools and trade schools for skilled craft and service occupations. Employers who traditionally do not train their own workers may resort to offering or sponsoring training if they are experiencing difficulty filling vacancies.

Offering training for an occupation is often a major commitment for employers, and it is typically not provided unless most other approaches fail. There are several related reasons why firms are reluctant to offer occupational training. First, the training is generally time consuming. Training new employees for a skilled occupation can sometimes take years, and by the time the workers are trained, the problem of filling vacancies may have disappeared. Second, establishing and operating a training program to bring new employees into an occupation is costly. Employers must feel confident that they can recoup their investment before they are willing to underwrite these costs. Finally, training new hires for occupations with vacancies carries several risks for employers. The individuals selected may not be able to successfully
complete the training, or if the skills are transferable to other employers, they may quit shortly after they are trained.\textsuperscript{10}

For occupations that do not require a college degree, establishing an apprenticeship program is one potential method of training workers for occupations through a combination of classroom and on-the-job training. Other possibilities include training current or new workers in-house or in cooperation with local colleges, vocational schools, and proprietary schools. In some cases the employer may not pay for the training—the courses can be partially or fully funded under federal programs such as the Workforce Investment Act (WIA), state training programs, or educational institutions.

Training for entry into an occupation can be illustrated by an extreme but interesting case. The uniformed services need physicians, but they are prohibited from paying market wages to physicians (a shortage induced by market restrictions). To get around this problem, the uniformed services established their own medical school, Uniformed Services University, to train physicians at no cost to the students. To prevent the students from leaving soon after being trained, the students are required to sign contracts agreeing to stay in the military for a specified number of years.

\textbf{Improve Working Conditions.} Improving working conditions sometimes is an effective way to attract new workers and/or reduce turnover. Working conditions include factors such as hours worked, upgrades in equipment and facilities used by workers, level and type of supervision, involvement in operation of the firm, training to deal with stress related to the job,

\textsuperscript{10} The arguments presented above apply primarily to training new hires for entry into an occupation that they are not qualified for. The arguments do not apply, or do not apply to the same extent, to training workers already on the payroll to improve their skills. Moreover, even if training does not pay for an individual employer, it might pay for society as a whole. See Barnow, Chasanov, and Pande (1990).
and recognition of the importance of workers in the occupation. Improvements in working
conditions can be especially useful in situations where vacancies are created by high turnover.
High turnover is often associated with occupations with high stress, low wages, or low prestige.
A concomitant benefit of improving working conditions is that productivity may increase as
well.

Improving the number or timing of work hours can also help in recruiting and/or reducing
vacancies. Some occupations may require split shifts (e.g., driving buses), night and weekend
work (e.g., health occupations), or down time between productive periods (e.g., home care).
Employers sometimes deal with these unpleasant working conditions by offering premiums for
work at undesirable times, but they often believe they cannot afford a sufficiently high shift
differential to eliminate the problem. Although shift differentials are still often necessary for
undesirable shifts, employers can sometimes improve recruiting and reduce turnover by working
with employees to structure shifts to be as desirable as feasible. For example, hospitals have
experimented with a number of shift structures to fill the most undesirable shifts. In the home
care industry, where workers sometimes have a great deal of travel time and down time between
cases, some employers have been successful in restructuring caseloads to minimize these
problems.

**Offer Bonuses to New Employees.** Although this approach is not commonly used, firms
sometimes offer new employees bonuses for joining the firm. Signing bonuses are similar to
paying current employees bonuses (or "bounties") for recruiting new employees for occupations
that are difficult to fill, except that bonuses go to the new employees rather than the current
employees.
For workers, this option provides an extra incentive to join the firm offering the bonuses. This approach is more advantageous for employers than raising wages because it is a one-time cost and only affects the employees added in the occupation of interest. The disadvantage for employers is that the employees lured by such bonuses may not be as interested in long-term careers with the firm, and they may be "pirated" away by other firms offering similar bonuses. Signing bonuses are most frequently used when employers feel that they are under intense pressure to fill vacancies in the short run. They have been used by hospitals to recruit nurses and by data processing firms to recruit programmers. When employers recognize this to be the case, they sometimes resort to using hiring bonuses to lure employees from other firms.

**Improve Wages and Fringe Benefits.** Based on the simple supply and demand curve analysis, increasing wages is an obvious way to increase the number of workers willing to work in a particular occupation. Employers are generally reluctant to increase wages for several reasons. First, an increase in wages will affect the entire workforce in the occupation with vacancies, not just the new workers the firm wishes to attract. Thus, the employer incurs costs for more than just the added workers. Second, the employer might have to increase wages for workers in other occupations as well. Employers generally attempt to maintain equity among workers in various occupations. Thus, if an employer increases wages for one occupation because of difficulties in filling vacancies, wages may have to be increased for other occupations as well to maintain what are viewed as appropriate differentials. Another problem with raising wages is that wages tend to be "sticky" in terms of moving down. That is, once market conditions change, employers will generally have less flexibility to reduce wages later. Finally, raising wages might not be an effective means of recruiting in the short run if supply is not responsive to changes in wages (i.e.,
the supply is inelastic). In the extreme case, if the supply is totally fixed in the short run, higher wages cannot induce any change in the number of workers qualified to work in the occupation.

Improving fringe benefits is similar to increasing wages, but in some instances employers will reduce their vacancy rates more by improving benefits rather than increasing wages by a similar amount. For example, health insurance is often an important fringe benefit to provide. Because group health insurance rates are usually substantially less expensive than individual policies, the value of health insurance to the employee will often be greater than the cost to the employer. Health insurance is especially a concern for employers trying to fill vacancies for relatively low-paying jobs if Temporary Assistance for Needy Families (TANF) recipients are potential workers.\footnote{In 1996, TANF replaced Aid to Families with Dependent Children (AFDC).} This is because TANF recipients receive excellent health insurance through the Medicaid program, and they are often hesitant to take jobs if they will lose coverage for themselves and their children. Unfortunately, many employers who do not provide health insurance are small and pay low wages. Thus, adding benefits such as health insurance may be most burdensome in those cases where it would be most important. Other potential fringe benefits include subsidized housing and childcare.

**Contract Out the Work.** If a firm is unable to hire all the employees it needs in particular occupations, the firm may be able to contract out the work to another employer who is not experiencing the problems. In some instances the labor problem may be regional in nature, and the firm can contract out the work to a firm in another part of the country. If the problem is nationwide, the firm can sometimes have the work performed overseas.

**Turn Down Work.** If a firm has exhausted all means that it considers reasonable and can find no reasonable way around its occupational vacancies, the firm always has the option of
turning down work. Employers generally use this "solution" only as a last resort because they do not like to give up customers to competitors and, more basically, the only way to make a profit is to sell goods and services.

If the firm has limited capacity to conduct its business because of occupational shortages, there are more subtle measures than simply refusing work. For example, the firm might reduce its marketing activity, and thus reduce the demand for its products as well as its advertising costs.

E. Reasons Labor Markets May Adjust Slowly

As discussed above, labor markets, and other markets as well, constantly experience changes in supply and demand that cause them to deviate from an equilibrium situation. In most cases, firms and workers will take actions that will move the labor market toward equilibrium. In some instances, however, the market adjusts slowly, and equilibrium is not restored, resulting in a shortage for the occupation. The literature suggests several factors that may result in the market failing to clear reasonably quickly. These factors are discussed below.

**Slow Reaction Time by Employers.** In most industries, each individual firm employs a small share of the workers in a particular occupation. Thus, individual employers may be unaware of an increase in demand, and they are almost certainly unaware of the magnitude of the increase. As the firm recognizes that workers cannot be attracted at what they believe to be the market wage, they may then take the actions described above to deal with the vacancies.

A number of factors can influence the reaction time of employers. If the firm does not recruit frequently for the occupation, either because of low turnover or because it employs few workers in the occupation, the firm may not know the typical period for filling vacancies for that occupation. The firm also may not have a good idea of what the market wage is, and thus may tend to set its offer wage too low.
Several institutional factors are likely to affect reaction time by employers. Occupations characterized by long vacancy periods are more likely to have slow reaction times by employers because employers expect to take a significant amount of time before they fill vacancies. Lengthy recruiting periods are more characteristic of occupations with high salaries, typically professional and managerial occupations and highly skilled craft jobs. Occupations where employment is concentrated in small firms are likely to be characterized by slow reaction times because the employers are likely to recruit for fewer positions and less frequently than larger employers.

Other institutional factors that can influence employer reaction time include the extent to which employers and workers in the occupation are organized and exchange information. For example, if employers have a trade association that monitors and publishes data on wages, vacancies, and other employment-related factors, employers will be aware of the occupational situation early in the search process. Of course, receiving national-level data is not as useful as local data for an employer who recruits locally. For some occupations, hiring is done in conjunction with the trade union representing the workers. Even if most firms are small, the centralization of the hiring process will help employers gain a quicker grasp of the supply available.

**Slow Response Time by Employers.** After firms recognize that there is excess demand for an occupation, they may delay taking actions to fill their vacancies. Most strategies that a firm might try could be risky, expensive, or both. Relatively minor responses, such as intensifying the recruiting effort, will waste the firm's money if the positions would be filled without them. More significant responses, such as changing the occupational structure of the firm and training workers, require major commitments of time and resources to plan and
implement. Such actions are unlikely to be taken unless the employer believes that the firm is facing a prolonged period of difficulty in hiring.

Increasing wages can also be a major step for employers. As noted above, the wage increases must also be passed on to current workers as well as the newly hired workers, and sometimes workers in other occupations must receive increases as well. If the firm is in a competitive product market, it must carefully balance two competing interests. If it sets the wage too high, the firm's costs will be higher than the costs of its competitors, and the firm is likely to either lose market share (if it passes the costs on to consumers) or profits (if it absorbs the increased costs) or both. Thus, firms are likely to be conservative in increasing wages as a method of filling vacancies.

**Slow Reaction Time by Workers.** Workers in other occupations and individuals who are unemployed or out of the labor force may not immediately recognize that wages and/or working conditions have improved in the occupation with the developing shortage. If workers who might be attracted to jobs in the occupation with the excess demand are unaware of the opportunities, they will not be able to consider entering that occupation. The time required for workers to become aware of the new opportunities depends on how effective firms' recruiting strategies are and how sensitive workers are to the recruiting effort. Also, workers may have a certain amount of loyalty to their current employer, occupation, or industry; and the greater such loyalty is, the slower will be the reaction time by workers.

**Slow Response Time by Workers.** Once workers are aware of the opportunities, their response time will depend on the time required to qualify for the positions and the costs and benefits of obtaining any needed qualifications, applying for the positions, and changing jobs.
Typically, the greater are the incentives provided by employers to induce workers into the occupation of interest, the quicker and greater will be the response by potential entrants.

For many occupations, training time is the most important factor slowing worker response time. Occupations requiring a specialized college degree, such as engineering, will be very slow in adjusting because the "pipeline" for producing new engineers is four years. The lag might be more extensive if some potential engineers must adjust their mathematics course load in high school. Some specialized occupations, such as architecture and medicine, require even longer preparation.

Many occupations requiring less than a college education still demand several years of training and will have a substantial lag before interested individuals qualify for the occupation. For example, many technician and skilled craft positions take two or more years of training. At the other extreme, some low-skill jobs, including paraprofessional home health care workers, may require as little as one week of formal training. Thus, the worker response lag generally will be shorter.

Response time can also be slowed if training institutions lack the capacity to train additional workers. For instance, the supply of nurses cannot be readily expanded if there are too few nursing instructors.

**Restrictions on Occupational Entry.** In some cases, institutional barriers to occupational entry will slow down the adjustment process. These restrictions are generally instituted to achieve certain purposes, so removing or modifying the barriers is not always appropriate. However, in times of occupational shortages, consideration is often given to modifying these restrictions.
One example of a barrier to occupational entry is limits in the enrollment capacity of training institutions that supply workers for the occupation. Suppose, for instance, that hospitals needed to hire more physicians and there were enough individuals interested in attending medical school to meet the hospitals' demands. If the nation's medical schools could not admit the extra students because of limited capacity, the supply of physicians could not increase. Note that hospitals do not regulate the capacity of medical schools, so it would be difficult for this market to adjust.

Other institutional barriers include licensing and certification requirements. Employers might be willing to lower the standards for a particular occupation, but if entry to the occupation is regulated, the regulatory or licensing board would have to agree. These boards, which are often state bodies, might not wish to lower the standards, and current members of the occupation might object to relaxation because it would cheapen their credentials and possibly result in lower wages. Restrictions on immigration may operate as a similar institutional barrier to achieving equilibrium in occupational labor markets. Trade unions or associations, at the time of contract negotiations or through other activities, may restrict the supply of workers or hiring requirements for workers. An example of this type of barrier is restrictions on the ratio of apprentices to journey workers in an occupation. In some instances, such restrictions could constrain employers and potential entrants from increasing the number of entrants in an occupation making use of apprenticeships.

All of the barriers mentioned above were established for particular reasons, usually to assure quality for workers in the occupation. Although consideration should be given to changing or eliminating the barriers, their original intent should not be forgotten.
**Continuous Increases in Labor Demand.** If the labor demand schedule continuously increases faster than the amount supplied can increase, then the market will not achieve equilibrium. This scenario is the basis of the Arrow-Capron dynamic model of labor shortages, and it can occur in periods of rapid sustained growth in one or more industries that employ workers in the shortage occupation. Such a period of sustained rapid growth for a particular sector of the economy can prevent the market from clearing for a substantial period of time. According to Arrow and Capron (1959), this situation occurred for engineers following World War II. Note that in this situation the problem is not necessarily that workers or employers cannot adjust; rather, the problem is due to continued shocks to the equilibrium levels of employment and wages.

**F. Consequences of Labor Shortages**

Labor shortages can lead to a number of consequences for the firms experiencing the shortages, and the rest of the economy as well. In economic terms, the major consequence of a sustained shortage is that the economy will be operating less efficiently than it could. Until the market achieves equilibrium, resources are not put to their most productive use. Thus, aggregate production for the nation is below capacity. Workers may have to work more hours than they desire, or they may be assigned to jobs they do not want. Employers may have to use their workers and equipment less efficiently than they desire, and this may result in lower output and reduced profits. The government may not be able to provide adequate defense, and consumers will be denied the goods and services they wish to buy. In some cases, the impact on consumers will be relatively modest, but if consumers cannot obtain needed health care because of a labor shortage, the consequences can be severe. Finally, the impact of a shortage can extend beyond the firms directly experiencing the problem. A shortage of home health workers or nursing home
workers, for example, may result in hospitals having to keep patients longer than is desirable or releasing without adequate care after release. Thus, it is difficult to trace all of the effects of an occupational shortage.

G. Outline of the Report

The remainder of this report has five chapters. The next four chapters provide case studies of special education teachers, pharmacists, physical therapists, and homecare workers. For each occupation we provide background on the occupation, describe the reasons why the occupation was selected for study, and summarize evidence from data bases, literature, and interviews on whether the occupation is currently experiencing or recently experienced a labor shortage, the reasons for the shortage, and possible ways to alleviate the shortage. The final chapter provides our conclusions and discusses potential uses for occupational shortage data. More specifically, we discuss the limitations of current occupational data collected by the Bureau of Labor Statistics (BLS) and the extent to which the federal and state governments and other organizations could collect additional data that would be useful for policy purposes. The chapter also discusses how occupational data can be used in immigration policy.
CHAPTER 2:
CASE STUDY OF SPECIAL EDUCATION TEACHERS

We selected special education teachers for a case study because there have been many reports in the popular and academic literature about shortages in the field, and these reports have persisted for over 30 years. The labor market for this profession is interesting for several reasons. Although special education teachers are often paid according to the same wage scale as other teachers, they typically have longer and more rigorous training and certification requirements and face a greater number of administrative burdens. Although a shortage of special education teachers could result from rapidly increasing demand, other reasons to explore this occupation include federal and state regulations regarding the provision of special education, limitations on funding possibilities due to the strong role of the public sector in funding special education positions, and institutional rigidities that could be introduced through the collective bargaining process.

A. Background and Description of the Occupation

Special education teachers work with students who face specific learning disabilities, emotional or behavioral disorders, and physical challenges. The special needs and abilities of these students, who may be emotionally disturbed, learning disabled, mentally retarded, or have speech, hearing, vision, or other impairments, cannot be met well by conventional teaching practices. Special education teachers use a variety of classroom methods to tailor their material to the learning characteristics and needs of their students, usually providing instruction to individuals or small groups (USDOL, 2010).

In addition to providing educational instruction, special education teachers have several other responsibilities. First, they are involved in the identification of children with special needs
and with the transition of these students between special education and mainstream classes. To this end, they also act as consultants to the entire faculty on issues regarding the transition of children with special needs back into the conventional classroom setting, which is a process of inclusion often referred to as "mainstreaming." Second, they serve as advisors to parents of children with special needs, providing counsel on the motivational, cognitive, and social consequences of their children's conditions. Finally, they help to develop an Individualized Education Program (IEP) for each special education student, which sets personalized goals and is tailored to the student's individual needs and ability. This task often includes working with parents, school administrators, and the student's general education teacher to formulate and evaluate long-term strategies to help students attain a sense of social and personal self-sufficiency. Often the special education teacher may work in a resource room, a place where students with mild disabilities may spend a portion of the school day working toward specified goals (USDOL, 2010).

The history of special education teaching as a distinct area of teaching is quite brief, beginning in the late 1950s. Prior to that time, special education teachers watered down or simplified regular classroom curricula, an approach that largely reflected the lack of knowledge in the field, as well as a lack of recognition that a different approach was required for the education of children with special needs (Palmer and Hall, 1988). In the case of severely disabled students, who were often placed in separate centers or institutions and thus separated from their mainstream peers, teachers focused for the most part on controlling student behavior and attempting to teach students as best they could through conventional instruction methods (Palmer and Hall, 1988).
In view of the lack of specialized personnel to train special education teachers, federal legislation was enacted to improve programs and services. Some notable early examples include: the establishment of university doctorate level training programs in the area of mental retardation by PL 85-926 in 1958; the *Training of Professional Personnel Act* of 1959 (PL 86-158), which helped train leaders to educate children with mental retardation; and the *Teachers of the Deaf Act* of 1961 (PL 87-276), which provided for training instructional personnel for children who were deaf or hard of hearing. In addition, the *Elementary and Secondary Education Act* of 1965 (PL 89-10) and the *State Schools Act* of 1965 (PL 89-313) gave states direct grant assistance to help educate children with disabilities (USDOE, 2000). However, in 1970, schools in the United States educated only one in five children with disabilities, as many states had laws excluding certain students from public school, including children who were deaf, blind, emotionally disturbed, or mentally retarded (USDOE, 2000). Landmark court decisions further advanced educational opportunities for children with disabilities, such as the *Pennsylvania Association for Retarded Citizens v. Commonwealth* (1971) and *Mills v. Board of Education of the District of Columbia* (1972), which established the responsibility of states and localities to educate children with disabilities. In these court cases, the right of every child with a disability to be educated was found based on the equal protection clause of the 14th Amendment to the U.S. Constitution (USDOE, 2000).

The enactment of the *Education for All Handicapped Children Act* (EHA), PL 94-142 in 1975, which guaranteed a "free and appropriate" education to all disabled children between the ages of 3 and 21, represented a critical turning point both for inclusion of special needs children in regular classroom settings and creating increased pressure for special education teachers. The four main purposes of the Act were to improve how children with disabilities were identified and
educated, to evaluate the success of these efforts, to provide due process protections for children and families, and to provide financial incentives to enable states and localities to comply with the EHA. This Act affected more than eight million children and greatly increased the demand for special education personnel; in addition, it gave the field an intellectual and professional legitimacy it had not previously enjoyed (Sattler and Sattler, 1985). The EHA mandate had several other consequences. First, it stimulated research in the instructional, psychological, and social aspects of special education. Second, it hastened the accumulation and dissemination of new educational methods developed in schools. Finally, it placed the special education teacher at the center of a network of supporting special education personnel (e.g., psychologists, therapists, and social workers), all with the goal of providing an "appropriate" education to children with special needs.

In 1990, the EHA was reauthorized as PL 101-476, the Individuals with Disabilities Education Act (IDEA). The emphasis of the law shifted from a mandate to serve disabled children to a law protecting the educational rights of individuals with disabilities. In the same year, the Americans with Disabilities Act (ADA), (PL 101-36,) was passed. The IDEA was then amended in 1997, supporting initiatives for transition services from high school to adult living, and the Act is periodically reviewed by Congress as part of the Elementary and Secondary School Act. The 1997 amendments emphasized the need to include students with disabilities in state reform efforts, expand the availability of special education classrooms, foster research-based instruction, and support professional development for special educators (Katsiyannis, Antonis, Zhang, and Conroy. (2003).

On December 3, 2004, IDEA was further amended by the Individuals with Disabilities Education Improvement Act of 2004 (PL 108-446), which added the requirement that all public
elementary and secondary special education teachers must be "highly qualified" as special education teachers. The definition of "highly qualified special education teachers" in IDEA is aligned with the No Child Left Behind Act's definition of "highly qualified" general education teachers. In general, "highly qualified" requires that a special education teacher: has obtained state certification; has not had state certification waived on an emergency, temporary, or provisional basis; and holds at least a bachelor's degree (USDOE, 2007).

The many changes to federal legislation over the years helped to shape the requirements for special education teachers. Overall, the passage of Education for All Handicapped Children Act (later renamed Individuals with Disabilities Education Act) has intensified the need for teachers with specialized skills and experience to meet the needs of special education students, who are now guaranteed a free and appropriate education. As is discussed later in this chapter, the “highly qualified” requirement introduces complex questions about whether there is a “quality” shortage, that is, an adequate supply of “highly qualified” special education teachers to meet demand (Boe, 2006).

B. Training and Recruitment of Workers into the Occupation

This section discusses the educational requirements and qualifications for entry into special education teaching, the factors affecting those requirements, and the methods employers use to fill vacancies in the field. This examination of the means by which individuals enter the occupation lays the groundwork for the later analysis of labor market conditions for special education teachers.
1. **Educational Qualifications and Entry Requirements**

In a field with such varied responsibilities and teaching goals, the requirements to enter special education are not universally agreed upon by the states, and they are in constant flux. As the goals of special education progressed in the 1960s and 1970s from behavioral control and remedial education to also include emotional and developmental therapy, the proficiencies and skills necessary for a special education teacher expanded well beyond those required for mainstream (general education) teachers.

Entry into special education is primarily regulated by state certification. Not unlike those for general education, the requirements for certification reflect each state's educational philosophy regarding the education of children with special needs, and more recently, have reflected concerns about the adequate supply of qualified special education teachers. As might be expected, there is great variation in state special education standards. However, all 50 states and the District of Columbia require special education teachers to be licensed.

Most states base their certification processes on a few broad premises. First, special education teachers receive a general education credential to teach kindergarten through twelfth grade. Second, these teachers train in a specialty area of special education, such as learning disabilities or behavioral disorders. Third, special education teachers must be able to function as team members and consultants, providing expertise to the general teaching faculty and parents regarding the child's special needs. Finally, special education teachers must be able to assess a pupil's level of functioning and select, implement, and evaluate instructional programs based on each student's individual learning abilities.

A majority of states' certification requirements reflect these fundamental premises. For full certification, all states require a bachelor's degree and completion of an approved teacher preparation program with a prescribed number of subject and education credits. In addition,
most states require supervised practice teaching, which is based on the recognition that co-teaching with an experienced special education teacher is important in the formation of good instructional skills and habits. Some states also require a master's degree in special education, involving at least one year of additional coursework beyond a bachelor's degree. A large number of states require "dual certification" in special education, meaning that special education teachers are required to obtain a general teaching certificate in order to qualify for certification in special education. Finally, most states also require a teacher competency test such as the Praxis exam as part of the process of initially certifying all teachers.

A major characteristic of special education certification is the specific category in which it is granted. States may certify special education teachers based upon specific need-based categories, such as autism or speech impairments (categorical certification), or they may certify teachers without strictly defining the areas of special education in which they are qualified to teach (noncategorical and multicategorical certification). Rather than dividing certification according to disability classifications, the noncategorical and multicategorical approaches often specify certification by the level of education or severity of the disability at which teachers are qualified to teach. A majority of states (27) consider their certification to be noncategorical; however, many of these states also issue certificates in specific categories, such as deafness/hearing impaired, blind/visually impaired, and emotionally disturbed. The remaining states provide categorical certification (Geiger, Crutchfield, and Maizner, 2003).

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12 As might be expected, dual certification has important consequences for the supply of special education teachers. First, it extends the investment in time and training required for special education certification and second, it influences their possible career paths, allowing them to enter general education easily and immediately. The relevance of these two factors to labor shortages in the occupation is discussed later.
States define categories differently, and they divide special education into various categories. The U.S. Department of Education, in collecting its data on special education programs, collapses this diverse group into 13 broad categories:

- Specific Learning Disabilities
- Speech/Language Impairments
- Mental Retardation
- Emotional Disturbance
- Multiple Disabilities
- Hearing Impairments
- Orthopedic Impairments
- Other Health Impairments
- Visual Impairments
- Autism
- Deaf-Blindness
- Traumatic Brain Injury
- Developmental Delay

A majority of all special education students are in the four largest categories: learning disabled, speech impaired, mentally retarded, and emotionally disturbed (USDOE, 2004). Exhibit 2-1 shows the broad range of categories for which states provide special education teacher certification.

Although some states hire few uncertified teachers, others report that up to 32 percent of their special education teachers are not fully certified for their main assignments (McLeskey, Tyler, and Flippin, 2004). The No Child Left Behind (NCLB) Act of 2001, PL 107-110, outlines the minimum requirements that “highly qualified” teachers must meet. According to NCLB, a highly qualified teacher must have: a bachelor's degree; a full state certification and licensure, as defined by the state; and demonstrated competency, as defined by the state, in each core academic subject taught. States then have the freedom to define certification, streamline the certification process, and create alternate routes to certification.
Exhibit 2-1: State Special Education Certification Programs by Category Type

![Bar chart showing the number of states for different categories of special education certification programs.]

**Source:** Special Education Certification and Licensure Database (2007). Education Commission of the States.

IDEA's most recent amendments, the Individuals with Disabilities Education Improvement Act of 2004, added the requirement that special education teachers must be "highly qualified." The definition of "highly qualified" under IDEA mirrors that of NCLB. However, the "highly qualified" special education teacher requirements apply only to teachers providing direct instruction in core academic subjects. Special education teachers who do not directly instruct students in core academic subjects or who provide only consultation to highly qualified teachers in adapting curricula, using behavioral supports and interventions or selecting appropriate accommodations, do not need to demonstrate subject-matter competency in those subjects (USDOE, 2004). This flexibility allows states to have special education teachers who do not meet the "highly qualified" requirements serve as consultants and aides to general education teachers.
2. Methods Employers Use to Recruit Workers and Methods Workers Use to Obtain Employment in the Occupation

The ability to hire qualified special education teachers in a time of relative teacher scarcity depends on the school or district's ability to attract qualified applicants. Traditionally, employers, school districts, and private schools, have recruited special education teachers as they did all other teachers, namely by contacting prospective teachers through college or university channels and professional conferences, or by placing advertisements in professional publications and newspapers. Word-of-mouth has also played an important role in attracting teachers. During the 1999-2000 school year, administrators used a variety of strategies to recruit special education teachers. According to a U.S. Department of Education study, 98 percent of school administrators contacted colleges and universities; 97 percent contacted educators in other schools and agencies; 97 percent advertised in local publications; 55 percent contacted teacher organizations; 23 percent advertised in national education publications; and 92 percent recruited in other ways, including websites, job fairs, and collaboration with State Departments of Education (USDOE, 2002).

The general perception of a tight labor market for special education teachers has led many school districts to devise and implement new strategies to attract and recruit special education teachers. For example, electronic bulletin boards have been recently developed by a number of education associations listing vacancies available for special education teaching posts around the country. Several state education agencies and associations have also created employment clearinghouses that compile and disseminate employment information about available teaching positions.13 While these new methods will not supplant the traditional

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13 For example, SpecialNet, a nationwide computer network developed by GTE and NASDSE (National Association of State Directors of Special Education), has an employment bulletin board that lists employment opportunities nationwide. Another electronic service is CAREER
recruiting techniques, there are certain advantages. Electronic bulletin boards and employment clearinghouses are accessible to any person or agency across the country, providing greater geographic reach than print newspapers (although Internet-based versions of newspapers offer the same broad coverage). They are less expensive and more up-to-date than professional journals, and they require none of the informal university channels that are inherently limited in range and number. In addition, employment clearinghouses are able to provide prospective applicants with more recruitment material, such as brochures and information on requirements, and to assist applicants in their employment search (Billingsley, 2005).

As would be expected, the methods that special education teachers use to seek and obtain positions are generally similar to the methods employers use for recruitment. Teachers use university postings, word-of-mouth, employment clearinghouses, and computer networks to find vacancies in teaching positions. There is, however, variation in the methods used by different types of applicants. Entrants to special education teaching, newly trained teachers, and those who have recently obtained certification generally rely on university-based channels, professional conferences, job fairs, and journals to seek and obtain teaching positions. With few exceptions, university-based channels are limited geographically within the state and to states with similar certification procedures. Applicants certified in the field who are reentering the profession, who have recently obtained temporary or emergency certification, or who have

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CONNECTION, which lists candidates seeking special education positions. Several state agencies have also developed such systems to rapidly and effectively disseminate teacher vacancy information.

14 Universities generally design their teacher education curricula around their state's certification requirements; consequently the requirements of in-state employers generally match university curricula and new teachers find it easiest to obtain jobs in the state in which they were educated.
moved from other states are more likely to use employment clearinghouses or employer-based sources of information, primarily due to their lack of other connections.\textsuperscript{15}

C. Characteristics of Workers in the Occupation

Broad national data on the demographic characteristics of special education teachers show some similarities between special and general education teachers, but also highlight several distinct characteristics. According to the Study of Personnel Needs in Special Education (SPeNSE):

- Special education teachers are more likely to be women compared to general education teachers—in 2000, 85 percent of special education teachers were females, compared to 76 percent for general education teachers.

- In terms of race, there are relatively slight differences between special education and general education teachers—in 2000, 86 percent of special education teachers were white, compared to 88 percent of general education teachers; four percent of special education teachers were Hispanic, while 7 percent of general education teachers were Hispanic.

- A greater percentage of special education teachers are disabled in comparison to general education teachers, with 14 percent of special education teachers reporting a disability in 2000 compared to 6 percent of general education teachers.

- The average age for both special and general education teachers is about the same—in 2000, the average age for both types of teachers was 43 years.

- Special education teachers tend to be slightly less experienced than general education teachers—in 2000, special education teachers had an average of 14.3 years of experience compared to 15.5 years of experience for general education teachers.

- Special education teachers are considerably more likely to have an advanced degree. In 2000, 59 percent of special education teachers had their Master's degree compared to 49 percent of general education teachers. However, special education teachers were less likely than general education teachers to be fully certified for their main teaching assignment; in 2000, 92 percent of special education teachers were fully certified compared to 95 percent of general education teachers. In addition, only 71 percent of

\textsuperscript{15} Although many of those who receive temporary or emergency certification are general education teachers who are simply reassigned within the same school district, and thus the need for a job search is often unnecessary.
beginning special education teachers, those with less than three years of experience, were fully certified for their main assignment (Carlson et al., 2002).

Special education teachers' characteristics also vary somewhat by type of teacher, geographical region, type of school, and other factors. For example, special education teachers serving younger students tend to have less experience (13.3 years compared to the 14.3 year average), and special education teachers in urban areas tend to have more years of experience than their counterparts in suburban and rural areas (15.2 years compared to 13.8 and 14 years, respectively).

D. Employment and Earnings Trends within the Occupation

1. Employment Trends

Employment Levels and Change. As with the growth in students receiving special education services, there has been rapid growth in the number of special education teachers. Exhibit 2-2 shows the trends in the number of special education teachers compared to general education teachers and all workers from 2004 to 2008. As the table reveals, the number of special education teachers has increased every year during this period. From 2004 to 2008, the number of special education teachers (pre-school, kindergarten, elementary, middle, and secondary) increased by 7 percent, from 443,270 to 474,110 special education teachers. In comparison, the number of general education teachers (pre-school, kindergarten, elementary, middle, and secondary) increased by an average rate of 7.7 percent from 2004 to 2008, from 3,586,750 to 3,863,280 general education teachers. Middle school teachers for both special education and general education had the lowest growth over this time period, at a rate of 1.8 percent for special education teachers and 6.2 percent for general education teachers. The very low growth rate of middle school special education teachers compared to preschool, kindergarten, and elementary school special education teachers (with a 9.9 percent growth rate)
Exhibit 2-2: Employment Trends: Number and Percentage Change in Special Education Teachers, General Education Teachers, and All Workers, 2004-2008

Percentage Change, 2004-2008

![Bar chart showing percentage change in employment for Special Education Teachers and General Education Teachers from 2004 to 2008.](chart.png)

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary</td>
<td>205,960</td>
<td>214,060</td>
<td>216,930</td>
<td>219,930</td>
<td>226,250</td>
<td>9.9%</td>
</tr>
<tr>
<td>Middle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Education Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary</td>
<td>98,840</td>
<td>103,480</td>
<td>101,420</td>
<td>100,160</td>
<td>100,650</td>
<td>1.8%</td>
</tr>
<tr>
<td>Middle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Education, Training, and Library Occupations</td>
<td>138,470</td>
<td>136,290</td>
<td>136,870</td>
<td>141,330</td>
<td>147,210</td>
<td>6.3%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

and secondary school special education teachers (with a 6.3 percent growth rate) seems to account for the overall growth of special educators being lower than that of general educators over this time period. Overall, special education teacher employment has grown at a faster rate than all workers from all occupations and about the same as all education, training, and library occupations.

**Unemployment Trends.** Another key indicator of labor market conditions is the annual average unemployment rate by occupation. Occupations experiencing shortages, in which the number of vacancies is greater than the number of qualified applicants, are likely to have very low unemployment rates, since those searching for jobs find them quickly, and are thus, unemployed for a very short period (Cohen, 1990). Exhibit 2-3 illustrates the trend in the annual unemployment rate for special education teachers, postsecondary teachers, preschool and kindergarten teachers, elementary and middle school teachers, secondary school teachers, and all workers from all occupations. The annual unemployment rate for special education teachers averaged 1.5 percent between 2004 and 2008, compared to 2.4 percent for postsecondary teachers, 3.0 percent for preschool and kindergarten teachers, 2.1 percent for elementary and middle school teachers, and 2.4 percent for secondary school teachers. The unemployment rate in this period for all workers was 5.3 percent. Across all years, special education teachers have one of the lower unemployment rates, ranging from a high of 1.9 percent in 2004 and a low of 1.0 percent in 2008. Although the low unemployment rate for special education teachers indicates a tight labor market and is consistent with the presence of a shortage, it does not conclusively prove that there is a shortage.
Exhibit 2-3: Average Annual Unemployment Rate: Special Education Teachers, General Education Teachers and All Workers

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special education teachers</td>
<td>1.9%</td>
<td>1.8%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Postsecondary teachers</td>
<td>2.1%</td>
<td>2.3%</td>
<td>2.1%</td>
<td>2.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Preschool and kindergarten teachers</td>
<td>3.2%</td>
<td>3.1%</td>
<td>2.9%</td>
<td>2.9%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Elementary and middle school teachers</td>
<td>2.0%</td>
<td>2.1%</td>
<td>2.0%</td>
<td>2.1%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Secondary school teachers</td>
<td>2.1%</td>
<td>1.3%</td>
<td>1.5%</td>
<td>1.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>All Education, Training, and Library Occupations</td>
<td>2.5%</td>
<td>2.5%</td>
<td>2.4%</td>
<td>2.3%</td>
<td>2.8%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>5.1%</td>
<td>4.7%</td>
<td>4.2%</td>
<td>4.2%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

**Vacancy Rates.** The primary source of information concerning the employment of special education teachers is the Office of Special Education Programs (OSEP) in the U.S. Department of Education, which is charged with compiling and analyzing employment data on special education programs and personnel. The *Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act* data is based primarily on the survey responses of the state departments of education, which are mandated by PL 94-142 to provide data on their special education programs (USDOE, 2005). More recently, OSEP implemented SPeNSE to address concerns about nationwide shortages in the number of personnel serving students with disabilities and the need for improvement in the qualifications of those employed. SPeNSE included personnel from a nationally representative sample of districts, intermediate education agencies, and state schools for students with vision and hearing impairments. Over 8,000 local administrators, preschool teachers, general and special education teachers, speech-language pathologists, and paraprofessionals participated in telephone interviews during the 1999-2000 school year (USDOE, 2002). Thus, both the *Annual Report to Congress* and SPeNSE provide valuable data and information on special education teachers.

SPeNSE evidence for possible shortages among special education teachers is found in the occupational vacancy data. For the 1999-2000 school year, the U.S. Department of Education reported that there were 12,241 vacancies for special education teachers. In addition, 97% of national school districts had at least seven openings in special education. Out of the 12,241 vacant positions: 612 were for preschool teachers; 385 were for teachers for the hearing or visually impaired; 2,970 were for teachers for emotionally disturbed students; and 8,274 were for other types of special education teachers (Carlson et al., 2002).
According to the U.S. Department of Education report, “Teacher Shortage Areas: Nationwide Listing,” all states reported shortages in special education or at least one area of special education, such as specific grade levels or for specific disabilities, for the 2009-2010 school year (USDOE, 2009). While not part of this listing, state vacancy data in Massachusetts projects a decrease in openings to 2014 for special education, based on policy efforts to reduce shortages (Massachusetts State Department of Labor, 2006).

The American Association for Employment in Education (AAEE) conducts an annual survey titled Educator Supply and Demand in the United States. AAEE surveys educators in colleges and universities and career services nationwide to analyze the demand for teachers and subdivides the results into 11 geographic regions. Each field can be classified into one of five areas based on the measurable demand: considerable shortage, some shortage, balanced, some surplus, and considerable surplus. Exhibit 2-4 below shows the results of AAEE’s 2007-2008 survey, where a considerable shortage or some shortage was found in all regions for all measures included in the survey. As shown in the exhibit, findings from the 32nd AAEE Annual Survey support the presence of a shortage for special education in all regions:

- Region 1 consists of Idaho, Oregon, and Washington. A mix of considerable and some shortages in special education fields are present in this region, except for the learning disability field where the labor market is balanced.

- Region 2 consists of Arizona, California, Nevada, and Utah. A mix of considerable and some shortages are present in this region for all special education fields.

- Region 3 includes Colorado, Montana, New Mexico, and Wyoming. A considerable shortage is found for this area for all fields of special education, except for the hearing impaired and mild/moderate emotional/behavioral disorders and early childhood special education disabilities fields where there is some shortage.
Exhibit 2-4: AAEE Shortage Findings by Special Education Field and Region, 2008

<table>
<thead>
<tr>
<th>Special Education Fields</th>
<th>Region:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicategorical</td>
<td></td>
<td>5.0</td>
<td>4.4</td>
<td>4.3</td>
<td>4.5</td>
<td>4.1</td>
<td>4.5</td>
<td>4.2</td>
<td>4.4</td>
<td>4.7</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Emotional/Behavioral Disorders</td>
<td></td>
<td>4.0</td>
<td>4.2</td>
<td>4.0</td>
<td>4.3</td>
<td>4.4</td>
<td>4.5</td>
<td>4.3</td>
<td>4.1</td>
<td>4.6</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Hearing Impaired</td>
<td></td>
<td>4.0</td>
<td>3.8</td>
<td>4.0</td>
<td>4.3</td>
<td>4.2</td>
<td>4.4</td>
<td>4.0</td>
<td>4.3</td>
<td>5.0</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Learning Disability</td>
<td></td>
<td>3.5</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
<td>4.5</td>
<td>4.3</td>
<td>4.0</td>
<td>4.0</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Mental Retardation</td>
<td></td>
<td>4.0</td>
<td>4.3</td>
<td>4.5</td>
<td>4.2</td>
<td>4.2</td>
<td>4.5</td>
<td>4.4</td>
<td>4.2</td>
<td>5.0</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Visually Impaired</td>
<td></td>
<td>4.0</td>
<td>4.0</td>
<td>4.5</td>
<td>4.1</td>
<td>4.2</td>
<td>4.5</td>
<td>4.0</td>
<td>4.2</td>
<td>5.0</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Mild/Moderate Disabilities</td>
<td></td>
<td>4.5</td>
<td>4.5</td>
<td>4.3</td>
<td>4.3</td>
<td>4.3</td>
<td>4.4</td>
<td>4.3</td>
<td>4.4</td>
<td>4.4</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Severe/Profound Disabilities</td>
<td></td>
<td>4.0</td>
<td>4.6</td>
<td>4.5</td>
<td>4.3</td>
<td>4.3</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
<td>4.7</td>
<td>--</td>
<td>5.0</td>
</tr>
<tr>
<td>Early Childhood Special Education</td>
<td></td>
<td>4.0</td>
<td>4.3</td>
<td>4.0</td>
<td>3.9</td>
<td>4.3</td>
<td>4.5</td>
<td>3.7</td>
<td>4.2</td>
<td>4.1</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Dual Certificate (General/Special Education)</td>
<td></td>
<td>4.3</td>
<td>4.4</td>
<td>4.4</td>
<td>4.1</td>
<td>4.3</td>
<td>4.2</td>
<td>4.1</td>
<td>4.3</td>
<td>4.3</td>
<td>--</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Note: 5.00-4.21 = considerable shortage, 4.2-3.41 = some shortage, 3.4-2.61 = balance

- Region 4 is comprised of Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. A considerable shortage is present in this area for all fields of special education, except for hearing, visually impaired, and dual certificate fields, where some shortage was found. In addition, the supply and demand is balanced for early childhood special education in this region.

- Region 5 consists of Arkansas, Louisiana, Oklahoma, and Texas. A mix of considerable and some shortages in special education fields are present in this region. Some shortage is found for this area in all fields of special education, except multicategorical and mild/moderate disabilities, which were found to have a considerable shortage.

- Region 6 contains Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. A considerable shortage is present in this region for all fields of special education.

- Region 7 includes Illinois, Indiana, Michigan, Ohio, and Wisconsin. A mix of considerable and some shortage is found for this area depending on special education field.

- Region 8 consists of Delaware, the District of Columbia, Maryland, New Jersey, New York, and Pennsylvania. A considerable shortage is present in this region for all fields of special education, except for emotional/behavioral disorders, learning disability, and visually impaired. A considerable shortage is present in this region for multicategorical, emotional/behavioral disorders, and hearing
impaired. All of the other fields of special education have some shortage in this region.

- Region 9 is comprised of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. A considerable shortage is present in this region for all fields except for hearing impaired, learning disability, and early childhood special education where there is some shortage.

- Region 10 consists of Alaska. A considerable shortage is present for this area in the two fields of special education provided in the state.

- Region 11 consists of Hawaii. A considerable shortage is present for this area in the two fields of special education provided in the state (American Association for Employment in Education, 2008).

**Projections for Future Employment Growth within the Occupation.** Although special education teacher employment growth has been similar to that of general education teachers over the past five years, special education teacher employment is projected to grow at a higher rate over the next decade, as shown in Exhibit 2-5. The Bureau of Labor Statistics estimates that between the years 2008 and 2018, the number of preschool, kindergarten, and elementary school special education teachers will grow by 19.6 percent, while the number of general education teachers for the same grade levels will grow at a lower rate of 16.3 percent. The gap in the growth rate between special education and general education teachers is similar for middle school, 18.1 percent compared to 15.3 percent, and secondary school, 13.3 percent compared to 8.9 percent.

Across grade levels, the rate of increase in special education teacher employment is expected to exceed the rate of increase for general education teachers and to significantly exceed the growth of all workers in all occupations, estimated at about 10.1 percent. The expected growth in the employment of special education teachers, however, by no means reflects the total number of entrants needed in this period; many more new special education teachers will be needed to replace those who retire, leave the field, or die (i.e., "replacement demand").
### Exhibit 2-5: Employment Projections: Special Education Teachers, General Education Teachers, and All Workers, 2008 and Projected 2018

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2008</th>
<th>Projected 2018</th>
<th>Percent Change 2008-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Special Education Teachers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary School</td>
<td>226,000</td>
<td>270,000</td>
<td>19.6%</td>
</tr>
<tr>
<td>Middle School</td>
<td>100,000</td>
<td>118,000</td>
<td>18.1%</td>
</tr>
<tr>
<td>Secondary School</td>
<td>147,000</td>
<td>166,000</td>
<td>13.3%</td>
</tr>
<tr>
<td><strong>General Education Teachers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary School</td>
<td>2,186,000</td>
<td>2,544,000</td>
<td>16.4%</td>
</tr>
<tr>
<td>Middle School</td>
<td>660,000</td>
<td>761,000</td>
<td>15.3%</td>
</tr>
<tr>
<td>Secondary School</td>
<td>1,088,000</td>
<td>1,184,000</td>
<td>8.9%</td>
</tr>
<tr>
<td><strong>All Education, Training, and Library Occupations</strong></td>
<td>9,210,000</td>
<td>10,534,000</td>
<td>14.4%</td>
</tr>
<tr>
<td><strong>All Workers from All Occupations</strong></td>
<td>150,932,000</td>
<td>166,206,000</td>
<td>10.1%</td>
</tr>
</tbody>
</table>


---

2. **Earnings Trends**

The relative wage rate change in an occupation is often an important indicator of labor market dynamics, especially in the short run. In occupations where market forces move freely (i.e., supply, demand, and wages are not regulated by the government), a rapid rise in wages may indicate the presence of a shortage. Wages in special education, as with many occupations substantially supported by government funding, do not necessarily behave in this manner. It is important nevertheless to observe the trends in median wages for special education, as compared to other professions.
Exhibit 2-6 shows the median annual earnings in the United States for special education teachers for the period of 2004 to 2008, in comparison with general education teachers and all workers from all occupations. From 2004 to 2008, the median annual earnings for special education teachers (pre-school, kindergarten, elementary, middle, and secondary) increased by 11.5 percent, from $48,317 in 2004 to $53,853 in 2008. Meanwhile, the median annual earnings for general education teachers (pre-school, kindergarten, elementary, middle, and secondary) increased at a slightly higher rate of 14.7 percent, from $43,543 in 2004 to $49,944 in 2008. Among special education teachers, those teaching preschool, kindergarten, and elementary school saw the highest increase in median annual earnings from 2004 to 2008, as earnings increased by 14.1 percent from $46,420 to $52,970. For general education, secondary school teachers saw the highest increase in earnings from $46,250 in 2004 to $54,390 in 2008 at 17.6 percent. The average growth in earnings over this time period for all workers from all occupations was 14.2 percent, with the median annual earnings for all workers from all occupations increasing from $37,020 in 2004 to $42,270 in 2008.

In terms of detecting and analyzing shortages, wages themselves are generally not as important as how they change over time, especially relative to those for other professions. As Exhibit 2-6 reveals, median annual earnings for special education teachers increased at a slightly lower rate from 2004 to 2008 than general education teachers across all grade levels. Economic theory suggests that changes in earnings are important indicators of shortages in freely moving labor markets, but in the special education labor market wages are restricted by government negotiated pay scales. The salary levels for general education teachers seem to be rising at a faster pace than special education teachers, which may contribute to the difficulty in attracting and retaining special education teachers. Special education teachers may choose to teach general
Exhibit 2-6: Median Annual Earnings: Special Education Teachers, General Education Teachers and All Workers, 2004-2008

Percentage Change 2004-2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary School</td>
<td>$46,420</td>
<td>$47,820</td>
<td>$49,710</td>
<td>$51,230</td>
<td>$52,970</td>
<td>14.1%</td>
</tr>
<tr>
<td>Middle School</td>
<td>$48,910</td>
<td>$50,340</td>
<td>$52,550</td>
<td>$51,610</td>
<td>$53,540</td>
<td>9.5%</td>
</tr>
<tr>
<td>Secondary School</td>
<td>$49,620</td>
<td>$50,880</td>
<td>$52,520</td>
<td>$53,020</td>
<td>$55,050</td>
<td>10.9%</td>
</tr>
<tr>
<td>General Education Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preschool, Kindergarten, Elementary School</td>
<td>$37,870</td>
<td>$39,130</td>
<td>$40,547</td>
<td>$41,197</td>
<td>$42,873</td>
<td>13.2%</td>
</tr>
<tr>
<td>Middle School</td>
<td>$46,510</td>
<td>$47,890</td>
<td>$49,470</td>
<td>$50,630</td>
<td>$52,570</td>
<td>13.0%</td>
</tr>
<tr>
<td>Secondary School</td>
<td>$46,250</td>
<td>$49,400</td>
<td>$51,150</td>
<td>$52,450</td>
<td>$54,390</td>
<td>17.6%</td>
</tr>
<tr>
<td>All Education, Training, and Library Occupations</td>
<td>$42,080</td>
<td>$43,450</td>
<td>$45,320</td>
<td>$46,610</td>
<td>$48,460</td>
<td>15.2%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>$37,020</td>
<td>$37,870</td>
<td>$39,190</td>
<td>$40,690</td>
<td>$42,270</td>
<td>14.2%</td>
</tr>
</tbody>
</table>

education rather than special education if the pay differential is not proportionate to the added work burdens associated with special education.

For special education teachers, salary and attrition rates are strongly negatively correlated at the state level, particularly at the top and bottom of salary distribution scales. The state with the highest average salaries in the nation (after cost-of-living adjustments), Michigan, had the lowest proportion of districts reporting difficulties in retaining teachers (21.9%). Iowa, which has the lowest average salaries, has the highest rate of teacher turnover (Brownell et al., 2002). Like general education teachers, special education teachers move in and out of lower paying jobs in urban areas more quickly because opportunities for higher salaries in nearby districts are often abundant. In addition, special education teachers move into employment outside of teaching when working conditions and wages are better (Brownell et al., 2002).

E. Labor Market Factors Contributing to a Shortage

This section assesses the most prominent factors on the demand and supply sides that have been cited and affect labor market conditions for special education teachers. The factors discussed have been singled out in interviews conducted as part of this study (with individuals from associations and academia knowledgeable about special education teacher trends), as well as in the extensive literature on special education teachers.

1. Demand-Side Factors
   a. Growth in Size of Student-Age and Special Needs Population

   Growth of the student-age population and the special needs population, in particular, has led to a rise in the demand for special education teachers. This is a key demand-side factor cited in both the literature and in our interviews conducted as part of this study. For example, one study interviewee observed: “There has been an increase in students identified, diagnosed, and
categorized as in need of special education...there is growing demand for special education due in part to increased diagnoses.” [Gillespie] The nation's student-age population grew significantly through the 1990s and into the 2000s. In addition, the students in need of special education assistance grew even faster than the overall student population, which created increased demand for special education teachers. Based on data collected for the 28th Annual Report to Congress by the U.S. Department of Education, Exhibit 2-7 presents trends in the number of school-age population in comparison to the special education students in the 50 states and the District of Columbia from 1995 to 2004. From 1995 to 2004, the total population age 6 through 21 grew by 9.6 percent, while the students served under IDEA age 6 to 21 grew at a much higher rate of 19.8 percent. As the exhibit reveals, the number of students receiving special education services has increased every year during this period at an average annual rate of about 2.3 percent. The total population age 6 to 21 grew at a much slower pace of about 1.2 percent over the same time period.

b. Medical Technological Advancement

The American Association of School Administrators believes that the rapid growth in the number of children in need of and receiving special education assistance is due in part to developments in medical technology (Berman and Urion, 2003). Children who would have perished from premature births or infant illnesses in the past are now likely to survive. However, they have more medical complications and conditions such as cerebral palsy and borderline mental retardation. These children are matriculated into public education systems under special needs categories. In addition, medical technology can diagnose conditions such as autism and behavioral disorders at a higher rate than in the past. As a result, school enrollment for children
Exhibit 2-7: Number of Students Receiving Special Education Services, Age 6 to 21, 1995-2004

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Served under IDEA Part B (6 through 21)</th>
<th>Total Population Age 6 through 21</th>
<th>Percentage of the 6 through 21 Population Receiving Special Education Services</th>
<th>Percent Change in Students Receiving Special Education Services</th>
<th>Percent Change for Total Population Age 6 through 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>5,036,139</td>
<td>60,109,523</td>
<td>8.4%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1996</td>
<td>5,185,444</td>
<td>61,339,104</td>
<td>8.5%</td>
<td>2.96%</td>
<td>2.05%</td>
</tr>
<tr>
<td>1997</td>
<td>5,347,058</td>
<td>62,552,035</td>
<td>8.5%</td>
<td>3.12%</td>
<td>1.98%</td>
</tr>
<tr>
<td>1998</td>
<td>5,486,630</td>
<td>63,763,580</td>
<td>8.6%</td>
<td>2.61%</td>
<td>1.94%</td>
</tr>
<tr>
<td>1999</td>
<td>5,620,764</td>
<td>64,717,510</td>
<td>8.7%</td>
<td>2.44%</td>
<td>1.50%</td>
</tr>
<tr>
<td>2000</td>
<td>5,711,482</td>
<td>65,383,159</td>
<td>8.7%</td>
<td>1.61%</td>
<td>1.03%</td>
</tr>
<tr>
<td>2001</td>
<td>5,797,930</td>
<td>65,790,897</td>
<td>8.8%</td>
<td>1.51%</td>
<td>0.62%</td>
</tr>
<tr>
<td>2002</td>
<td>5,892,878</td>
<td>65,896,444</td>
<td>8.9%</td>
<td>1.64%</td>
<td>0.16%</td>
</tr>
<tr>
<td>2003</td>
<td>5,970,497</td>
<td>65,885,462</td>
<td>9.1%</td>
<td>1.32%</td>
<td>-0.02%</td>
</tr>
<tr>
<td>2004</td>
<td>6,033,425</td>
<td>65,871,265</td>
<td>9.2%</td>
<td>1.05%</td>
<td>-0.02%</td>
</tr>
</tbody>
</table>


with forms of autism and special needs has increased. States such as Massachusetts, California, and New York report an increase in special needs students with these conditions.16

c. De-institutionalization and Mainstreaming of Special Needs Children

Deinstitutionalization of special needs children, a product of federal legislation and requirements enacted since 1975, has over the years created a shift away from state institutions and toward programs provided by schools and communities (Berman and Urion, 2003). The creation of Individualized Education Plans and the matriculation of formerly institutionalized students into public education systems created a need for more special needs educators and support staff. As discussed earlier, exceptional students must be placed in the “least restrictive

environment” (LRE) in which they can effectively learn. The LRE requirement is aimed at preventing unnecessary segregation/institutionalization of students with disabilities. As a result, most students with mild disabilities spend all or most of their day in an at-the-general-education setting and may be assigned a full-or part-time instructional assistant to help them with assignments. If a student is not able to learn in a general instruction classroom, the student may be placed in a more restrictive setting in which the student participates in the general education setting for portion of the day, but receives most academic instruction in a separate classroom with instruction being provided by a special education teacher or other staff. Students unable to function within a general education or special education classroom may receive instruction at home or be placed at a school specializing in providing instruction to children with specific and more serious disabling conditions. The highest level of restrictive placement – one in which very few students with disabilities are placed today – is a residential (or institutional) placement. The overall effect of the requirement to provide “free and appropriate public education” in the “least restrictive environment” (i.e., mainstreaming) is to increase the numbers of students with disabilities to be served within the public school system – thereby, increasing overall demand for special education teachers. It should be noted, though, that schools have had a long time to adjust to mainstreaming of children with disabilities (i.e., the Education for All Handicapped Children Act made special education programs mandatory in the mid-1970s). As discussed earlier in this chapter, since the mid-1970s, there have been a series of new federal laws enacted (including IDEA in 2004), which have tightened up and made more explicit requirements for serving children with disabilities within the public education system.
d. Class Size

The demand for special education teachers is affected by student-teacher ratios, with a declining ratio of students per teacher necessitating an increase in the number of teachers (if the total number of students remains constant or rises). The demand for special education teachers is governed overall by an array of federal and state legislation which mandates “a free and appropriate” education for children with disabilities. To comply with these requirements, state and local education authorities have developed guidelines to control how the needs of children with disabilities are to be “appropriately” met, including establishing student-teacher ratios for children with various disabilities. A portion of the demand for teachers that may go unfilled may be related to reducing student-teacher ratios over time. Boe (2006), for example, observes that one factor driving demand for special education teachers – particularly for special education teachers serving young children with disabilities – has been decreasing student-teacher ratios:

…The number of students per teaching position for the 3–5 age group declined from a ratio of 27.2:1 in 1989/1990 to a ratio of 17.5:1 in 2000/2001 (before increasing to 22.6:1 2 years later). In contrast, the comparable ratio for the 6–21 age group held remarkably steady, at close to 15:1 throughout the 15- year period studied. Thus, the shortage of SETs [special education teachers] for students aged 3–5 years with disabilities might be explained, in part, by efforts to rapidly reduce the student-teacher ratio, thereby putting extraordinary pressure on sources of supply. But the same explanation does not apply to the shortage of SETs for students aged 6–21 years, since the student-teacher ratio was stable, at approximately 15:1, during the 15-year period examined.

e. Fiscal and Budgetary Constraints

Fiscal and budgetary issues can substantially affect demand for special education teachers and be a factor in school districts facing challenges to filling vacancies. Under the Individuals with Disabilities Education Act (IDEA), states and localities have primary responsibility for providing special education programs and services to eligible school-age children with disabilities. According to Center for Special Education Finance (CSEF), based on data from 39
responding states, on average, local school districts provide about 46 percent and states about 45 percent of the support for special education programs, with the remaining 9 percent provided through federal funding (Parrish et al., 2003). Local school districts hire based upon the number of unfilled budgeted vacancies, as well as the number of teachers needed to replace less than fully-qualified teachers.

Budget cuts or increases at any of the three levels of funding can affect demand for special education teachers and result in an imbalance between supply and demand. For example, budget cuts can reduce the overall number of teachers sought (and thus, could potentially reduce the demand for teachers). Budget reductions could, however, be achieved by reducing salaries, decreasing supports for special education teachers, or instituting larger class sizes, and these actions could reduce the supply of special education teachers. In contrast, an increase in funding for special education teachers could result in pressures for reducing student-teacher ratios and increase the number of budgeted vacancies for special education teachers – thus increasing demand and creating a potential imbalance in the labor market (and a tighter labor market or even shortages for special education teachers).

2. Supply-Side Factors

a. **Highly Qualified Teaching Requirement**

During interviews conducted for this study, several respondents highlighted the role that increased certification requirements – especially the “highly qualified” requirement -- have played as a supply-side factor in contributing to a tight market for special education teachers. As discussed earlier, the reauthorization of IDEA in 2004 added the requirement that special education teachers must be “highly qualified,” which aligns special education teaching with
NCLB. According to 34 CFR 300.18(b)(1), the following three conditions must be met for a special education teacher to be considered “highly qualified”:

- The teacher has obtained full state certification as a special education teacher (including certification obtained through alternative routes to certification), or passed the state special education teacher licensing examination, and holds a license to teach in the state as a special education teacher, except that when used with respect to any teacher in a public charter school, highly qualified means that the teacher meets the certification or licensing requirements, if any, set forth in the state's public charter school law;

- The teacher has not had special education certification or licensure requirements waived on an emergency, temporary, or provisional basis; and

- The teacher holds at least a bachelor's degree.

The highly qualified teacher requirement has added another hurdle for the administrators in the education field to recruit and retain highly qualified teachers, which has led to the rise in alternative certification programs and, in some cases, the use of uncertified teachers in the classroom (see Section D below, under responses to labor shortages for a discussion of alternative certification programs and use of uncertified teachers).

Interviewees pointed to the importance of legislation increasing requirements for special education teachers as the key underlying factor in the tight labor market for special education teachers. For example, one interviewee observed the following about tightening certification requirements for special education teachers:

...IDEA tightened eligibility requirements to become special education teacher, in particular, the “highly qualified” requirements, which have resulted in shortages of special education teachers. The “full inclusion” philosophy was a factor with regard to shortages in 1990s—but this factor has been sidelined since the enactment of the highly qualified requirement. Some special education teachers had been working in self-contained classrooms, but when the new definition came along, some of these special education teachers were no longer considered highly qualified. As a result, they needed to pass tests or became floaters that did not teach in core content areas. This was very demoralizing, and often special education teachers were not happy because of their new floating consultant-like positions. [Ralabate]
Cook and Boe (2007) have pointed to the need for careful analyses of two types of “demand” for special education teachers, one of which (“quality demand”) has resulted in shortfalls of fully qualified special education teachers:

Examination of the adequacy of teacher supply requires a distinction between two types of teacher demand and the adequacy of supply in relation to each type including: (a) quantity demand, or the demand for the number of teachers to fill all teaching positions that have been created and funded at the district level, and (b) quality demand, or the demand for teachers with specific qualifications such as certification level, certification field, amount of teacher preparation, and degree major field.

In their analyses, Cook and Boe (2007) found there was a need to replace 49,000 less than fully-certified special education teachers (practicing in 2001-02) and that the shortage of fully-certified special education teachers had been growing each year since 1993. The authors conclude: “…there is an enormous unmet need for qualified SETs (special education teachers) that is unlikely to be met in the near future regardless of modest increases in the production of new teachers and recruitment from other available sources.”

The distinction raised by Cook and Boe (2007) between quantity and quality illustrate the difficulties in defining an occupational shortage. Most of the literature indicates that the vast majority of special education students are being taught, even if not by “highly qualified” special education teachers. Thus, the market is clearing in the sense that school districts are responding to the lack of highly qualified special education teachers and employing other individuals. This is no different than the standard response we would expect from employers facing a tight labor market—while they would prefer to have workers with the best possible credentials, they will accept others when the alternative is to have untaught classes or to cram many more students into classes with highly qualified teachers. This is not to suggest that there is not a serious problem

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17 Section D below, which focuses on responses to labor market conditions, provides additional evidence and discussion about special requirements for special education teachers and effects of such requirements on the labor market conditions for special education teachers.
in the special education labor market—to the contrary, the recognition that many classes are taught by teachers who are not highly qualified signifies that there is a problem in attracting and retaining highly qualified individuals; the problem is akin to the “social demand shortage” concept introduced by Arrow and Capron (1959).

b. Attrition

High attrition is an often-cited factor (both in the literature and in interviews with experts conducted under this study) affecting the supply of special education teacher. This factor was identified as a key factor by a number of experts interviewed for this study and often linked to several other factors affecting supply – extra administrative burden, working conditions, and lack of a pay differential versus general education teachers. For example, one interviewee observed:

...If changes are not made in No Child Left Behind (NCLB) and IDEA, it can be expected that in the future, shortages will get worse. This is because lots of teachers working in special education will either age out (an estimated 50 percent of SE teachers ready to or eligible for retirement); also, not as many new special education teachers are coming in and staying in the field as they are likely to leave within the first 5 years. Among new special education teachers, an estimated 50 percent leave within first 5 years – so, overall, it is not possible to replenish those who are retiring and leaving the field of Special Education. [Ralabate]

The literature that examines key factors determining whether there is an adequate supply of special education teachers focuses considerably on retention and attrition of special education teachers. In a critical analysis of the research literature, Billingsley (2004) observes:

Although the causes of the shortage problem are complex, teacher attrition is clearly a major contributor. Recent evidence suggests that special education, math, and science are the fields with the highest turnover and that special education teachers are more likely to depart than any other teacher group (Ingersoll, 2001). McLeskey et al. (2004) provide an analysis of the research on special education attrition rates and suggest that a greater proportion of special educators than general educators leave.

Several types of attrition have been examined in the literature, including leaving the teaching profession altogether and transferring to other teaching and educational positions. Of particular
interest has been the loss of special education teachers to general education, with some researchers reporting a higher proportion of special education teachers transferring to general education than the reverse (Boe et al., 1996).

The research demonstrates that teacher characteristics and work factors play critical roles in determining special educators’ job satisfaction and career decisions. Billingsley (2003) provides an overview in a review of the literature of “several key teacher characteristics and personal factors that influence teachers’ decisions to leave special education: (1) there are consistent reports that younger and inexperienced special educators are more likely to leave than their older, more experienced counterparts; (2) there is support from two major studies that uncertified teachers are more likely to leave than certified teachers; (3) special educators with higher test scores are more likely to leave; and (4) teachers’ personal circumstances and priorities influence attrition and retention.”

Despite the attention that attrition has received, not all researchers agree that attrition and teacher retention are key determinants of the balance between supply and demand of special education teachers. Boe, Cook, and Sunderland (2008) assert that teacher attrition in special education appears to be equivalent in magnitude to that in general education (during the 1990s):

Attrition percentage of SETs and GETs during the 1990s (aggregated) was comparable (about 10%), but clearly less than that from all nonbusiness occupations (about 13%)…Thus, there is no evidence that public school teachers left their LEA [local education authority] of employment at a higher rate than did employees from nonbusiness employers nationally. In fact, the corporate attrition rate of public teachers was actually lower than for nonbusiness occupations during the 1990s. Boe and Cook (2006) find that what they term as “total annual turnover” (i.e., the sum of attrition, teaching area transfer, and school migration) of SETs and GETs increased substantially during the nine-year period from 1991-1992 to 2000-2001. However, based on aggregated data for 1991-1992, 1994-1995, and 2000-2001, the total annual turnover of public school teachers
was virtually identical for SETs and GETs (22.8% and 22.4%, respectively, either left teaching, switched teaching area, or migrated to a different school annually during the 1990s). The authors found some differences between SETs and GETs in the extent of various types of turnover: SETs were somewhat less likely to switch teaching areas than GETs, whereas SETs were somewhat more likely to move to a different school than GETs. The authors note that teacher turnover rates are more similar than different for special education and general education and conclude:

Our conclusions from this research are that teacher attrition is not excessive in comparison with other vocations and that retention will not improve substantially unless prevailing conditions improve dramatically. This is unlikely; therefore, the supply of qualified teachers needs to be increased sufficiently to satisfy demand. Although the topic of teacher supply is too large and complex to be reviewed here (see Cook & Boe, in press; Curran & Abrahams, 2000; NCES, 2005), we use special education to illustrate the need for enhanced supply. Of first-time SETs hired in 1999-2000, only 46% were extensively prepared to teach in special education; the others were either prepared in general education or had inadequate preparation.

c. **Administrative Burden/Working Conditions**

Both our interviews and the literature point to excessive administrative burden and working conditions – without additional compensation – as a potential key factor with regard to difficulty in recruitment of new teachers into the special education field as well as a major precipitating factor for existing special education teachers making a switch to general education teaching or out of teaching altogether. For example, one interviewee pointed directly at working conditions as an underlying factor in attrition: “Working conditions are a major cause of shortages of special education teachers. As you might suspect, special education teachers have unworkable caseloads and face unrealistic demands...when you have role ambiguity it leads to burnout. Special education teachers have too much paperwork.” [Maizner]
As a result of NCLB, special education teachers are sometimes placed as consultants in general education classrooms or used as resources. Without their own classes in their specialized fields of special education, many have high caseloads, must complete a great deal of paperwork, and travel around the school building to complete different tasks. Also as a result of NCLB, all the students with special education needs are required to take state assessments, which can be time consuming to administer and score. The result is a workload increase for special education teachers, which, coupled with the redefined teaching role, has led to increased burnout and attrition. As noted in the previous section of this report, attrition is a major concern for the special education teacher labor market (Billingsly, 2005).

SPeNSE identified paperwork burden related to monitoring student progress and the paperwork associated with IDEA policy changes as the leading cause of burnout for special education teachers (USDOE, 2002). In her analysis of studies investigating the factors that contribute to special education teacher attrition and retention, Billingsley (2004) found stress to be one of the most powerful predictors of attrition. Billingsley (2004) emphasizes the connection between stress and school climate, “role” problems, and paperwork. In inadequate work environments, in which special educators lacked necessary materials, experienced poor administrative support, and dealt with low staff morale, teachers were more likely to leave their positions. Role problems (including, role overload, role conflict and ambiguity, and role dissonance) create stress and decrease job satisfaction for special educators. In one study Billingsley reviewed, 68 percent of special education teachers felt that they had too little time to do their work, and nearly 33 percent found conflicting goals and directions to be a frequent source of stress (Morvant et al. (1995); cited in Billingsley (2004)). In addition, several studies found that paperwork is significantly related to intent to leave teaching, and 60% of teachers who
planned to leave urban school districts cited paperwork problems as a major factor in their decision (Billingsly, 2004).

**d. Teacher Wages**

Some interviewees and the literature have pointed to the need for higher wages for special education teachers to fully compensate them for additional required training and certification, as well as the greater administrative and paperwork burden that is often required of special education teachers. The earlier analysis of median salaries for teachers showed that while elementary school special education teachers have somewhat higher median earnings than elementary school general education teachers, there is no differential for special education teachers at the middle or high school levels. According to one interviewee for this study, pay differential between school districts can to some extent lead to transfers between school districts, but only large pay differentials would likely make much of a difference in terms of attracting more teachers into the field of special education:

> Wages have been discussed over and over with regard to shortages. I believe that money doesn’t make that big of a difference for special education teachers. They may transfer to another district for several thousand dollars. If salary was significantly higher more would come into the field, but a $5-10,000 difference probably wouldn’t make a difference...unless salaries are radically increased, simply offering higher salaries will not attract new people into the field. [Gillespie]

**F. Assessment of Labor Market/Shortage Conditions**

Both interviewees for this study and recent literature argue that the labor market for special education teachers is tight and that there appear to be insufficient fully qualified special education teachers to fill vacancies. In addition, analysts observe that there are certain geographic areas and subspecialities within the special education field where school districts face
serious challenges to filling vacancies, especially with personnel that meet certification requirements under IDEA.

Interviewees for this study were in agreement that there have been long-standing shortfalls of fully-qualified special education teachers to fill job vacancies – and as a result, in some instances, school districts “lower the bar” to fill vacancies with less than fully-certified teachers. Several of the interviewees indicated that school districts have faced shortages of special education teachers dating back to the mid-1970s, for example, according to one interviewee: “There has never not been a shortage since 1974 – special education teachers have been a critical shortage area since the inception of the legislation mandating free and appropriate education to all disabled children (i.e., since PL 94-142 went into effect). At the time the legislation was enacted, there was a rush to get special education teachers certified.” [Gillespie] A second interviewee observed: “Special education teachers actually have a relatively short history as a profession – with the passage of PL 94-142 (in 1974) there was an immediate shortage and there have been continuing shortages since.” [Mainzer] A third interviewee was unsure when shortages first arose, but observed labor market conditions had “worsened” as a result of the “highly qualified” definition (incorporated into IDEA in 2004), which tightened requirements on who could become a special education teacher. [Ralabate]

Interviewees highlighted shortage or near-shortage conditions in certain geographical areas – notably inner city and rural areas, and certain regions of the country. They cited a variety of factors for geographic differences in shortage conditions, including lack of mobility, pay differentials, and working conditions. For example, one interviewee observed the following geographic trends and underlying factors driving the trends:

...There are some areas with better supply than others, but hardly any inner city or rural areas are exempt from these shortages. There are areas of the Midwest that
have the least amount of need and best supply of special education teachers – for example, Wisconsin, Iowa, Michigan, Indiana, and Iowa have lots of preparation programs. Also, Pennsylvania prepares lots of special education teachers – this state has always been an exporter of SE teachers.

...While there is sometimes a problem with reciprocity between states in accepting special education teachers’ certifications, the bigger problem is that people do not want to move away (from where they grew up) to take teaching job in other states. While people might go to another state to go to college and receive a special education teaching degree, they usually want to go back home to teach. This is why our organization is introducing community-based teaching campaigns. [Gillespie]

A second interviewee observed that there is variation across states and localities due to differences in working conditions, pay, and the highly diverse Title I populations. He noted that urban [inner city] and rural areas are having the most trouble attracting well-qualified special education teachers (and teachers in general) and that problems of shortages of special education teachers tend not to be as bad in wealthier suburban areas. He also noted that as a result, about half of special education teachers in many large cities are teaching under emergency licensure. He went on to observe that pay differentials can make a critical difference locally from school district to school district:

...Affluent stable school districts are often able to steal people from surrounding districts; some districts also set salary scales so it is possible to attract teachers from out of state. No state has been able to deal with the “equitable” distribution requirement in NCLB (which calls for equal distribution of SE teachers across the state). If you paid special education teachers more, over time the shortage would be reduced...if (for example) pay was $100,000 for special education teachers the shortages would largely go away. [Mainzer]

Interviewees also highlighted tight labor market conditions for certain subspecialties within special education teaching. One interviewee noted that shortages are worst for those teachers that teach specific types of disabilities, citing long-term shortages of special education teachers for the visually impaired (for 20 years or more). He also noted more recent shortages relate to special education teachers that are qualified to teach specific content areas (e.g.,
reading/math), with the challenge being that special education teachers need to meet more requirements than a general education teacher (i.e., meet both subject content and special education requirements). A second interviewee also highlighted the difficulties that some school districts encountered in filling specialty areas within special education:

- **Shortage areas change somewhat from year to year.** Those consistently at the top in terms of shortages are: teachers of severely and profoundly disabled children, emotionally disturbed children, and multi-categorical children (i.e., many of these children spend one-half their time in general education classrooms; teachers must be able to handle multiple disabilities). As states move to a multi-categorical model, you need to get more teachers qualified to teach in more than one environment.

- **Shortages of SE teachers of the visually impaired (VI) are increasing** – though are not at the top of list. This is because there are not enough preparation programs distributed across the nation (many states do not have a VI preparation program).

- **Low-incidence disabilities have a good pool/supply,** and teachers do not leave the field; the problem is that there may not be many training programs in the state or locality for this type of teacher. However, there is a revolving door (high attrition) for teachers of emotionally disabled and severe and profoundly disabled. [Gillespie]

Finally, a third interviewee highlighted challenges in recruiting and keeping special education teachers serving those students that are the most difficult and demanding to serve: “**Special education teachers for the emotionally disabled/disturbed is where the shortages are the greatest – it is the area where teaching is least reinforcing and most segregated – this group of students is the hardest to work with.**” [Mainzer]

The literature indicates that the labor market has been and continues to be tight for special education teachers, especially when it comes to fully-certified teachers. Boe (2006) summarizes labor market conditions in the 1990s and how the concept of the “highly qualified teacher” has resulted in a tight labor market for special education teachers that are fully qualified that affected labor market conditions in the early 2000s. In the 1990s, using U.S. Department of Education data, Boe (2006) finds shortfalls in the number of special education teachers:
For a period of 5 years in the 1990s (1993/1994 through the 1997/1998 school years), the Office of Special Education Programs (OSEP), of the U.S. Department of Education (USDE), provided information about the number of vacant teaching positions in special education in its annual reports to Congress on the implementation of the Individuals with Disabilities Education Act (IDEA) (OSEP, 1996, 1997, 1998, 1999, 2000). During this 5-year period, the median number of vacant full-time equivalent (FTE) teaching positions in special education was about 3,600 positions or 1.1% of total FTE positions (OSEP, 1996, 1997, 1998, 1999, 2000). These vacant positions can be construed as the “quantity shortage” of SETs (i.e., the number of positions for which there was an insufficient supply of eligible individuals who were available and willing to accept positions under the terms of appointment established by hiring school districts). Although the national quantity shortage percentage was small, the number of classrooms without a teacher was not trivial.

Boe (2006) notes that the No Child Left Behind Act of 2001 (NCLB) defined the concept of a “highly qualified teacher” and prescribed that all public school teachers of core subject matters be highly qualified by the end of the 2005/2006 school year (as cited in USDE, 2004b). As noted earlier, NCLB defined a highly qualified teacher as one with (a) a bachelor’s degree, (b) full certification, and (c) demonstrated expertise in the subject matter of each core subject taught. Boe (2006) defines “shortages” of teachers in terms of having adequate supply of teachers to meet NCLB requirements:

Thus, there is a federal statutory quality demand for teachers who attain all three qualifications. Since all teachers of core subjects are required to be highly qualified by NCLB, the size of the national quality demand (i.e., the demand for teachers with specific qualifications) for such teachers is the same as the quantity demand for such teachers. To the extent that the supply of qualified teachers does not satisfy the quality demand, there is a shortage of qualified teachers. This shortage, in turn, creates a quantity demand for the number of additional qualified teachers needed to satisfy the shortage.

Boe and Cook (2006) compare labor market conditions for special education teachers to those of general education teachers and finds that it is comparatively more challenging to fill job vacancies for fully certified special education teachers:

The magnitude of the chronic shortage of fully certified SETs for students aged 6–21 years with disabilities can also be viewed by contrasting the shortage of SETs with that of GETs. Available evidence suggests that for students in grades K–12, the shortage of fully certified GETs stood at 10.5% (based on 1999/2000 SASS data), whereas the comparable shortage
of SETs stood at 13.7% (also based on 1999/2000 SASS data, adjusted upward by 1.1% to account for vacant positions.

Boe (2006) indicates that there even if some reduction in demand for fully certified SETs is achieved, there is little reason to expect that the need for a much larger supply will be offset substantially in the future. He concludes that an increase in teacher supply is needed to address the chronic and increasing shortage of over 50,000 fully certified SETs for students aged 6–21. He suggests four possible strategies to increase supply: (a) increased transfer of qualified GETs to teaching positions in special education, (b) improved recruitment of qualified teachers entering from the reserve pool, (c) expansion of initiatives to upgrade the qualifications of unqualified employed SETs, and (d) expansion of teacher preparation programs in special education to increase the production of novice teachers. He concludes that of these strategies, upgrading the qualifications of employed SETs represents a more promising approach to increasing the supply of qualified teachers. He points out that:

Almost 50,000 employed SETs nationally have not earned full certification in their main teaching assignment. However, they have demonstrated that they are able and willing to be employed in special education. Therefore, these teachers can be viewed, for the most part, as an asset worthy of further investment in upgrading their qualifications. This can be implemented by local education agencies encouraging, supporting, and providing incentives for such teachers to complete alternative routes to certification (ARC) or to enroll part-time in traditional teacher preparation programs at local colleges and universities.

The next section of this report considers alternative preparation programs and several other potential responses to tight labor market conditions for special education teachers.

G. Responses to Labor Market Conditions

This section of the report examines some of the responses to tight labor market conditions for special education teachers, including responses that have been undertaken or could be undertaken by employers, the government, or special education teachers.
1. **Use of Alternative Routes to Certification**

Alternative routes to certification in special education tend to fast-track or circumvent traditional university-based teacher education. Alternative programs prepare teachers in nontraditional ways and allow individuals without traditional undergraduate teacher preparation to obtain teacher credentials. Alternative routes to certification in special education open doors to teaching for people who may not have otherwise pursued such a career. Teacher preparation programs tend to vary in length and structure, delivery mode, and target population. However, alternative programs tend to be shorter than traditional programs and are structured to allow candidates to begin teaching immediately or soon after beginning the program. In addition, alternative programs typically rely more heavily on field experiences than traditional preparation programs and less on formal classroom instruction. Compared to traditional certification, alternative program candidates are more likely to have majors unrelated to special education or general education teacher preparation (Rosenberg and Sindelar, 2005). A typical alternative certification training program involves a summer course lasting six to eight weeks, followed by a paid supervised internship lasting up to one year, after which the teacher is expected to receive full certification.

The major concern regarding alternative certification programs is the impact that they may have on the quality of special education teaching. Critics claim that acceptance of such certification practices represents a reduction of teaching standards and will result in inadequately prepared teachers-- and ultimately, ineffectively served children. Opponents charge that they create a two-tiered system of entry into teaching, one with negligible standards and the other with clear standards and rigorous assessments for those who choose traditional training. Advocates of such programs, on the other hand, argue that alternative certification requirements, when thoughtfully developed, will maintain the quality of teaching in special education and still
allow talented candidates to enter the field with ease. Proponents of alternative certification view certification requirements as barriers to the recruitment of quality candidates, and argue that alternate routes offer opportunities for candidates with strong subject matter knowledge and/or prior professional experience in other fields to improve the quality of the teaching force (Birkeland and Peske, 2004).

Recent studies have found that most alternative education programs require baccalaureate degrees, have entrance requirements equal to or greater than those for university teacher education programs, emphasize practical training and experience over educational methods and training seminars, and involve ongoing supervision and evaluation of the candidates. Although critics cite the potential danger of producing lower quality teachers, approximately 50,000 individuals were issued teaching certificates through alternative routes in 2004-2005, up from approximately 39,000 the year before (Feistritzer, 2006). As of 2005, there were 115 alternative routes to teacher certification being implemented by approximately 485 providers in 43 states and the District of Columbia, and more states are likely to consider such programs if the perceived shortage of special education teachers in certain critical demand areas continues (Feistritzer, 2005). For example, a study by Raymond, Fletcher, and Luque indicates that Teach for America teachers are as competent as their non-TFA counterparts.¹⁸ Employers use alternative certification programs for many reasons: they offer greater access to teaching for nontraditional candidates; they help provide teachers to under-served geographical areas; they attract candidates to subject areas of perpetual shortages; they draw in promising candidates who might otherwise pursue different careers; and they permit candidates to bypass extra hurdles faced in traditional programs (Nakai and Turley, 2003).

2. Use of Non-Certified Special Education Teachers

Exhibit 2-8 shows the percentage of special education teachers that are not fully-certified by state. During the fall of 2002, 12.4 percent (398,199) of the employed special education teachers were not fully certified, which translates to 12.4 percent or 730,716 students with special needs being taught by teachers who are not fully certified. This fell slightly in fall of 2003 to 10.5 percent (361,458) of employed special education teachers being not fully certified. As shown below, the national average of uncertified special education teachers has fluctuated over the years from a high of 12.4 percent in the fall of 2002 to a low of 10 percent during the 1999-2000 school year. However, one-quarter of special education teachers during the 1999-2000 school year did not have an undergraduate or graduate major in special education (USDOE, 2002). Therefore, about one-quarter of special education teachers did not study and do not have a background in special education.

The data in Exhibit 2-8 illustrates the large variation in certification rates among states. Although Connecticut is the only state that never had uncertified special education teachers in all the years covered, in 2003, Iowa also employed only fully-certified special education teachers. In the fall of 2003, another 17 states employed 5 percent or less not fully certified special education teachers. At the other extreme, in seven states more than 20 percent of the special education teachers in fall 2003 were not fully certified. In the District of Columbia, 30 percent of the special education teachers lacked full certification. Interestingly, the relationship between per capita income and the proportion lacking full certification is not strong. For example, in Alabama and Mississippi, less than 5 percent of the special education teachers lack full certification, while in the relatively wealthy states of California, New York, and Hawaii, well over 10 percent of the special education teachers lack full certification.
Several research studies have shown that the school administrators have been meeting the demand for special education teachers by hiring not fully certified teachers. A study by Boe and Cooke (2006) found that the proportion shortage of not fully certified special education teachers increased from 7.4 percent in 1993–1994 to 12.2 percent in 2001–2002, which is 2 to 4 percent higher than the proportion shortage of not fully certified general education teachers. In addition, the study found that the number of additional fully certified special education teachers needed almost doubled from 25,000 in 1993–1994 to 49,000 in 2001–2002. This situation was further exacerbated by entering teachers, where only 44.4 percent of entering special education teachers were fully certified.

The inadequate supply of fully certified special education teachers is a major issue facing the field, as many (over 10 percent as shown above) special education teachers do not meet the highly qualified teacher requirement under IDEA. According to the U.S. Department of Education, state education agencies must ensure that all special education teachers are highly qualified and that the local education agencies are taking measurable steps to recruit, train, hire, and retain highly qualified special education teachers. If local education agencies are failing to pursue these action, than the state must take measures, appropriate to the situation, to bring the local education agency into compliance with IDEA. The Office of Elementary and Secondary Education currently monitors the implementation of the highly qualified teacher standards. The Office of Special Education Programs collects data about special education personnel qualifications and requires states to establish and maintain qualifications to ensure that personnel are appropriately and adequately prepared and trained (USDOE, 2007).
## Exhibit 2-8: Percentage of Not Fully-Certified Special Education Teachers (FTE) for Students Ages 6 to 21 by State

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<td>1.7%</td>
<td>2.3%</td>
<td>2.4%</td>
<td>1.7%</td>
</tr>
<tr>
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<td>4.3%</td>
<td>5.1%</td>
<td>5.6%</td>
<td>4.1%</td>
</tr>
<tr>
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<td>1.1%</td>
<td>1.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Rhode Island</td>
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<td>6.1%</td>
<td>9.4%</td>
<td>3.9%</td>
</tr>
<tr>
<td>South Carolina</td>
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<td>9.6%</td>
<td>6.3%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>2.2%</td>
<td>2.4%</td>
<td>4.0%</td>
<td>5.9%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Tennessee</td>
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<td>1.6%</td>
<td>1.4%</td>
<td>1.1%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Texas</td>
<td>13.7%</td>
<td>11.1%</td>
<td>11.4%</td>
<td>12.1%</td>
<td>14.2%</td>
</tr>
<tr>
<td>Utah</td>
<td>12.5%</td>
<td>6.1%</td>
<td>8.0%</td>
<td>6.6%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Vermont</td>
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<td>4.5%</td>
<td>7.4%</td>
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<td>9.0%</td>
</tr>
<tr>
<td>Virginia</td>
<td>13.5%</td>
<td>16.4%</td>
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<td>15.0%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Washington</td>
<td>1.2%</td>
<td>1.0%</td>
<td>2.8%</td>
<td>3.1%</td>
<td>1.9%</td>
</tr>
<tr>
<td>West Virginia</td>
<td>14.2%</td>
<td>18.1%</td>
<td>17.4%</td>
<td>18.0%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2.8%</td>
<td>2.3%</td>
<td>3.4%</td>
<td>3.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Wyoming</td>
<td>5.1%</td>
<td>4.6%</td>
<td>6.8%</td>
<td>4.7%</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

| Nation-wide         | 10.0%     | 11.5%     | 12.2%     | 12.4%     | 10.5%     |

However, states currently have the added flexibility of using their own separate High Objective Uniform State Standard of Evaluation (HOUSSE) standards for special education teachers under NCLB and IDEA, provided that any adaptations of the state's HOUSSE would not establish a lower standard for the content knowledge requirements for special education teachers and meets all the requirements for a HOUSSE for regular education teachers (34 CFR 300.18(e)). Special education teachers hired before the 2002-2003 school year may demonstrate competence based on their state's HOUSSE. HOUSSE allows teachers to demonstrate knowledge without necessarily having to complete further training or testing. Some states use points systems for various professional development activities, peer and supervisor evaluations, and portfolios developed by teachers to meet HOUSSE requirements.

In addition, new teachers (those hired after July 1, 2002) may qualify under the HOUSSE under certain circumstances, including: 1) the alternative standards provision, where special educators who exclusively teach students assessed by alternative standards have options for meeting the highly qualified mandate; and 2) two or more subject areas, where special educators who are highly qualified in math, language arts, or science have two years from the date of employment to qualify for the other subjects they teach using the HOUSSE requirements (Billingsly, 2008).

Therefore, the use of special education teachers that are not highly qualified teachers as outlined under IDEA is generally not condoned, but there may be exceptions for uncertified teachers with state HOUSSE requirements if they: 1) fall under IDEA’s category of “experienced,” hired before the 2002-2003 school year; 2) teach students who are assessed by alternative standards; or 3) are highly qualified in at least one subject area. Perhaps the state flexibility of implementing HOUSSE for special educators allows school administrators to hire
less than highly qualified teachers. The increased usage of uncertified special education teachers indicates that there is an inadequate supply of highly qualified special education teachers, and in light of the regulations under IDEA and NCLB, this may indicate an overall shortage in the field, depending on the definition of shortage used.

3. Other Potential Approaches to Expanding Supply, Including Expanding Special Education Teacher Training Programs and Improving Pay and Working Conditions

Much of the research conducted by Erland Boe and others cited above concludes that it is critical to increase the supply of highly qualified special education teachers. One approach, discussed above, is to increase the availability of alternative routes to certification. Another approach is to increase opportunities for individuals to prepare to become special education teachers by offering more generous financial aid to individuals who take courses in special education. This aid could take the form of scholarships or loan forgiveness for individuals who receive degrees in special education and practice in the field.

Employers who perceive a shortage of personnel may intensify their recruiting efforts and/or offer financial incentives to entice applicants. Some of the strategies employed by school districts in the past that could be used in the future to expand supply of special education teachers (and reduce attrition) include offering the following types of financial incentives: signing bonuses; salary advances; assistance with acquiring homes (such as low down payments on homes, paying closing costs, low-rate mortgages, and counseling on home buying); paying for coursework to earn certification in special education; student loan repayment; bonuses for teaching in critical demand areas or schools; and grants to cover professional development costs. Billingsley (2005) has also suggested several other possible strategies for improving working
conditions that could potentially encourage entry or reduce attrition into the field of special education teaching:

- Principal and staff who are knowledgeable about and interested in providing programs for students with disabilities;
- Strong induction and mentor programs;
- Professional development opportunities;
- Reasonable teaching materials budget;
- Job sharing; and
- Reduced responsibilities during the first year.

H. Conclusions and Recommendations

The labor market for special education teachers is particularly interesting because both the supply and demand sides are strongly affected by government actions at the federal, state, and local levels. At the federal level, laws such as NCLB and IDEA push states and local governments to use individuals who are deemed “highly qualified” by the legislation. Local school districts, however, have difficulty paying relatively high salaries for special education to increase retention because of financial pressure and institutional pressures to pay teachers similar salaries.

Using a strict economist’s definition, the special education teacher labor market is, for the most part, not experiencing labor shortages. As Boe pointed out in many of his studies, the vast majority of special education students do have a teacher in the classroom. The fact that a substantial minority of these teachers do not meet the criteria to be considered highly qualified is not surprising—it is a natural response by employers in any labor market where employers have difficulty filling positions to lower the standards for employees they hire.

Legislation such as IDEA and NCLB force the nation to take note of the fact that children in special education are not all being taught by “highly qualified” instructors, but they do not guarantee that local school districts will hire only people who meet the requirements for being
highly qualified. Contrast this situation to what would occur in a hospital that is having difficulty attracting physicians to perform surgery for patients. The hospital cannot substitute other personnel, such as nurses or veterinarians, to perform surgery, and some patients might have to be turned away.

Thus, the special education teacher labor market is far from a free market, and it is largely the actions of various government agencies that will determine how the labor market issues are resolved. The tight labor market, with a substantial number of teachers deemed not to be highly qualified signifies a possible “social demand shortage” described in the first chapter. To resolve this situation, some additional research is needed and some difficult policy decisions are required.

First, the public should decide how important it is to have “highly qualified” teachers in special education positions. Are the credentials required truly necessary or worth the cost of obtaining them? If so, perhaps the requirements for employing highly qualified special education teachers should be strengthened. If not, then the current situation where some special education positions are filled with individuals who do not meet all the requirements for being highly qualified may be adequate.

Second, although there is not unanimity in the literature, much of the research indicates that retention could be improved in special education. Local school systems should be encouraged to explore approaches including pay differentials and ways of reducing stress on the job as means to improve retention and possibly attract new individuals to the field.

Finally, salaries in special education are determined by government decisions rather than by private market forces. As many of the individuals we interviewed stated, higher salaries are likely to attract more individuals to the field, attract more able individuals, and reduce attrition.
Special education teachers fill an important niche in the public education system, and we can anticipate that both quantity and quality problems will be reduced somewhat if salaries are increased.
CHAPTER 3:
CASE STUDY OF PHARMACISTS

We selected pharmacists for a case study because there have been many reports in the popular and academic literature about shortages in the field, including a congressionally mandated study in 2000 (USDHHS, 2000). The labor market for this profession is interesting for several reasons. Many health care professions are facing the strains of increased demand, but the market demand for pharmacists is related to the increase in demand for prescription drugs in particular. Although the balance between supply and demand for pharmacists is greatly affected by the rapid rise in demand for prescription drugs, there are a variety of other factors to explore in understanding the market conditions for pharmacists, including: the recent shift in education requirements, the expanding role of pharmacists (e.g., in consultation with patients and physicians), the increase in pharmacy services available at grocery stores and other locations, the use of pharmacist technicians and aides as a labor substitute to perform some duties formerly performed by pharmacists, increasing use of automation in processing prescriptions, and the rise of third party payers for prescriptions.

A. Background and Description of the Occupation

The primary duty of pharmacists is the distribution of prescription drugs to individuals. However, pharmacists have several other responsibilities, including advising patients on the selections, dosages, interactions, and side effects of medications, as well as monitoring the health and progress of patients to ensure the proper use of medication. Very few pharmacists spend much time compounding, the actual mixing of ingredients to form medications, as most medications are now produced by pharmaceutical companies in standard dosages that are
A majority of pharmacists work in community settings, such as retail drug stores, or health care facilities, such as hospitals, nursing homes, and mental health institutions. Increasingly, pharmacists are pursuing non-traditional roles and careers, including: conducting research or marketing for pharmaceutical manufacturers, developing benefit packages or performing cost-benefit analysis for health insurance companies, and teaching as a college professor. In addition, some pharmacists work for government agencies, public health care service organizations, and pharmacy associations (U.S. Department of Labor, 2010).

Pharmacists in community settings dispense medications, counsel patients on the use of medications, and advise physicians about patients' medication therapy. Community pharmacists also provide patients with information on general health topics, such as diet and exercise, and over-the-counter medications and other medical products. In addition, pharmacists have a great deal of paperwork, including third-party insurance forms. Pharmacists who own or manage a community pharmacy may have additional duties, such as selling other merchandise, overseeing personnel, and managing the general operations of the pharmacy. Some community pharmacies also provide specialized services to help patients with specific conditions, such as diabetes, asthma, smoking cessation, and high blood pressure. Some pharmacists are also authorized to administer vaccinations to their patients (U.S. Department of Labor, 2010).

Pharmacists in health care facilities dispense medications and advise medical staff on the selection and effects of prescription drugs. These pharmacists may also make sterile solutions to be administered intravenously to patients. In addition, health care pharmacists plan, monitor, and evaluate patient drug programs. Pharmacists working in home health care monitor drug therapy and prepare medications for use in the home, such as infusions, which are solutions prepared for patient injection. Some pharmacists specialize in specific drug therapy areas, such
as intravenous nutrition support, oncology, nuclear pharmacy, geriatric pharmacy, and psychiatric pharmacy (U.S. Department of Labor, 2010).

Pharmacy technicians and pharmacy aides often assist in performing several of pharmacists' responsibilities. Pharmacy technicians help licensed pharmacists provide medication and other health care products to patients. Technicians tend to perform routine tasks to help prepare prescribed medication, such as counting tablets and labeling prescriptions. Pharmacy technicians also perform administrative duties, such as answering phones, stocking shelves, and operating cash registers. Pharmacy technicians in community pharmacies have varying responsibilities, depending on state rules and regulations. For example, some states allow technicians to prepare prescriptions that must be checked by a pharmacist before being given to a patient. In addition, technicians may establish and maintain patient profiles, prepare insurance claim forms, and stock prescription and over-the-counter medications. In health-system pharmacies, technicians may have added responsibilities, including reading patients' charts and preparing appropriate medications, which may be delivered to the patient after pharmacist approval (U.S. Department of Labor, 2010).

Pharmacy aides work closely with pharmacy technicians and perform a variety of administrative duties, including answering telephones, stocking shelves, and performing clerical duties. In addition, aides may establish and maintain patient profiles and prepare insurance claim forms. Pharmacy aides and technicians refer any questions regarding prescriptions and drug information to a pharmacist (U.S. Department of Labor, 2010).

Both state and federal law regulate the pharmaceutical industry. Federal rules primarily address prescription drugs, while state rules tend to regulate pharmacists and pharmacist practice settings. In 1906, federal regulation of drugs began with the passage of the Pure Food and Drug
Act, which required that labeling on medications be truthful. In 1914, The Harrison Narcotic Act was passed, which created the need for prescriptions for products exceeding the allowable limit of narcotics. In addition, this Act mandated increased record-keeping for physicians and pharmacists who dispense narcotic prescription drugs. In 1938, the Food, Drug, and Cosmetic Act (FDC) was passed, which required that new drugs be proven to be safe prior to marketing (U.S. Department of Health and Human Services, Food and Drug Administration, 2008).

There have been several subsequent amendments to the FDC Act. In 1951, the Durham-Humphrey Amendment was passed, which defines the kinds of drugs that cannot be used safely without medical supervision and restricts their sale to prescription by a licensed practitioner. The 1961 Kefauver-Harris Drug Amendments required drug manufacturers to prove the effectiveness of their products to the FDA before marketing them. In 1983 the Orphan Drug Act passed, enabling FDA to promote research and marketing of drugs needed for treating rare diseases, and the first televised drug commercial aired in June of that year. The 1984 Drug Price Competition and Patent Term Restoration Act both made marketing of generic equivalents of drugs easier and granted patent term extension to the innovators of new drugs, under certain conditions. In 1988, the Prescription Drug Marketing Act banned the diversion of prescription drugs from legitimate commercial channels. The Food and Drug Administration Modernization Act of 1997 clarified pharmacist responsibilities is drug distribution (U.S. Department of Health and Human Services, Food and Drug Administration, 2008).

More recently, final guidance was provided for pharmaceutical marketing in 1999, the Drug Safety Board was created in 2005, and the final rule for Requirements on Content and Format of Labeling for Human Prescription Drug and Biological Products was passed in 2006, including new content and format requirements for FDA-approved labeling (U.S. Department of
President Bush signed into law the Medicare Prescription Drug Improvement and Modernization Act (MMA) of 2003 (Pub. L. 108-173). MMA established a voluntary outpatient prescription drug benefit for people on Medicare, known as Part D, which went into effect January 1, 2006 (U.S. Department of Health and Human Services, Center for Medicare and Medicaid Services, 2008.)

Overall, federal rules and regulations have created incentives for the pharmaceutical industry to produce more drugs, including allowing direct marketing of prescription drugs and encouraging the development of generic equivalents, thus increasing the need for pharmacists to dispense medications. In addition, federal rules and regulations created the classification of prescription drugs and outlined the requirements for dispensing drugs that exceed the specified narcotic level. These federal regulations add to the administrative burden of pharmacists, including recordkeeping and labeling requirements.

State pharmacy boards are responsible for setting regulations, standards, and parameters within the pharmacy practice in each state. The three primary standards set by state pharmacy boards ensure that pharmacists check the patient's history, review current medications, and interact with the patient directly. A majority of the other standards address the dispensing of drugs, such as specific forms required for strict-access drugs and the confidentiality of patient information. Pharmacy board standards are developed in cooperation with pharmacy professionals, state legislatures, and consumer groups (Girogianni, 2002). The National Association of Boards of Pharmacy publishes the Model State Pharmacy Act and Model Rules of the National Association of Boards of Pharmacy (Model Act), which provide the boards of
pharmacy with model language that may be used when developing state laws or board rules (National Association of Boards of Pharmacy, 2007).

B. Training and Recruitment of Workers into the Occupation

This section discusses the educational requirements and qualifications to be a pharmacist, the factors affecting those requirements, and methods employers use to fill vacancies. This examination of the means by which individuals enter the occupation lays the groundwork for the analysis later in the chapter.

1. Educational Qualifications and Entry Requirements

Licensure of pharmacists is required in all states. Pharmacists must earn a Doctor of Pharmacy (PharmD) degree from a college of pharmacy in order to obtain a license. The PharmD degree has recently replaced the Bachelor of Pharmacy degree, which is no longer being awarded by colleges of pharmacy in the United States. The PharmD requires six years of postsecondary education, compared to the Bachelor of Pharmacy, which required four years of undergraduate education. PharmD applicants must have completed at least two years of postsecondary study with coursework in mathematics, natural sciences, humanities, and social sciences in order to be admitted to a PharmD program. A majority (70 percent) of the PharmD programs also require applicants to take the Pharmacy College Admissions Test (PCAT) (U.S. Department of Labor, 2010).

The PharmD program is designed to teach students about all aspects of drug therapy, including communication with patients and other health care providers about drug information and patient care. In addition, students learn professional ethics, concepts of public health, and medication distribution systems management. Besides classroom instruction, students in PharmD programs spend about one-quarter of their time in a variety of pharmacy practice
settings under the supervision of licensed pharmacists to gain hands-on experience (U.S. Department of Labor, 2010).

In the 2006-2007 school year, 70 colleges of pharmacy also awarded a master of science (MS) or a doctor of philosophy (PhD) degree. Both the MS and PhD degrees are awarded after the completion of the PharmD program and are designed for those who want additional clinical, laboratory, and research experience. Areas of graduate study include: pharmaceutical chemistry, the study of the physical and chemical properties of drugs and dosage forms; pharmacology, the study of the effects of drugs on the body, and pharmacy administration. Many pharmacists who go on to earn a master's or doctorate degree go on to do research for a pharmaceutical company or teach at a university (U.S. Department of Labor, 2010).

PharmD graduates who wish to gain further training also have the option of pursuing a one- or two-year residency or fellowship. Pharmacy residency programs, which are often required to become a hospital pharmacist, consist of postgraduate training in pharmacy practice and usually require the completion of a research project. Pharmacy fellowship programs are much more individualized as they prepare participants to work in a specialized area of pharmacy, such as clinical practice or research laboratories (U.S. Department of Labor, 2010).

In addition to earning a PharmD, all states require pharmacists to pass the North American Pharmacists Licensure Exam (NAPLEX), which tests pharmacy skills and knowledge. Forty-five states also require the Multistate Pharmacy Jurisprudence Exam (MPJE), which tests knowledge of pharmacy law. Both of these exams are administered by the National Association of Boards of Pharmacy (NABP). The eight states that do not require passage of the MPJE have their own state pharmacy law exam that is required for licensure. As with many professions, some states have additional exams required that are unique to their jurisdiction. Currently, all
states except California grant license transfers to qualified pharmacists who are already licensed in another jurisdiction. Most jurisdictions require continuing education for license renewal (U.S. Department of Labor, 2010).

Most pharmacy technicians are trained on-the-job, but employers may prefer applicants that have formal training, certification, or previous experience. Formal education programs are offered by the military, some hospitals, vocational and technical colleges, and community colleges. Formal education programs require classroom and laboratory work in a variety of areas, including medical and pharmaceutical terminology, pharmaceutical calculations, pharmacy recordkeeping, pharmaceutical techniques, and pharmacy law and ethics. Many training programs include internships that give students an opportunity to gain hands-on experience in actual pharmacies. After completion of formal education programs, students receive a diploma certificate, or associate's degree, depending on the program.

The Pharmacy Technician Certification Board and the Institute for the Certification of Pharmacy Technicians administer national certification exams, which are usually voluntary, but certification is required by some states and employers. Both exams require candidates to have a high school diploma or GED, no felony convictions in the past five years, and no drug or pharmacy related felony convictions at any point. Under both programs, technicians must be recertified every two years, which requires 20 hours of continuing education with at least one hour in pharmacy law (U.S. Department of Labor, 2010). Pharmacy aides, on the other hand, are trained informally on the job, but employers favor applicants with at least a high school diploma. Many pharmacy aides become certified or undergo on-the-job training to become a pharmacy technician (U.S. Department of Labor, 2010).
2. **Methods Employers Use to Recruit Workers and Methods Workers Use to Obtain Employment in the Occupation**

Employers, such as chain drug stores and medical facility pharmacies, recruit new pharmacists through interactions with pharmacy training programs (e.g., PharmD programs) at universities and professional conferences, or by placing advertisements in professional publications and on websites. Word-of-mouth also plays a role in recruitment of new pharmacists entering the field, as well as recruiting pharmacists already working at other pharmacies, but looking to change jobs. Increasingly, employers utilize their own websites to advertise job openings, as well as advertise job openings on various health care or general manpower websites. For example, company websites, such as those for large chain drug stores run by Target and CVS, make it very easy for new and existing pharmacists to search for pharmacist jobs by locality or to contact a pharmacists’ recruiter that covers a specific geographic area. For example, a search on the Target Stores website produces a listing of openings such as the following (and each job listing can be clicked on to provide additional information about the vacancy):

- **2010 D348 Pharmacy Intern  Full-time**
  United States
  Job Posting:  May 24, 2010 - Requisition ID PHA00018B

- **2010 Pharmacy Exec in Training  Full-time**
  United States-Texas, United States-New Mexico, United States-Oklahoma
  Job Posting:  Jan 29, 2010 - Requisition ID PHA0000OM

- **D353 Pharmacy EIT 2010  Full-time**
  United States-Louisiana
  Job Posting:  Apr 16, 2010 - Requisition ID PHA00014A

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These websites also make it very easy for candidates to apply for job vacancies and to contact job recruiters. Additionally, pharmacists associations have set up electronic bulletin boards to list vacancies available for pharmacist positions.20

The methods that pharmacists use to seek and obtain positions are generally similar to the methods employers use for recruitment. Pharmacists use university postings, word-of-mouth, employer websites, and a variety of employment websites to locate and apply for pharmacist openings. The following from a website provides step-by-step instructions for new entrants to the field of pharmacy, illustrating the various methods employers use to find qualified pharmacists and the ways in which newly train pharmacists should go about finding a vacant position:

- **Step 1:** Get job placement assistance from the careers office at your pharmacy school. This office will have contacts you can use to find current pharmacist openings in the areas of the country where you would most like to work.

- **Step 2:** Complete an internship. Most pharmacy schools require this as part of the program. The pharmacist for whom you intern may be able to refer you to places that are hiring or may even hire you herself once you've graduated.

- **Step 3:** Conduct a targeted resume blitz. Determine the places where you would most like to work, then send out your resumes to each of them. Include your pharmacy school transcripts and a cover letter introducing yourself and highlighting some of your academic achievements.

- **Step 4:** Join a professional organization. Most states have professional pharmacist alliances. Become a member and attend group functions. You can make contacts at these events that could lead to a job down the road.

- **Step 5:** Visit a job board online, such as HealthCareRecruitment.com. Sites such as this have current listings for pharmacist jobs all across the United States.21

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20 For example, the American Pharmacists Association has a website that allows for easy searching of pharmacists job openings at: [http://assoc.healthecareers.com/apha/association-home/](http://assoc.healthecareers.com/apha/association-home/) accessed August 28, 2010.

21 From “Ehow” website at: [http://www.ehow.com/how_2068810_find-pharmacist-jobs.html#ixzz0vl8RSiFv](http://www.ehow.com/how_2068810_find-pharmacist-jobs.html#ixzz0vl8RSiFv) (accessed August 28, 2010).
C. Characteristics of Workers in the Occupation

As Exhibit 3-1 shows, nearly half of all pharmacists (44.5%) work in pharmacies and related stores. The second largest setting for pharmacists is hospitals, including general medical and surgical hospitals, where 21 percent of pharmacists work. Pharmacists are less commonly employed in grocery stores (8.4 percent), department stores (6.9 percent), and other general merchandise stores.

Exhibit 3-1: Pharmacist Employment by Industry, 2009

<table>
<thead>
<tr>
<th>Industry</th>
<th>Employment</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and personal care stores</td>
<td>119,150</td>
<td>44.5%</td>
</tr>
<tr>
<td>General medical and surgical hospitals</td>
<td>57,230</td>
<td>21.4%</td>
</tr>
<tr>
<td>Grocery stores</td>
<td>22,390</td>
<td>8.4%</td>
</tr>
<tr>
<td>Department stores</td>
<td>18,410</td>
<td>6.9%</td>
</tr>
<tr>
<td>Other general merchandise stores</td>
<td>13,230</td>
<td>4.9%</td>
</tr>
<tr>
<td>Other</td>
<td>37,450</td>
<td>14.0%</td>
</tr>
<tr>
<td>Total</td>
<td>267,860</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Note: Excludes self-employed persons

D. Employment and Earnings Trends within the Occupation

1. Employment Trends

As with the increase in prescription drug expenditures, there has been a steady increase in the number of pharmacists employed. Exhibit 3-2 shows the trends in the number of pharmacists compared to pharmacy aides and technicians, comparison health care professions, and all workers from 2004 to 2008. As the table shows, the number of pharmacists has increased every year during this period. From 2004 to 2008 the number of pharmacists increased by 19.5 percent, which is much greater than for all workers (5.5 percent) and notably higher than all
Exhibit 3-2: Employment Trends: Number and Percentage Change in Pharmacist, Comparison Occupations, and All Workers, 2004-2008

Percent Change in Pharmacists Versus Other Occupations, 2004-08

![Graph showing percent change in pharmacists versus other occupations, 2004-08.]

Number of Pharmacists and Other Comparison Occupations and Percentage Change, 2004-08

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>222,960</td>
<td>229,740</td>
<td>239,920</td>
<td>253,110</td>
<td>266,410</td>
<td>19.5%</td>
</tr>
<tr>
<td>Pharmacy Technicians</td>
<td>255,290</td>
<td>266,790</td>
<td>282,450</td>
<td>301,950</td>
<td>324,110</td>
<td>27.0%</td>
</tr>
<tr>
<td>Pharmacy Aides</td>
<td>47,720</td>
<td>46,610</td>
<td>47,810</td>
<td>49,630</td>
<td>53,190</td>
<td>11.5%</td>
</tr>
<tr>
<td>Optometrists</td>
<td>22,780</td>
<td>23,720</td>
<td>24,220</td>
<td>24,900</td>
<td>25,970</td>
<td>14.0%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>2,311,970</td>
<td>2,368,070</td>
<td>2,417,150</td>
<td>2,468,340</td>
<td>2,542,760</td>
<td>10.0%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>6,359,380</td>
<td>6,547,350</td>
<td>6,713,780</td>
<td>6,877,680</td>
<td>7,076,800</td>
<td>11.3%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>128,127,360</td>
<td>130,307,840</td>
<td>132,604,980</td>
<td>134,354,250</td>
<td>135,185,230</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

health care practitioners (19.5 percent) over the same time period. Among the occupations compared, only pharmacy technicians have a higher growth rate in employment from 2004 to 2008, at 27.0 percent.

The dramatic increase in pharmacy technicians over the past five years most likely reflects employers hiring more pharmacy technicians to assist pharmacists with their day to day tasks that do not have to be performed by a licensed pharmacist, such as preparing medications, answering phones, and completing third party payer paperwork. Pharmacy aides, however, have seen an average increase for healthcare field of 11.5 percent from 2004 to 2008. Aides may see less growth in employment than pharmacists and pharmacy technicians due to attrition and the expansion of pharmacy technicians’ duties.

Unemployment Trends. Another key indicator of labor market shortages is the annual average unemployment rate by occupation. Occupations experiencing shortages or tight labor markets, in which the number of vacancies is greater than the number of qualified applicants, are likely to have very low unemployment rates, since those searching for jobs find them quickly so are unemployed for a very short period (Cohen, 1990). Exhibit 3-3 illustrates the trend in the annual unemployment rate for pharmacists, comparison occupations, all health care practitioners, and all workers from all occupations. The annual unemployment rate for pharmacists averaged 1.4 percent between 2004 and 2008, compared to 1.4 percent for all health care practitioners and 4.7 percent for all workers from all occupations. Over the past five years, the unemployment rate for pharmacists has fluctuated from a low of 0.5 percent in 2005 to a high of 2.9 percent in 2007, well below the rate for all workers, though sometimes slightly above or below that for all health care practitioners. The unemployment rate for pharmacists—like that of nurses and other health care practitioner—is relatively low (in some years, less than one percentage point).
Exhibit 3-3: Average Annual Unemployment Rate: Pharmacist, Comparison Occupations, and All Workers, 2004-2008

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>1.2%</td>
<td>0.5%</td>
<td>1.6%</td>
<td>2.9%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>1.0%</td>
<td>1.2%</td>
<td>1.1%</td>
<td>1.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>1.3%</td>
<td>1.3%</td>
<td>1.4%</td>
<td>1.3%</td>
<td>1.5%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>5.1%</td>
<td>4.7%</td>
<td>4.2%</td>
<td>4.2%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>


Although the low unemployment rate for pharmacists indicates a tight labor market and is consistent with the presence of a shortage, it does not conclusively prove that a shortage exists.

Vacancy Rates. The American Society of Health-System Pharmacists (ASHP) conducts an annual staffing survey to gauge the supply and demand to pharmacists. ASHP is a national professional association that represents pharmacists who practice in hospitals, health maintenance organizations, long-term care facilities, home care, and other components of health care systems. As Exhibit 3-4 below shows, the pharmacist vacancy rate has remained fairly high, fluctuating from a low of 5 percent in 2004, a high of 7 percent in 2006, to 5.9 percent in 2008. The vacancy rate for pharmacy technicians, on the other hand, has steadily increased from
Exhibit 3-4: Pharmacist and Pharmacy Technician Full Time Equivalents (FTEs) Vacancy Rates, 2004-2008

*Weighted  **Source:** ASHP Pharmacy Staffing Survey Results (2008).

3.8 percent in 2004 to 4.7 percent in 2008. According to the ASHP staffing survey of 597 pharmacy directors, the average length of time required to fill a vacant position was about 6 months in 2006 (Scheckelhoff, 2006). The difficulties in hiring pharmacists and the relatively high vacancy rates show that there is a strain on the pharmacist labor market. In 2002, 77 percent of state health agencies in the United States reported that a shortage of pharmacists is a major concern in their state (Center for Health Workforce Studies, 2002).

Pharmacies have also faced difficulties in filling vacancies for leadership positions. In 2005, 46 percent of employers recruiting for health-system management and leadership positions in pharmacies indicated that it took 3 to 6 months and 26 percent indicated it took 7 to 12 months to fill these vacancies. More than half of the employers indicated that recruiting was more difficult than it was 3 years ago, and 40 percent indicated it was about the same. Factors contributing to the difficulties hiring pharmacists for leadership positions include: lack of
## Exhibit 3-5: Employment Projections: Pharmacist, Comparison Occupations, and All Workers, 2008 and Projected 2018

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>270,000</td>
<td>316,000</td>
<td>17.0%</td>
</tr>
<tr>
<td>Pharmacy Technicians</td>
<td>326,000</td>
<td>426,000</td>
<td>30.6%</td>
</tr>
<tr>
<td>Pharmacy Aides</td>
<td>55,000</td>
<td>52,000</td>
<td>-6.3%</td>
</tr>
<tr>
<td>Optometrists</td>
<td>35,000</td>
<td>43,000</td>
<td>24.4%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>2,619,000</td>
<td>3,200,000</td>
<td>22.0%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>150,931,000</td>
<td>166,206,000</td>
<td>10.1%</td>
</tr>
</tbody>
</table>


Pharmacists with leadership or management experience (55%); lack of interest among current pharmacists (50%); and suboptimal salaries (50%) (White, 2005).

**Projections for Future Employment Growth within the Occupation.** Although employment growth for pharmacists has been rapid during the past five years, the future is anticipated to see further growth as shown in Exhibit 3-5. The Bureau of Labor Statistics estimates that between the years 2008 and 2018, the total number of pharmacists will increase by 17 percent, compared to the estimated 31 percent increase for pharmacy technicians and 6 percent decrease for pharmacy aides. The increase in pharmacist employment is expected to greatly exceed the increase for all workers in all occupations, estimated at about 10 percent for this time period.

### 2. Earnings Trends

The relative wage rate change in an occupation is often an important indicator of labor market dynamics, especially in the short run. In occupations where market forces move freely, a rapid rise in wages may indicate the presence of a shortage. This appears to be true in the case of
pharmacists as they have seen a substantial increase in median hourly earnings compared to all health care practitioners and all workers from all occupations as shown in Exhibits 3-6. Pharmacists' wages have consistently increased over the past five years, with a 25.3 percent increase from $40.82 in 2004 to $51.16 in 2008. Pharmacy technicians have also had a significant increase in wages over this time period with a 17.2 percent change from 2004 to 2008 from $11.37 to $13.32. Because pharmacy is a freely moving labor market, it appears the market has driven employers to raise wages in response to a tight labor market.

E. Labor Market Factors Contributing to a Shortage

This section assesses the most prominent factors on the demand- and supply-sides that have been cited and affect labor market conditions for pharmacists. The factors discussed have been singled out in interviews conducted as part of this study (with individuals from associations and academia knowledgeable about pharmacists trends), as well as in the literature on pharmacists.

1. Demand-Side Factors

a. Increased Use of Prescription Drugs

In 2006, the pharmacy industry had more than $216 billion in sales and dispensed over 3.4 billion prescriptions in the United States, of which 72 percent (2.4 billion) were dispensed by the 56,000 retail chain drug pharmacies across the states. In 2006, retail pharmacies filled more than 2.4 billion prescriptions, with the average person filling five written prescriptions every year (National Association of Chain Drug Stores, 2007). Spending on prescription drugs in 2006 was $216.7 billion in the United States, which is more than five times the $40.3 billion expenditures
Exhibit 3-6: Median Hourly Earnings and Percentage Change: Pharmacist, Comparison Occupations, and All Workers, 2004-08

Percentage Change, 2004-08

Median Earnings and Percentage Change, 2004-08

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>$40.82</td>
<td>$43.18</td>
<td>$45.44</td>
<td>$48.31</td>
<td>$51.16</td>
<td>25.3%</td>
</tr>
<tr>
<td>Pharmacy Technicians</td>
<td>$11.37</td>
<td>$11.73</td>
<td>$12.32</td>
<td>$12.85</td>
<td>$13.32</td>
<td>17.2%</td>
</tr>
<tr>
<td>Pharmacy Aides</td>
<td>$8.86</td>
<td>$9.09</td>
<td>$9.35</td>
<td>$9.39</td>
<td>$9.66</td>
<td>9.0%</td>
</tr>
<tr>
<td>Optometrists</td>
<td>$42.51</td>
<td>$42.33</td>
<td>$43.77</td>
<td>$26.17</td>
<td>$46.31</td>
<td>8.9%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>$25.16</td>
<td>$26.28</td>
<td>$27.54</td>
<td>$28.85</td>
<td>$30.03</td>
<td>19.4%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical</td>
<td>$22.71</td>
<td>$23.83</td>
<td>$24.99</td>
<td>$26.17</td>
<td>$27.20</td>
<td>19.8%</td>
</tr>
<tr>
<td>Occupations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>$13.83</td>
<td>$14.15</td>
<td>$14.61</td>
<td>$15.10</td>
<td>$15.57</td>
<td>12.6%</td>
</tr>
</tbody>
</table>

in 1990. The share of prescription drug costs paid by private health insurance has also increased in recent years, from 26 percent in 1990 to 44 percent in 2006. With the implementation of the Medicare Part D prescription drug benefit, the government’s share rose from 28 percent in 2005 to 34 percent in 2006. These both contribute to the decline in the amount of out-of-pocket expenses for prescription drugs from 56 percent in 1990 to 22 percent in 2006 (Kaiser Family Foundation, 2008). Several interviewees pointed to the rapid growth in the number of prescription drugs as the key driving factor in the increased demand for pharmacists. For example, according to one interviewee, the push for more pharmacists to fill prescriptions has been closely linked to a number of underlying factors driving rapid increases in prescriptions:

...Between 1998 and 2008, there was about a 50% increase in prescriptions filled. There are a number of factors that have driven this increase, but the most important has been the increased 3rd party coverage of prescription drugs through the Medicare Part D and private insurance. For example, in 1990 cash (self-pay) prescriptions accounted for about two-thirds (63.1 percent) of all prescriptions; by 2008, only about a tenth (10.8 percent) of prescriptions were self-pay. The aging of the population and direct to consumer advertising has also been a factor—but the big driver has been the increasing reliance on 3rd party payments, which means the payment is not coming out of the patients’ pocket. [Miller]

As shown below in Exhibit 3-7, the amount of prescription drug spending has dramatically increased over the past decade. From 1997 to 2007, the number of prescriptions purchased increased by 193 percent from 77.6 billion to 227.5 billion. National health expenditures on prescription drugs have also rapidly increased over the past five years from $157 billion in 2002 to $227 billion in 2007, which is nearly a 40 percent increase. Prescription drug expenditures are also significantly increasing from year to year with a 9 percent increase from 2005 to 2006 and a slightly lower 5 percent increase from 2006 to 2007 (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, 2007). In addition,
Exhibit 3-7: Prescription Drug Expenditure Trends, 1997 to 2007

![Graph showing prescription drug expenditure trends from 1997 to 2007](image)


the U.S. Department of Health and Human Services projects that prescription drug spending will increase from $234.1 billion in 2008 to $457.8 billion in 2019, almost doubling in an 11-year period.

b. **Aging of the Population and Medicare**

The population 65 years or older has grown substantially in recent years. In 2008, there were 38.9 million elderly people, which is a 13 percent increase of 4.5 million from 1998. The total population of older Americans is expected to increase to 55 million in 2020 (U.S. Department of Health and Human Services, Administration on Aging, 2009).

The growth in the proportion of older Americans in the population is significant for the need for pharmacists, as older people tend to spend more on health care and drug prescriptions. In 2008, older consumers averaged $4,605 in out-of-pocket health care expenditures, an increase of 57 percent since 1998. In contrast, the total population spent considerably less, averaging $2,976 in out-of-pocket costs. About 18 percent of older Americans’ out-of-pocket health care expenditures were on prescription drugs, as older Americans spent an average of $821 on

Medicare is the public insurance program for Americans over the age of 65. In 2007, almost all (93%) non-institutionalized persons 65 and over were covered by Medicare (U.S. Department of Health and Human Services, Administration on Aging, 2009). Since 2006 when the new Medicare Part D prescription drug benefit went into effect, Medicare beneficiaries have had access to prescription drug coverage offered by private plans, either stand-alone prescription drug plans or Medicare Advantage prescription drug plans. Medicare drug plans receive payments from the government to provide Medicare-subsidized drug coverage to enrolled beneficiaries. In 2008, more than 25 million Medicare beneficiaries were enrolled in Medicare drug plans, including 17.4 million in stand-alone prescription drug plans and 8 million in Medicare Advantage plans (U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, 2008).

According to a 2006 survey of 802 pharmacists, 53 percent of the respondents found the administrative burden of filling prescriptions for customers covered by the new Medicare drug plans worse than the administrative burden under typical commercial insurance plans. In addition, nearly all (97 percent) of the pharmacists surveyed had customers ask for help or advice about the Medicare drug plans (Kaiser Family Foundation, 2006). Therefore, the new prescription drug benefit results in not only a significant increase in the demand for prescription drugs, but also for additional counseling to navigate the new government benefit.

c. **Pharmaceutical Advertising and Development**

In 1997, the Food and Drug Administration (FDA) revised its guidelines for advertising medications to the public. Since then, there has been a great increase in direct-to-consumer...
advertising, with 2009 spending estimated at $4.3 billion, over twice the $1.8 billion spent in 1999. Although a majority of advertising continues to be directed toward physicians, spending directed to physicians decreased from $6.8 billion in 2008 to $6.6 billion in 2009 (Kaiser Family Foundation, 2010). The increase in direct advertising has led to consumers asking for specific prescription drugs by name from seeing a commercial on television or hearing an advertisement on the radio. This results in a relatively new source of demand of consumers actively seeking prescription drugs, as opposed to patients who wait for doctors to prescribe medications. Two study interviewees identified direct to consumer advertising as a factor behind increased demand for prescription drugs (thereby increasing demand for pharmacists) – for example, according to one interviewee: “Over the years, there has been an increased use of medications by the consumer. In recent years, direct-to-consumer advertising by pharmaceutical companies has increased demand for medication and pressures on doctors to prescribe.” [Dall]

d. Increased Use/Availability of Over-the-Counter-Drugs and Expansion of Number of Pharmacies and Hours of Operation

The number of over-the-counter drugs has grown significantly. In 2000, there were over 100,000 over-the-counter drugs available with more than 600 containing ingredients and dosages available only by prescription 20 years ago. The increased availability of over-the-counter drugs reclassified from prescription status offers consumers more choices and greater flexibility. However, the greater selection results in a need for pharmacists to provide more counseling to consumers with questions (U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, 2000). With the increase in demand for both over-the-counter and prescription drugs, there has been an increase in new pharmacies opening and a number of pharmacies have expanded their hours. For example, according to one study interviewee, “Competition among chain stores has led to increases in hours – creating
demand for pharmacists. There has also been expansion in settings for pharmacies in venues such as grocery stores and discount stores, resulting in increased demand.” Since state pharmacy laws require a pharmacist on site when prescription medications are dispensed, new store openings and expanded hours put pressure on hiring and employing more pharmacists (U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, 2000).

The increased demand for prescription drugs also results in the need for more of pharmacists' time to be devoted to filling prescriptions, filling out paper work for third party payers, and other administrative tasks. However, according to a 2004 survey of pharmacists' time in work activities, pharmacists would like to devote more of their time to consultation and drug use management activities in community pharmacy settings (Schommer et al., 2005). In addition, the change in education requirements with the shift to PharmD has changed the type, competencies, and practice expectations of pharmacy graduates. As a result, PharmD graduates have expanded opportunities, and there has been an increase demand for these graduates in nontraditional environments, including pharmaceutical and clinical research in the business sector, such as insurance, managed care, and benefits management (Cohen et al., 2001).

2. Supply-Side Factors

a. Longer Training Period Due Change from BS to PharmD Programs

Two degree programs, the Bachelor of Science (BS) in Pharmacy and the Doctor of Pharmacy (PharmD) were offered for accreditation by the American Council of Pharmaceutical Education (ACPE) until 2004. The BS has been gradually phased out throughout the United States, and the ACPE only accredited PharmD programs after 2003. The PharmD program was first introduced in 1992 when the House of Delegates of the American Association of Colleges
of Pharmacy (AACP) adopted the Doctor of Pharmacy as the entry-level degree after much consideration and debate. During the conversion process, the number of graduates was lower because of the extra year required in the PharmD program compared to the BS. A majority of schools transitioned gradually, so the impact on graduate numbers is spread out over time; however, some schools began the PharmD for an entire class in a single year, so there were no graduates one year. Several responses to the Federal Register request for comment in 2000 noted employer difficulties with reduced numbers of graduates during the transition to the PharmD program (U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, 2000). One study interviewee noted that the switch over to the PharmD degree created a temporary, but noticeable tightness in the labor market for pharmacists:

...Demand for pharmacists (and shortage conditions) peaked in about 1999-2000. At that time, the National Association of Chain Drug Stores (NACDS) had a lot of members complaining that they could not fill positions. Tight labor market conditions were closely associated with regulatory change, which switched pharmacists’ training from a bachelor’s degree to a 5-year doctoral (PharmD) degree. This change added one additional year of training, a one-year practicum. This practicum replaced time that previously had been spent working under the supervision of pharmacist. The result was that one whole year of work among those training to become pharmacists was pulled out of the labor market. [Miller]

As of March 2009, 102 colleges and schools of pharmacy in the United States had accredited professional degree programs. In the Fall of 2008, first professional degree enrollment ranged from 45 to 1,754 students at each college or school with an average application to enrollment rate of 8:1 for Fall 2008 admission. In 2008, 2,037 students were pursuing post-BS PharmD graduate degrees (American Association of Colleges of Pharmacy, 2009). As Exhibit 3-8 shows, the number of pharmacy graduates was affected during the transition to the PharmD program. Although the PharmD program was first introduced in 1992,
Exhibit 3-8: First Professional Degree Graduates: Shift to the PharmD, 1997-2008

<table>
<thead>
<tr>
<th>Year</th>
<th>B.S. Pharmacy Graduates</th>
<th>Percent</th>
<th>PharmD Graduates</th>
<th>Percent</th>
<th>Total First Professional Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>5,768</td>
<td>74.2%</td>
<td>2,004</td>
<td>25.8%</td>
<td>7,772</td>
</tr>
<tr>
<td>1998</td>
<td>4,768</td>
<td>64.4%</td>
<td>2,632</td>
<td>35.6%</td>
<td>7,400</td>
</tr>
<tr>
<td>1999</td>
<td>3,876</td>
<td>54.3%</td>
<td>3,265</td>
<td>45.7%</td>
<td>7,141</td>
</tr>
<tr>
<td>2000</td>
<td>2,956</td>
<td>40.7%</td>
<td>4,304</td>
<td>59.3%</td>
<td>7,260</td>
</tr>
<tr>
<td>2001</td>
<td>1,914</td>
<td>27.3%</td>
<td>5,086</td>
<td>72.7%</td>
<td>7,000</td>
</tr>
<tr>
<td>2002</td>
<td>1,415</td>
<td>18.7%</td>
<td>6,158</td>
<td>81.3%</td>
<td>7,573</td>
</tr>
<tr>
<td>2003</td>
<td>839</td>
<td>11.2%</td>
<td>6,649</td>
<td>88.8%</td>
<td>7,488</td>
</tr>
<tr>
<td>2004</td>
<td>388</td>
<td>4.8%</td>
<td>7,770</td>
<td>95.2%</td>
<td>8,158</td>
</tr>
<tr>
<td>2005</td>
<td>26</td>
<td>0.3%</td>
<td>8,242</td>
<td>99.7%</td>
<td>8,268</td>
</tr>
<tr>
<td>2006</td>
<td>-</td>
<td>0.0%</td>
<td>9,040</td>
<td>100.0%</td>
<td>9,040</td>
</tr>
<tr>
<td>2007</td>
<td>-</td>
<td>0.0%</td>
<td>9,812</td>
<td>100.0%</td>
<td>9,812</td>
</tr>
<tr>
<td>2008</td>
<td>-</td>
<td>0.0%</td>
<td>10,500</td>
<td>100.0%</td>
<td>10,500</td>
</tr>
</tbody>
</table>


A majority of pharmacy graduates had a BS until 2000, when about 40 percent of graduates had a BS and nearly 60 percent had a PharmD. From 1997 to 2003, the number of graduates fluctuated from year to year, which likely shows the effects of the transition to the PharmD as pharmacy schools transitioned at different times. Beginning in 2004, the number of graduates steadily increased from year to year through 2008. This shows that the transition to the PharmD program is likely complete and supply may continue to steadily rise with demand.

b. Changing Demographics in the Supply of Pharmacists

As Exhibit 3-9 shows, the proportion of females studying pharmacy at the first professional degree level has increased slightly over the years, with females being a significant majority of the graduates. Some researchers have observed that as more females enter the pharmacist workforce, there may be greater difficulty in finding full-time pharmacists because females tend to work part time more often than males. However, the proportion of males at both the first professional degree and graduate degree levels has been increasing in recent years, so
### Exhibit 3-9: First Professional Degrees and Graduate Degrees Conferred by Gender, 2001-2008

<table>
<thead>
<tr>
<th>Year</th>
<th>First Professional Degrees (B.S., PharmD)</th>
<th>Graduate Degrees (post-B.S. PharmD, M.S., Ph.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent Male</td>
<td>Percent Female</td>
</tr>
<tr>
<td>2001</td>
<td>35.5%</td>
<td>64.5%</td>
</tr>
<tr>
<td>2002</td>
<td>34.3%</td>
<td>65.7%</td>
</tr>
<tr>
<td>2003</td>
<td>35.2%</td>
<td>64.8%</td>
</tr>
<tr>
<td>2004</td>
<td>33.4%</td>
<td>66.6%</td>
</tr>
<tr>
<td>2005</td>
<td>31.9%</td>
<td>68.1%</td>
</tr>
<tr>
<td>2006</td>
<td>31.8%</td>
<td>68.2%</td>
</tr>
<tr>
<td>2007</td>
<td>32.3%</td>
<td>67.4%</td>
</tr>
<tr>
<td>2008</td>
<td>34.0%</td>
<td>66.0%</td>
</tr>
</tbody>
</table>

**Source:** American Association of Colleges of Pharmacy (2009).

perhaps the gender divide in the pharmaceutical industry is no longer an issue. Although much of the research asserts that many pharmacists are continuing on to earn graduate degrees in order to enter into research fields, the above table shows a decrease in graduate degree graduates, but this may be due to the shift from the PharmD graduate degree to PharmD first professional degree.

### F. Assessment of Labor Market/Shortage Conditions

Interviews with experts, a review of recent literature, and analysis of employment and earnings trends for pharmacists indicate that while there has been from time to time a very tight labor market for pharmacists (sometimes bordering on shortages), that there is not an overall current shortage of pharmacists. However, the literature and experts point to the complexities of determining whether there is a shortage or tight labor market for pharmacists because there is quite a bit of flexibility to use part-time labor to fill vacancies, and pharmacy hours can be
altered to address staffing issues. For example, one interviewee observed the challenges to detecting shortages within an occupation such as pharmacist:

...It can be difficult to determine if there is a shortage within an occupation. There is a need to distinguish between whether hours are fixed versus flexible for an occupation. In pharmacies, hours can be changed and you can change the mix of part-time and full-time workers. For example, a pharmacy can change its hours from 24 hours a day to 12 hours a day—there are lots of ways in which pharmacies can adjust to labor market conditions. There is less flexibility to make adjustments, on the other hand, with teachers—they normally work school days, there are fixed hours and no overtime, and pay/hours is subject to a teachers’ union contract. [Miller]

A second expert also pointed to the complexities of determining whether a particular area was experiencing a true shortage of pharmacists to fill available vacancies:

...It is hard to tell if it is “artificial” shortage caused by stores trying to increase hours. For example you could have two pharmacies a mile apart (a CVS and a Rite Aid). What happens is that they try to expand hours, creating a “shortage” – that is, unfilled positions in that locality. But whether this is a shortage, depends on the definition of shortage that is applied. Chain store pharmacies often want to offer late hours so that they can serve new customers. Is there really a shortage of pharmacists if you cannot fill a prescription at 2 a.m.? [Dall]

Several interviewees indicated that there have been shortages of pharmacists to fill vacancies and that tightness within the labor market continues, with some geographic areas experiencing difficulties in recruiting pharmacists to fill vacancies and/or staff certain hours that a pharmacy might want to remain open. With regard to shortages, interviewees suggested that the labor market for pharmacists was particularly tight about a decade ago (in 1999 and 2000), when educational qualifications for pharmacists were increased by one year with the shift from bachelor’s degree to PharmD degree. This shift in educational requirements created a lag in supply in the pipeline of new pharmacists, which rippled through the labor market at a time when several other underlying factors (see earlier discussion) were at work increasing demand for additional pharmacists. According to one interviewee representing an employer association:
...There was a shortage of pharmacists in the recent past, but not now. Demand for pharmacists (and shortage conditions) peaked in about 1999-2000. At that time, NACDS had a lot of members complaining that they could not fill positions. Tight labor market conditions were closely associated with regulatory change which switched pharmacists’ training from a bachelor’s degree to a 5-year doctoral (PharmD) degree...The result was that one whole year of work among those training to become pharmacists was pulled out of the labor market. When there was a shortage (in 1999-2000), the NACDS survey revealed there were only a few areas with no shortage. For example, Hawaii did not have shortage, but 49 states reported problems. [Miller]

One interviewee (Dall) noted that residents in rural communities may experience greater difficulties with regard to getting prescriptions filled; for example, “you might have to travel 30 miles in a rural area to fill a prescription, but only around a mile or so in an urban setting.”

Interviewees and the literature suggested that there was a likelihood that the labor market for pharmacists would continue to be tight into the future, but there were not expectations of shortages unless there were major changes in regulations. One interviewee (Miller) observed that over the last 10 years, new pharmacy schools have opened and are now graduating their first classes, which has resulted (and will result) in an increased supply of pharmacists in the coming years.

G. Responses to Labor Market Conditions

Although the analyses indicate there are no current shortages of pharmacists, there have been a number of strategies that have been employed in the past to respond to the tight labor market conditions for pharmacists (some or all of which could potentially be used in the future, should shortages of pharmacists occur). For example, Scheckelhoff, (2006) found that health-system pharmacy directors employed a variety of non-traditional staffing model practices in order to overcome turnover and vacancies in 2006, including:

- 54 percent provided options for working longer shifts in order to work fewer days per week;
• 48 percent provided employees the option of collaborating on creating their own work schedules that meet both individual and organizational needs;

• 45 percent provided opportunities for two part-time employees to divide the hours and responsibilities of a full-time position;

• 41 percent offered programs that supported pharmacists who were looking to transition from a community pharmacy to a health system position;

• 18 percent provided support or incentives for retirement age workers to remain in the workforce longer;

• 13 percent offered programs that supported pharmacists who were attempting to re-enter the workforce after an extended (5 years or more) absence from the profession;

• 10 percent had other employees, such as pharmacy technicians, who performed their job responsibilities from home; and

• 8 percent had pharmacists who processed patient care orders from home.

Interviews conducted under this study identified a number of strategies that employers have used in the past in responding to tight labor market conditions for pharmacists including the following:

• **Increase Wages.** According to one interviewee (Dall), raising pay has been one approach to both encourage new entrants into the profession, as well as for employers seeking to fill vacant positions. A second analyst (Miller) noted that salaries for pharmacists have increased rapidly, but fringe benefits have remained about the same.

• **Increased Use of Automation.** One interviewee (Dall) noted that hospitals and other employers have increasingly used automated systems to reduce pharmacists’ time in filling prescriptions. This has led to productivity increases (i.e., increasing the amount of work that can be accomplished pharmacists in the same period of time), and at the same time has had other benefits for customers (e.g., the software used checks for drug interactions and inappropriate levels of prescription). This trend toward automation has gone on for at least 15 years. These automated systems are linked to national systems that check across states prescriptions filled for customers. A second interviewee (Miller) noted that some states do and other do not allow for pre-filling bottles for prescriptions (i.e., referred to as “central fill” in which bottles for prescriptions are filled at a central location, rather than in the local pharmacy where the prescription is brought in by the patient).

• **Substitution of Less Expensive Labor (Pharmacy Technicians/Aides).** According to one interviewee (Dall), there has been increased use of pharmacy technicians/aides over
the years as another way to reduce demand for pharmacists. Such technicians/aides are particularly used in chain drug stores and in larger urban areas. A second analyst (Miller) observed that while states have set limits on the ratio of technicians to pharmacists, these ratios are often not binding or enforced.

- **Reduce Pharmacy Hours and/or Wait Times for Filling Prescriptions.** Some pharmacies have cut back hours they are open for filling prescriptions (e.g., cutting back evening or overnight hours). Additionally, while there is no evidence (according to analysts interviewed for this study) of customers being unable to fill prescriptions, when employers are unable to fill vacancies for pharmacists, customers may encounter longer wait times in getting prescriptions filled.

- **Increasing Pipeline of New Workers.** A handful of new PharmD schools have been built in recent years and are being built – which has (and will continue to) increased the supply of pharmacists. Also, there are some long-distance (via the Internet) training programs that enable pharmacists with a bachelor’s degree to get a doctoral degree.

**H. Conclusions and Recommendations**

The analyses in this chapter suggest that while there has been a tight labor market for pharmacists at times (bordering on shortages), the tightness peaked about 10 years ago, and now there appears to be a generally adequate supply of workers to meet labor market demand. However, there are some localities areas (particularly rural areas) where difficulties in recruitment of pharmacists result in patients needing to travel farther than they might want in order to fill prescriptions. In the previous section, some of the steps taken by employers in the past in responding to tight labor market conditions are possible actions that could be taken in the future should shortages arise.

The case study of pharmacists fits well with the economic theory presented in Chapter 1. Although subject to licensing, pharmacists are not subject to the market restrictions that special education teachers, homecare workers, and physical therapists experience. Thus, although there can be (and were) market shocks that lead to shortages, the market can adjust to remedy the situation. Several factors converged to cause a temporary shortage of pharmacists about a decade ago—the increased length of schooling, the decision by many grocery stores to add
pharmacies, and the decisions by many pharmacy chains to increase hours are examples. The market has responded well to these developments, using many of the mechanisms predicted by the economic theory presented in Chapter 1. Although the occupation is projected by BLS to grow faster than average, it is likely that the industry should be able to accommodate the growth using the mechanisms described above. The one potential roadblock that should be watched is the capacity of pharmacy schools to meet the demand for new pharmacists.
CHAPTER 4:

PHYSICAL THERAPISTS

We selected physical therapists for a case study because it is a field that has long been on the list of occupations that the U.S. Department of Labor has included (along with nursing) as an occupation for which there is a national shortage. In addition, the popular and academic literature has chronicled shortages in this field for over 25 years. The labor market for this profession is interesting for several reasons. Studies dating back to the 1950s have suggested that significant numbers of physical therapists qualified to practice do not choose to do so and, similar to other health care occupations, there are issues of “burnout” and other factors that affect flow into and out of the profession (which in turn affects supply conditions). There are also interesting issues regarding the number of training institutions preparing physical therapists, as well as relatively lengthy periods of education and licensing requirements required for entry (i.e., physical therapists need a post-graduate degree from an accredited physical therapy program and a state license, requiring passing scores on national and state examinations). There is also a strong push within the field for academic institutions still offering masters degree level training to either close their programs or shift to offering doctoral degree training (which lengthens duration of training from two to three years and increases training costs to become a licensed physical therapist). As discussed below, several indicators of labor market conditions—for

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22 The U.S. Department of Labor has determined that there are not sufficient United States workers who are able, willing, qualified, and available as physical therapists and that the wages and working conditions of United States workers similarly employed will not be adversely affected by the employment of aliens. Physical therapists and registered nurses are the only two occupations in Group I of what is termed “Schedule A.”

23 Accredited physical therapy programs in the U.S. are either offering a doctor of physical therapy degree or planning to offer one after the American Physical Therapy Association (APTA) made a formal announcement about raising the educational standards for practitioners,
example, very low unemployment rates and escalating salaries—are suggestive of tight labor market conditions. In addition, there are expectations for continued growth of employment in the field, with particularly strong forecasts for employment at acute hospital, rehabilitation, and orthopedic settings. There is, according to the literature, increasing specialization within the occupation, which tends to decrease the interchangeability of practitioners and increase the number of practitioners required to meet specific service needs. There are also intriguing issues regarding substitution of less skilled aides/assistants and advances in medical technology/equipment that affect demand for physical therapists—for example, related to the appropriate blend of physical therapists to physical therapist assistants for delivery of services in varying settings and for various case mixes.

A. **Background and Description of the Occupation**

As documented in the *Occupational Outlook Handbook*, 24 physical therapists provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients suffering from injuries or disease. They restore, maintain, and promote overall fitness and health of patients. Patients of physical therapists include accident victims and individuals with disabling conditions such as low-back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

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24 For additional details about the physical therapist occupation, as well as physical therapy assistants and aides, see: U.S. Department of Labor, Bureau of Labor Statistics, *Occupation Outlook Handbook*, available via the Internet at: [http://www.bls.gov/oco/ocos080.htm](http://www.bls.gov/oco/ocos080.htm) accessed August 28, 2010. The background information in this section relating to the nature of the work, training and other qualifications, and outlook for future labor market conditions for this field are based in part on the discussion in this handbook.
Therapists typically examine patients’ medical histories and then test and measure the patients’ strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. Physical therapists develop plans describing a treatment strategy and its anticipated outcome, and then provide treatment. Treatment often includes exercise, especially for patients who have been immobilized or who lack flexibility, strength, or endurance. Physical therapists encourage patients to use their muscles to increase their flexibility and range of motion. More advanced exercises focus on improving strength, balance, coordination, and endurance. The goal is to improve how an individual functions at work and at home. Physical therapists also use electrical stimulation, hot packs or cold compresses, and ultrasound to relieve pain and reduce swelling. They may use traction or deep-tissue massage to relieve pain and improve circulation and flexibility. Therapists also teach patients to use assistive and adaptive devices, such as crutches, prostheses, and wheelchairs. They also may show patients how to do exercises at home to expedite their recovery. As treatment continues, physical therapists document the patient’s progress, conduct periodic examinations, and modify treatments when necessary.

Some physical therapists treat a wide range of ailments; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, and cardiopulmonary physical therapy. Physical therapists often consult and practice with a variety of other professionals, such as physicians, dentists, nurses, educators, social workers, occupational therapists, speech-language pathologists, and audiologists. In addition, physical therapist assistants and aides may help physical therapists to provide treatment, for example, a physical therapist might utilize an assistant to help patients exercise or learn to use crutches, for example, or an aide to gather and prepare therapy equipment. Physical therapists practice in hospitals, clinics, and private offices.
that have specially equipped facilities. They also treat patients in hospital rooms, homes, or schools. Tasks performed by physical therapists can be physically demanding because therapists often have to stoop, kneel, crouch, lift, and stand for long periods. In addition, physical therapists move heavy equipment and lift patients or help them turn, stand, or walk. According to the *Occupational Outlook Handbook*, in 2008, most full-time physical therapists worked a 40-hour week; some worked evenings and weekends to fit their patients’ schedules. About 27 percent of physical therapists worked part time.

The *Occupational Outlook Handbook* distinguishes the duties of physical therapist assistants versus physical therapy aides as follows: Under the direction and supervision of physical therapists, physical therapist assistants provide part of a patient’s treatment, which might involve exercises, massages, electrical stimulation, paraffin baths, hot and cold packs, traction, and ultrasound. Physical therapist assistants record the patient’s responses to treatment and report the outcome of each treatment to the physical therapist. Physical therapist aides help make therapy sessions productive, under the direct supervision of a physical therapist or physical therapist assistant. They usually are responsible for keeping the treatment area clean and organized and for preparing for each patient’s therapy. When patients need assistance moving to or from a treatment area, aides push them in a wheelchair or provide them with a shoulder to lean on. Because they are not licensed, aides do not perform the clinical tasks of a physical therapist assistant in states where licensure is required. The duties of aides may also include some clerical tasks, such as ordering depleted supplies, answering the phone, and filling out insurance forms and other paperwork. The extent to which an aide or an assistant performs clerical tasks typically depends on the size and location of the facility.
In the United States, physical therapists formed their first professional association in 1921, called the American Women's Physical Therapeutic Association. By the end of the 1930s, the Association changed its name to the American Physiotherapy Association.\(^{25}\) With the advent of World War II and a nationwide polio epidemic during the 1940s and 1950s, the demand for physical therapists intensified. Treatment through the 1940s primarily consisted of exercise, massage, and traction, with increasing use in the early 1950s of manipulative procedures to the spine and extremity joints. Gradually, beginning in the 1950s, physical therapists moved beyond hospital-based practice, to outpatient orthopedic clinics, skilled nursing facilities, rehabilitation centers, and other facilities. Over the past half century, there has been increasing specialization in the field of physical therapy, as well as the emergence of physical therapy assistants and aides. The American Physical Therapy Association (APTA) established the specialist certification program in 1978 in recognition of the increasing specialization within the field of physical therapy. According to the APTA website, APTA has developed specialist certification programs in the following specialty areas: Cardiopulmonary, Clinical Electrophysiology, Geriatrics, Neurology, Orthopedics, Pediatrics, and Sports Physical Therapy.\(^{26}\)

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\(^{25}\) By the late 1940s, the Association had changed its name to its current name – the American Physical Therapy Association (APTA). By the 1960s, APTA’s membership had reached 15,000; as of 2008, membership in APTA had reached more than 75,000 individuals. A portion of the background presented in this section is from the APTA website, at www.apta.org accessed August 22, 2010.

\(^{26}\) The established minimum eligibility requirements to sit for the specialist certification examinations are the following: (1) current licensure to practice physical therapy in the United States, the District of Columbia, Puerto Rico, or the Virgin Islands and (2) evidence of a minimum of 2,000 hours of clinical practice in the specialty area, 25% of which must have occurred within the last 3 years. As of 2009, there were 9,409 physical therapists who had been certified as clinical specialists, with over half (58 percent) in the specialty area of Orthopedics. See http://www.apta.org/AM/Template.cfm?Section=Professional_Resources&CONTENTID=64465 &TEMPLATE=/CM/ContentDisplay.cfm accessed August 22, 2010.
B. Training and Recruitment of Workers into the Occupation

This section discusses the educational requirements and qualifications for entry into the physical therapist occupation, the factors affecting those requirements, and the employment characteristics of physical therapists. This examination of the means by which individuals enter the occupation lays the groundwork for the later analysis of labor market conditions.

1. Educational Qualifications and Entry Requirements

The minimum educational requirement is a post-baccalaureate degree from an accredited education program. After graduation, candidates must also pass a state-administered national exam. Other requirements for physical therapy practice vary from state to state according to physical therapy practice acts or state regulations governing physical therapy. According to the American Physical Therapy Association, there are 212 accredited physical therapist education programs in the United States. Of the accredited programs, nine offer Master’s degrees (MS/MPT) and 203 offer doctoral degrees (DPT). Only master’s degree and doctoral degree programs are accredited, in accordance with the Commission on Accreditation in Physical Therapy Education. The APTA has set a goal that by 2020, the majority of practicing physical therapist will possess a doctoral degree.

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28 APTA’s “Vision Sentence for Physical Therapy 2020” is as follows: “By 2020, physical therapy will be provided by physical therapists who are doctors of physical therapy, recognized by consumers and other health care professionals as the practitioners of choice to whom consumers have direct access for the diagnosis of, interventions for, and prevention of impairments, functional limitations, and disabilities related to movement, function, and health.” See http://www.apta.org/AM/Template.cfm?Section=Vision_20201&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=285&ContentID=32061, accessed August 22, 2010.
Master’s degree programs typically last two years, while doctoral degree programs last three years. Most doctoral and master degree programs require students to enter with an undergraduate degree, though some will admit students after three years of undergraduate work and a few admit students at the freshman level. Physical therapist education programs start with basic science courses such as biology, chemistry, and physics and then introduce specialized courses, including biomechanics, neuroanatomy, human growth and development, manifestations of disease, examination techniques, and therapeutic procedures. Besides receiving classroom and laboratory instruction, students receive supervised clinical experience. (USDOL, 2010).

2. Methods Employers Use to Recruit Workers and Methods Workers Use to Obtain Employment in the Occupation

Employers, such as acute care facilities, skilled nursing facilities, and agency providers, recruit new physical therapists through interactions with universities providing post-graduate training programs. These employers may also recruit new entries to the field at professional conferences, or by placing advertisements in professional publications and on websites. Word-of-mouth also plays a role in recruitment of new-trained physical therapists, as well as recruiting physical therapists already working within the field but contemplating a change. Like many other health care providers, physical therapist employers utilize their own websites to advertise job openings, as well as advertise job openings on various health care or general manpower websites. For example, there are quite a few websites that specialize in helping physical therapists to find job openings including the following:

29 American Physical Therapy Association, [www.apta.org](http://www.apta.org) accessed August 28, 2010. An APTA survey of schools found that prerequisite courses for entry into post-graduate physical therapy programs vary, with more than half of PT programs requiring courses such as anatomy and physiology, chemistry, physics, statistics, psychology, and general biology.
- TherapyJobBoard.com hosts job postings from therapy employers and staffing agencies around the country. The services are free for job seekers.
- Therapyjobs.com offers a list of physical therapy jobs alphabetically by state. This site gives a description of each job listed. On therapyjobs.com, you can also post your resume for employers to look at.
- jobsintherapy.com allows the user to be more specific in your job search—allowing for example, the user to search for physical therapy jobs by state and setting.
- rehabworld.com is another web site that lets you look for physical therapy jobs by state.  

These websites typically make it very easy for candidates to apply for job vacancies and to contact job recruiters.

Additionally, physical therapy associations have set up electronic bulletin boards to list vacancies available for physical therapy positions. For example, the American Physical Therapy Association (APTA) has an interactive site devoted to connecting physical therapists with employers with job vacancies. The APTA website provides the physical therapist with the capability to search for available job openings based on: (1) practice setting (e.g., academic institution, acute care hospital, health and wellness facility); (2) practice area (e.g., acute care hospital/clinical practice, aquatic physical therapy, cardiovascular/pulmonary); (3) job type (e.g., full-time, part-time, internship, contract); (4) state; and (5) job source (agency placement or company placement). The APTA website also provides job applicants help with developing resumes, letters, a listing of job search resources, the ability to receive “job alerts,” and the capability to post a resume that can be viewed by prospective employers. The APTA website also has a portion of its website devoted to helping employers find physical therapists to fill job hospitals that house a department of physical therapy, and received 390 responses. Turnover rates were computed separately for full and part-time physical therapists (within acute care

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30 The websites identified are from the following website: http://physicaltherapy.about.com/od/joblistings/a/PTjobs.htm
openings, including the ability for employers to post job openings, view resumes, and run advertisements.

C. Characteristics of Workers in the Occupation

The basic characteristics of physical therapists are shown in Exhibit 4-1. This exhibit shows the percentage of physical therapists that are members of the American Physical Therapy Association (as of June 2007) that fall into various demographic categories. As shown in the exhibit, among the defining characteristics of physical therapists (i.e., those who are members of the APTA) are the following:

- about two-thirds are women (65 percent);
- a high proportion are white (88 percent), with relatively few minorities represented;
- over half (57 percent) are between the ages of 25 and 44; though slightly over one-quarter are 50 or older (28 percent);
- although schools and the APTA are pushing to make doctoral training (i.e., DPT) the norm by 2020, most APTA members had either a baccalaureate (49 percent) or Master’s (36 percent) at the time of their entry into the physical therapy field (8 percent had a DPT);
- two-thirds of physical therapists are full-time, salaried employees, and an additional 11 percent are part-time salaried employees;
- at the time of the survey (June 2007), 4 percent of APTA members indicated they were not employed (with half of these individuals indicating that they were seeking work); and
- Most APTA members work in three types of facilities: private outpatient office or group practices (42 percent); health system or hospital-based outpatient facility or clinic (15 percent); or acute care hospital (13 percent).
### Exhibit 4-1: Overview of Characteristics of Physical Therapists, June 2007

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Percent of APTA Members</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>65.3%</td>
</tr>
<tr>
<td>Male</td>
<td>34.7%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>88.0%</td>
</tr>
<tr>
<td>Asian</td>
<td>5.2%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>2.5%</td>
</tr>
<tr>
<td>African American/Black</td>
<td>2.0%</td>
</tr>
<tr>
<td>Other</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td>1.0%</td>
</tr>
<tr>
<td>25-29</td>
<td>15.0%</td>
</tr>
<tr>
<td>30-34</td>
<td>16.0%</td>
</tr>
<tr>
<td>35-39</td>
<td>14.9%</td>
</tr>
<tr>
<td>40-44</td>
<td>13.3%</td>
</tr>
<tr>
<td>45-49</td>
<td>12.2%</td>
</tr>
<tr>
<td>50-59</td>
<td>19.8%</td>
</tr>
<tr>
<td>60+</td>
<td>7.7%</td>
</tr>
<tr>
<td><strong>Entry-Level Education</strong></td>
<td></td>
</tr>
<tr>
<td>DPT</td>
<td>8.1%</td>
</tr>
<tr>
<td>Master's</td>
<td>35.6%</td>
</tr>
<tr>
<td>Baccalaureate</td>
<td>48.8%</td>
</tr>
<tr>
<td>Post-baccalaureate Certificate</td>
<td>6.9%</td>
</tr>
<tr>
<td>Other</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
</tr>
<tr>
<td>Full-time salaried</td>
<td>66.0%</td>
</tr>
<tr>
<td>Part-time salaried</td>
<td>11.0%</td>
</tr>
<tr>
<td>Full-time self-employed</td>
<td>12.7%</td>
</tr>
<tr>
<td>Part-time self-employed</td>
<td>4.3%</td>
</tr>
<tr>
<td>Retired</td>
<td>1.9%</td>
</tr>
<tr>
<td>Unemployed-seeking work</td>
<td>2.0%</td>
</tr>
<tr>
<td>Unemployed-not seeking work</td>
<td>2.0%</td>
</tr>
<tr>
<td><strong>Type of Facility</strong></td>
<td></td>
</tr>
<tr>
<td>Private out-patient office or group practice</td>
<td>41.5%</td>
</tr>
<tr>
<td>Health system or hospital based outpatient facility/clinic</td>
<td>14.5%</td>
</tr>
<tr>
<td>Acute care hospital</td>
<td>13.1%</td>
</tr>
<tr>
<td>Patient's home/home care</td>
<td>7.9%</td>
</tr>
<tr>
<td>SNF/ECF/ICF</td>
<td>5.6%</td>
</tr>
<tr>
<td>Academic Institution (post-secondary)</td>
<td>4.8%</td>
</tr>
<tr>
<td>School system (preschool, primary, secondary)</td>
<td>4.1%</td>
</tr>
<tr>
<td>Sub-acute rehabilitation hospital (inpatient)</td>
<td>3.5%</td>
</tr>
<tr>
<td>Health and wellness facility</td>
<td>0.8%</td>
</tr>
<tr>
<td>Industry</td>
<td>0.5%</td>
</tr>
<tr>
<td>Research Center</td>
<td>0.3%</td>
</tr>
<tr>
<td>Other</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

**Note:** Demographics are for physical therapists that are members of the American Physical Therapy Association, as of June 2007. Numbers of physical therapists surveyed range from 43,930 to 52,907 depending on the characteristic. **Source:** American Physical Therapy Association (accessed from website at [www.apta.org](http://www.apta.org))
APTA has also done some surveying to examine turnover rates among physical therapists in three practice settings: acute care hospitals, skilled nursing facilities, and outpatient physical therapy offices. With regard to acute care hospitals, APTA sent survey instruments to 1,000 hospitals. The formula used to compute turnover divided the number of employees within a specific category who left in the most recent 12 month period by the number of employees within each respective category at the facility. The turnover rate for full-time physical therapists was 15.9 percent compared to a rate of 11.5 percent among part-time physical therapists. This survey found substantial variability across acute care hospitals, with some facilities reporting very high turnover rates among physical therapists—12 facilities reported turnover rates of 100 percent (in one year), one a rate of 150 percent, and another a rate of 200 percent. In its survey, APTA found high turnover rates particularly among recent entrants to the field of physical therapy:

...There seemed to be a sharp dichotomy in the decision to leave based on years of experience. Individuals with four years or less of experience were more likely to leave a position than those with longer tenure (American Physical Therapy Association, February 2008).

The APTA also surveyed skilled nursing facilities and based its findings about turnover rates on 546 survey responses from these facilities. Using the same definition for turnover as in its survey of acute care hospitals, the APTA found a much higher turnover rate for physical therapists in skilled nursing facilities (SNFs) compared to acute care hospitals. The turnover rate was 85.2 percent for full-time physical therapists in SNFs—much higher than the 15.9 percent reported for full-time physical therapists in acute care hospitals. The turnover rate among part-time physical therapists was 65.9 percent (and the rate among full-time physical therapist assistants was 82.4 percent and among part-time physical therapists assistants was 62.4 percent). Unlike with acute care settings, this survey found that in a “skilled nursing setting, individuals
with substantial numbers of years of experience were as likely to vacate a position as a junior person. There was not a point at which it could be anticipated that an employee was not likely to leave a position” (American Physical Therapy Association, April 2008).

D. Employment and Earnings Trends within the Occupation

1. Employment Trends

**Employment Levels and Change.** Data from the U.S. Department of Labor’s Bureau of Labor Statistics (BLS) indicate a steady increase in the numbers of workers employed as physical therapists since 2002, as well as anticipated increases in employment through 2016. As shown in Exhibit 4-2, between 2004 and 2008, the number of wage and salary jobs as physical therapists in the United States increased from 142,940 to 167,300 positions – an increase of nearly 25,000 jobs. Overall, between 2004 and 2008, the total number of wage and salary positions as physical therapists increased by 17.0 percent. In comparison, over the same five-year period the increase in employment was at a much slower pace for all workers from all occupations (5.5 percent), and the increase among all health care practitioners and technical occupations was 11.3 percent. As shown in the exhibit, the pace of increase in employment was more rapid for physical therapists over the five-year period (17.0 percent), when compared to registered nurses (10.0 percent) and occupational therapists (13.5 percent), but lower than that for registered for chiropractors (23.9 percent).

The exhibit also shows employment growth at just above the national average (of 5.5 percent) for two occupations that support physical therapists within the workplace: (1) employment of physical therapist assistants grew from 57,420 in 2004 to 61,820 in 2008 (an increase of 7.7 percent), and (2) employment of physical therapist aides grew from 41,910 in
### Exhibit 4-2: Employment Trends: Number and Percentage Change in Physical Therapists, Comparison Occupations, and All Workers, 2004-2008

**Percent Change, 2004-08**

![Percent Change Chart]

### Number and Percentage Change, 2004-08

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapists</td>
<td>142,940</td>
<td>151,280</td>
<td>156,100</td>
<td>161,850</td>
<td>167,300</td>
<td>17.0%</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>83,560</td>
<td>87,430</td>
<td>88,570</td>
<td>91,920</td>
<td>94,800</td>
<td>13.5%</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>21,830</td>
<td>24,290</td>
<td>25,470</td>
<td>27,190</td>
<td>27,050</td>
<td>23.9%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>2,311,970</td>
<td>2,368,070</td>
<td>2,417,150</td>
<td>2,468,340</td>
<td>2,542,760</td>
<td>10.0%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>6,359,380</td>
<td>6,547,350</td>
<td>6,713,780</td>
<td>6,877,680</td>
<td>7,076,800</td>
<td>11.3%</td>
</tr>
<tr>
<td>Physical Therapist Assistants</td>
<td>57,420</td>
<td>58,670</td>
<td>59,350</td>
<td>59,120</td>
<td>61,820</td>
<td>7.7%</td>
</tr>
<tr>
<td>Physical Therapist Aides</td>
<td>41,910</td>
<td>41,930</td>
<td>45,520</td>
<td>43,350</td>
<td>44,410</td>
<td>6.0%</td>
</tr>
<tr>
<td>Occupational Therapist Assistants</td>
<td>20,880</td>
<td>22,160</td>
<td>23,700</td>
<td>25,130</td>
<td>25,610</td>
<td>22.7%</td>
</tr>
<tr>
<td>Occupational Therapist Aides</td>
<td>5,240</td>
<td>6,220</td>
<td>7,780</td>
<td>7,640</td>
<td>7,410</td>
<td>41.4%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>3,271,350</td>
<td>3,363,800</td>
<td>3,483,270</td>
<td>3,625,240</td>
<td>3,779,280</td>
<td>15.5%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>128,127,360</td>
<td>130,307,840</td>
<td>132,604,980</td>
<td>134,354,250</td>
<td>135,185,230</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

2002 to 44,410 in 2008 (an increase of 6.0 percent). Both of these supporting occupations grew at a much slower pace than that recorded for physical therapists over the five-year period.

**Unemployment Rates.** As illustrated in Exhibit 4-3, the unemployment rate for physical therapists—like most health care practitioner and technical occupations—is well below the average for all workers in the United States. For example, in 2008 the unemployment rate of physical therapists was 0.9 percent, compared to 5.3 percent for all workers from all occupations. Over the five years shown in the exhibit (2004-2008), the unemployment rate for physical therapists has been consistently very low (e.g., not exceeding 1.0 percent) and relatively stable. Throughout this period, the unemployment rate has been consistently well below that of the labor force as a whole, usually by 4 percentage points. As also shown in the exhibit, the unemployment rate for physical therapists has generally been consistently slightly lower than that of registered nurses, an occupation that has historically been judged as suffering from a persistently tight labor market. As also shown in the exhibit, prior to 2008, the field of physical therapist assistants and aides had generally a substantially lower unemployment rate (in the range of 0.4 percent to 3.4 percent) compared to that for all workers and a rate often quite comparable to that of physical therapists. In 2008, however, the unemployment rate suddenly jumped from 0.4 percent to 7.1 percent. Other things being equal, most analysts would consider the relatively low unemployment rate for physical therapist (at 1.0 percent or lower in each of the five years considered) to be indicative of tightness or even shortages within the occupation.
Exhibit 4-3: Average Annual Unemployment Rate: Physical Therapists, Comparison Occupations, and All Workers, 2004-2008

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapists</td>
<td>0.5%</td>
<td>0.6%</td>
<td>1.0%</td>
<td>0.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.2%</td>
<td>1.6%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>1.0%</td>
<td>1.2%</td>
<td>1.1%</td>
<td>1.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>1.3%</td>
<td>1.3%</td>
<td>1.4%</td>
<td>1.3%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Nursing, Psychiatric, and Home Health Aides</td>
<td>6.7%</td>
<td>5.7%</td>
<td>5.6%</td>
<td>5.2%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Physical Therapist Assistants and Aides</td>
<td>3.4%</td>
<td>1.2%</td>
<td>0.6%</td>
<td>0.4%</td>
<td>7.1%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>5.5%</td>
<td>4.7%</td>
<td>4.6%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>5.1%</td>
<td>4.7%</td>
<td>4.2%</td>
<td>4.2%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

**Source:** Current Population Survey (2004-2008). Table 3: Annual average employed and experienced unemployed persons by detailed occupation and class of worker.
**Vacancy Rates.** The American Physical Therapy Association (APTA) has examined vacancy rates among physical therapists in three practice settings: acute care hospitals, skilled nursing facilities, and outpatient physical therapy offices. Using survey results, the APTA calculated vacancy rates by “dividing the total number of vacant FTE positions by the total number of vacant FTE positions plus the total number of filled FTE positions and multiplying by 100” (American Physical Therapy Association, February 2008). APTA survey research found that the vacancy rate for physical therapists in acute care hospitals in 2006 was 13.8 percent in acute care hospitals, 18.6 percent in long-term care settings, and 13.1 percent in outpatient settings. APTA cites two additional studies of vacancy rates for physical therapists for comparison purposes: (1) the vacancy rate for hospital-based physical therapists in Maryland, as reported by the Maryland Hospital Association was 17.1 percent; and (2) the vacancy index for physical therapists (across all settings) in North Carolina computed by analyzing job advertisements was 14.8 percent (Maryland Hospital Association, 2007; Fraher and Gaul, 2007). The APTA concluded that high vacancy rates and “much of the shortage (for physical therapists) is a result of the Balanced Budget Act (BBA) of 1997: (1) lower reimbursement rates led to changes in staffing—physical therapists had benefits cut, hours reduced; (2) [the] profession became less attractive to potential physical therapists; and (3) [the] ‘pipeline’ decreased and supply of physical therapists diminished” (Goldstein, 2009).

**Projections for Future Employment Growth within the Occupation.** As also shown in the Exhibit 4.4, BLS forecasts that the number of workers employed as physical therapists will increase by 44.5 percent between 2008 and 2018. It is anticipated by 2018 that there will a total of 241,000 physical therapists employed (an increase of 74,400 new therapists over the five-year
Exhibit 4-4: Employment Projections: Physical Therapists, Comparison Occupations, and All Workers, 2008 and Projected 2018

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapists</td>
<td>167,300</td>
<td>241,700</td>
<td>44.5%</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>94,800</td>
<td>131,300</td>
<td>38.5%</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>27,050</td>
<td>58,700</td>
<td>117.0%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>2,542,760</td>
<td>3,200,200</td>
<td>25.9%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>7,076,800</td>
<td>9,090,800</td>
<td>28.5%</td>
</tr>
<tr>
<td>Physical Therapist Assistants</td>
<td>61,820</td>
<td>85,000</td>
<td>37.5%</td>
</tr>
<tr>
<td>Physical Therapist Aides</td>
<td>44,410</td>
<td>62,800</td>
<td>41.4%</td>
</tr>
<tr>
<td>Occupational Therapist Assistants</td>
<td>25,610</td>
<td>34,600</td>
<td>35.1%</td>
</tr>
<tr>
<td>Occupational Therapist Aides</td>
<td>7,410</td>
<td>10,200</td>
<td>37.7%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>3,779,280</td>
<td>5,129,500</td>
<td>35.7%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>135,185,230</td>
<td>166,205,600</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

**Source:** U.S. Department of Labor, Bureau of Labor Statistics. (2008). Employment Projections. (Period). By comparison, overall employment for all occupations in the United States is expected to expand by 22.9 percent and that of all healthcare practitioners and technical occupations by 28.5 percent. The anticipated rate of increase for physical therapists is also above that for occupational therapists (38.5 percent) and registered nurses (25.6 percent), but much slower than for chiropractors (117.0 percent). The projected increase for physical therapist assistants (37.5 percent) and physical therapist aides (41.1 percent) is similar to that for physical therapists, indicating that there is likely continued strong demand well into the future for not only physical therapist, but also for the two occupational categories that work closely with and support physical therapists.

BLS’s general assessment is that employment for physical therapists is expected to grow much faster than the average for all occupations, noting: “Job opportunities will be good for licensed physical therapists in all settings. Job opportunities should be particularly good in acute
hospital, skilled nursing, and orthopedic settings, where the elderly are most often treated. Job prospects should be especially favorable in rural areas as many physical therapists tend to cluster in highly populated urban and suburban areas."

2. **Earnings Trends**

The rate at which wages rise within an occupation is often viewed as the clearest indication of whether a shortage of workers exists (at least over the short term and if there are not constraints on wages). Exhibit 4-5 shows median hourly earnings for physical therapists from 2004-2008. This exhibit shows that earnings for physical therapists are more than twice those for all workers (e.g., in 2008, the median hourly earnings for physical therapists were $35.00 versus $15.57 for all workers). The increase in median hourly earnings for physical therapists between 2004 and 2008 (21.0 percent) was well above that for all workers (12.6 percent). This earnings increase for physical therapists over the five-year period was at about the same level as that of all health care practitioners and technical occupations (19.8 percent), as well as that of occupational therapists (22.1 percent) and registered nurses (19.4 percent). Also shown in the exhibit are increases in hourly earnings for physical therapist assistants (21.7 percent) and for physical therapist aides (11.1 percent). Hourly wages for physical therapist assistants in 2008 were about two-thirds of physical therapists ($22.18 versus $35.00), and those for physical therapist aides were about one-third those of physical therapists ($11.42 versus $35.00). Above average increases in hourly earnings, similar to trends in employment and unemployment, suggests the possibility of a tight labor market for physical therapists, though as discussed later

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Exhibit 4-5: Median Hourly Earnings: Physical Therapists, Comparison Occupations, and All Workers, 2004-08

Percentage Change, 2004-08

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Therapists</td>
<td>$28.93</td>
<td>$30.33</td>
<td>$31.83</td>
<td>$33.54</td>
<td>$35.00</td>
<td>21.0%</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>$26.28</td>
<td>$27.34</td>
<td>$29.07</td>
<td>$30.67</td>
<td>$32.10</td>
<td>22.1%</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>$33.61</td>
<td>$32.31</td>
<td>$31.36</td>
<td>$31.68</td>
<td>$31.97</td>
<td>-4.9%</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>$25.16</td>
<td>$26.28</td>
<td>$27.54</td>
<td>$28.85</td>
<td>$30.03</td>
<td>19.4%</td>
</tr>
<tr>
<td>All Healthcare Practitioners and Technical Occupations</td>
<td>$22.71</td>
<td>$23.83</td>
<td>$24.99</td>
<td>$26.17</td>
<td>$27.20</td>
<td>19.8%</td>
</tr>
<tr>
<td>Physical Therapist Assistants</td>
<td>$18.22</td>
<td>$18.98</td>
<td>$19.88</td>
<td>$21.22</td>
<td>$22.18</td>
<td>21.7%</td>
</tr>
<tr>
<td>Physical Therapist Aides</td>
<td>$10.28</td>
<td>$10.34</td>
<td>$10.61</td>
<td>$11.05</td>
<td>$11.42</td>
<td>11.1%</td>
</tr>
<tr>
<td>Occupational Therapist Assistants</td>
<td>$18.48</td>
<td>$19.11</td>
<td>$20.22</td>
<td>$21.66</td>
<td>$23.19</td>
<td>25.5%</td>
</tr>
<tr>
<td>Occupational Therapist Aides</td>
<td>$11.13</td>
<td>$11.69</td>
<td>$12.03</td>
<td>$12.54</td>
<td>$12.96</td>
<td>16.4%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>$10.45</td>
<td>$10.64</td>
<td>$11.00</td>
<td>$11.45</td>
<td>$11.80</td>
<td>12.9%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>$13.83</td>
<td>$14.15</td>
<td>$14.61</td>
<td>$15.10</td>
<td>$15.57</td>
<td>12.6%</td>
</tr>
</tbody>
</table>

because of possible distortions in reimbursement rates (related to government reimbursement for physical therapist provided services), the earnings increases may not fully measure the extent of tightness/shortage in the labor market for physical therapists.

E. Labor Market Factors Contributing to a Labor Shortage

1. Demand-Side Factors

   a. Changes to Reimbursement for Physical Therapy Services

   In its assessment, BLS noted that “changes to restrictions on reimbursement for physical therapy services by third-party payers will increase patient access to services and, thus, increase demand” (U.S. Department of Labor, 2010). Recent history provides much evidence that third-party insurance coverage and reimbursement policies have a substantial impact on demand for and utilization of physical therapy services. The literature and interviews conducted as part of this study point to the increasingly important role of legislation and federal regulation (particularly of reimbursement rates and coverage limitations) in determining labor market conditions for physical therapy services. Several interviewees highlighted the importance of Medicare (and to a lesser extent Medicaid) – because both programs are such an important source of payment for physical therapy service – in establishing the basic framework for reimbursement of physical therapy services. The terms of what is and is not reimbursable under Medicare and the payment rates are also often adopted by other major health care insurers, which makes government actions all the more important and determinantal.33 34 Several interviewees

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33 As noted by one interviewee: “Government policy (especially Medicare policy) drives private insurance policies – private insurers tag on and implement Medicare policies.”

34 A large share of physical therapy services are paid for by the government. One expert estimated that about half of physical therapy services are paid by Medicare and another 20 percent by Medicaid.
pointed to the particularly important role of the Balanced Budget Act (BBA) of 1997 in determining policies with regard to Medicare reimbursement and substantially affecting labor market conditions for physical therapists; for example, according to one interviewee:

...The Medicare system has a huge impact on supply and demand conditions for physical therapists. The Balanced Budget Act (BBA) of 1997 introduced dramatic changes for payment for physical therapy (and other medical services) by home health care agencies and skilled nursing facilities (SNFs). Prior to BBA, payments were based on actual costs, which incentivized facilities to hire physical therapists and pay them a lot. Prior to BBA, health care facilities were paid a percentage of costs (usually 80%). With BBA, cost-based payment changed to fixed rate per case with payment based on resource utilization groups (RUGs). Basically, facilities were paid a flat rate set at the time of admission—usually about $350/day, which covered the full cost of medicine, therapy, bed, etc. so facilities immediately cut back on physical therapists, occupational therapists, etc. Overall, the BBA created strong incentives to cut back on use of physical therapists, resulting in a drastic reduction in hours worked by physical therapists. Large numbers of physical therapist left the field in 1997 – with many retiring – and so, there was tremendous drop in physical therapists in the field.35 [Rao]

Once again, in 2002, a change in Medicare policy had a substantial effect on the demand for physical therapists (though in the opposite direction of BBA with respect to physical therapists). Medicare introduced the “three-hour rule” for physical therapy services provided in acute rehabilitation hospitals. This rule meant that to be reimbursed for rehabilitation services, acute care facilities had to provide patients with three hours of aggressive therapy five of seven days in a week. According to one interviewee (an executive at a rehabilitation hospital):

...This new rule resulted in a surge in demand for physical therapists within acute rehabilitation hospitals...As a result, from about 2002 to 2008, acute rehabilitation hospitals faced shortages of physical therapists, and many of these facilities had to work

35 According to a second interviewee, “The lower reimbursement rate as a result of BBA led to an immediate response on the part of employers—since revenues were lower, employers (health care facilities) cutback expenses. Reducing staffing expenses was one way to cut back such expenses—employers cut back hours and fringe benefits of physical therapists. There was an immediate surplus of physical therapists as a result. The numbers of physical therapists applying to, enrolling, and graduating from PT schools also slowed; in some instances, prospective physical therapists were told at that time to not pursue a career as a physical therapist.” [Goldstein]
with contract agencies to obtain needed physical therapists (and agencies did well in those days). Medicare also introduced minimum standards of care whereby rehabilitation services need to be provided by certified physical therapists. While there are a lot of drivers when it comes to supply and demand conditions for physical therapists, the really big driver is government policies, especially, individual state practice acts and Medicare reimbursement levels and what is allowed. [Rao]

One emerging trend that could add additional demand for physical therapy services is that APTA (and other groups representing physical therapists) is working hard with Medicare to gain direct payment for physical therapy services, without the need for referral first from a doctor.36

b. Aging of the Population

One of the most prominent factors cited in the literature (and in interviews conducted for this study) with respect to driving future demand for physical therapy services is the rapid aging of the U.S. population. For example, two of the main factors cited by the BLS for strong future growth in the demand for physical therapists are related to the aging of the U.S. population:

- “The increasing elderly population will drive growth in the demand for physical therapy services. The elderly population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services.”

- “The baby-boom generation is entering the prime age for heart attacks and strokes, increasing the demand for cardiac and physical rehabilitation” (U.S. Department of Labor, 2010).

The older population in the U.S., those 65 years or older, has grown substantially in recent years and is expected to continue to grow rapidly over the next quarter of a century. In 2008, there were over 38.9 million elderly people, which is a 13 percent increase of 4.5 million from 1998. In addition, 5.7 million Americans were over the age of 85 in 2008, which is projected to grow to 6.6 million in 2020. In 2008, older Americans (those over 65) comprised 12.8 percent of the

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36 While not of the significance of Medicare in driving demand for services, other federal and state agencies can affect demand for physical therapists and specialists within the field. For example, according to one interviewee, the U.S. Department of Education has rules that you must be qualified (have masters degree or higher) to provide physical therapy services in the schools and receive reimbursement.
A majority of Americans age 65 or older have at least one chronic health condition, and depending upon the condition, may require physical therapy services over a prolonged period. In 2005, nearly 37 percent of older people reported a severe disability, and 16 percent reported that they needed assistance as a result. In addition, chronic conditions and disabilities increase with age as 56 percent of people over 80 years of age reported a severe disability (U.S. Department of Health and Human Services, Administration on Aging, 2009). The recent and expected growth in the proportion of older Americans is significant since older people tend to need and spend more on health care and, in particular, are much more likely to require physical therapy services than younger individuals. Several of the interviewees for this study pointed to the likelihood that the aging of the baby boomers would have a big impact in coming years on utilization of physical therapy services. For example, one interviewee representing a physical therapy association observed the following:

...We think shortages will continue due to aging of population (which is likely to increase demand for physical therapy services); also there is likely to be increased demand for physical therapy services with longer lifespans and a trend toward healthier lifestyles and wellness. [Goldstein]

c. Medical and Technological Developments

According to BLS, “medical and technological developments will permit a greater percentage of trauma victims and newborns with birth defects to survive, creating additional demand for rehabilitative care. In addition, growth may result from advances in medical technology and the use of evidence-base practices, which could permit the treatment of an increasing number of disabling conditions that were untreated in the past” (U.S. Department of
Labor, 2010). In addition, though not a new factor, the federally Individuals with Disabilities Education Act (IDEA) guarantees that students have access to services from physical therapists and other therapeutic and rehabilitative services. The argument here is that as a result of new medical advances that infants, youth, and adults who might otherwise had succumbed to a disease will live longer, but in some cases, still require ongoing medical treatment and physical therapy.

There is, interestingly, a flip side to this argument—it is possible that robotics and other advances in medical technology could in the future reduce need for prolonged physical therapy services or even that new devises could be in some way substitute for physical therapy services. The potential for a “substitution” effect reducing demand for physical therapist services was noted as a possibility by one interviewee:

...There have been some technology substitution in recent years, such as robotic devices (e.g., which help with walking training). Employers are particularly looking to implement strategies to enhance efficiency of physical therapists, such as implementing strategies that enable physical therapists to take care of more than one patient at a time. [Gans]

2. Supply-side Factors

a. Adequacy of the Pipeline of New Physical Therapist, Meeting Escalating Educational Requirements

Over the past 20 years, as discussed earlier, educational requirements for entry into the field of physical therapy have escalated. While it is possible to practice as a physical therapist without a doctoral degree, there are very few academic institutions that continue to offer a master’s degree in physical therapy (i.e., nearly all have moved to doctoral degree level training programs). Even further, reflecting recent trends within academic institutions, the APTA has set a goal that by 2020, the majority of practicing physical therapist will possess a doctoral degree.
Escalating educational requirements—and the added costs of completing training, especially if there is not sufficient pay differentials for those attaining higher degrees within a field—can result in fewer people entering programs and completing educational requirements, as well as delaying entry into the field. Several interviewees noted how requirements have changed fairly dramatically in recent years and possible effects over time on the stream of new physical therapists entering the field, for example:

...A problem on the supply side is that there are efforts to inflate academic credentials for entry into the physical therapy field. It used to require a bachelor’s degree (when I started) and then a master’s degree; there are efforts now to require a doctor’s degree. This inflation in degree requirements (BA to masters to doctorate) means delaying entry of an existing cohort of students into the field. Physical therapists and professional societies are pushing advanced degrees (i.e., doctorate programs) as part of the licensing requirements. They also want physical therapists to be independent practitioners — that is, get patients without referrals from doctors, be able to bill insurers on their own, and generally get more control over their work. [Gans]

...With regard to state practice — states allow BAs (with certification as physical therapists) to practice and be reimbursed for physical therapy services in health facilities. However, all schools have converted to at least master’s degree programs (which require at least one year of training beyond a four-year BA degree), and soon all of the programs will only offer doctorates. The goal is for physical therapists to have autonomous practices (i.e., physical therapists will operate on their own without referral of patients from doctors). [Rao]

With regard to expanding the pipeline of new physical therapists, this interviewee also noted that there is also a logistical challenge to increasing the capacity of physical therapy programs—educational institutions need to have the available faculty and also need hands-on training (preceptorships/clinical), which can be difficult to arrange.

The location of education programs and types of specialty training provided can also be a factor in terms of possible shortfalls of physical therapists in certain localities/regions of the country or within certain specialty areas (within physical therapy). For example, one
interviewee noted that in some rural areas and certain regions of the country it can be much more challenging to recruit physical therapist than in other areas:

...Within states, rural areas tend to have a harder time recruiting physical therapists. The largest cities, such as Boston, New York City, and Philadelphia, have no shortages because these cities are desirable to practitioners and there are lots of PT schools (e.g., Philadelphia has about 7 schools which provides a steady pipeline of new physical therapists). Small community hospitals (in rural areas) have a tough time competing with hospitals in urban areas and, so they sometimes offer huge signing bonuses for physical therapists. Even with such incentives, rural areas often have trouble attracting sufficient numbers of physical therapists. These rural areas also can have high concentrations of elderly individuals in need of physical therapy. [Goldstein]

b. Changing Pool of Workers Entering the Field, Part-time Employment and Turnover Within the Field

The supply of workers within the field can be affected by rates of turnover of existing workers within the field and the extent to which physical therapists work full- or part-time hours. One expert noted that while the field of physical therapy had been for many years dominated by women, women are increasingly entering other fields, posing potential implications for future recruitment into physical therapy programs:

… The supply-side can be a problem. There are some problems attracting students into the PT field. It used to be that teachers, nurses, and physical therapy were fields that women would go into. Now there are a lot of other fields women are entering. [Gans]

The field of physical therapy is one that is conducive to part-time (as well as full-time) work. Similar to a field like nursing, at any point in time there may be considerable numbers of individuals with credentials to provide physical therapy services who are not actively working in the field or who choose to work part-time and/or with a limited number of patients. Also, turnover rates of physical therapists, particularly within certain settings, can result in a large number of job vacancies within the field. For example, the American Physical Therapy Association has conducted several recent surveys to compute both vacancy rates and turnover
rates of physical therapists in skilled nursing facilities, acute care hospitals, and outpatient private practices. Turnover rates were found to be particularly high for physical therapists in skilled nursing facilities (see earlier discussion under Worker Characteristics).

F. Assessment of Labor Market/Shortage Conditions

The consensus within the literature and among experts interviewed for this study is that while there have been times in the past where there have been very tight labor markets (bordering on shortages), at the current time there is not a nationwide shortage of physical therapists. However, there are some regions and localities within the country where employers of physical therapists have a hard time filling vacancies, particularly for some sub-specialties within the field.

Several of the interviewees for this study noted that there have been times in the past when the labor market for physical therapists has been very tight, and at times bordering on shortage conditions. For example, one expert indicated the labor market had from time to time been hit by very tight conditions, meaning that some employers had to escalate wages and at times look to other countries to recruit physical therapists:

...Throughout my career (spanning 30+ years), shortages of physical therapists have been a problem. Shortages can drive the price (salaries) of physical therapists up. Over the last 20 years, there have been phases during which ‘rehab’ hospitals and other employers have had to import physical therapists from the Philippines, Ireland, and other countries. [Gans]

As noted, several interviewees pointed to shortages of physical therapists within certain geographic areas, especially rural areas and those areas that are far from training institutions:

...There is no overall shortage of physical therapists—the shortage is regional; rural areas are the main places where shortages exist. The physical therapy profession is urban and school centric; e.g., Boston has four physical therapy programs (which graduate 300-400 physical therapists per year), so there is no shortage of physical therapists in Boston. As a result of supply and demand conditions, salaries for physical
therapists are not as high in Boston. With regard to specific types of facilities, there is much more of a shortage of physical therapists at skilled nursing facilities (SNFs). [Rao]

A second analyst pointed to the difficulties that certain types of facilities, especially skilled nursing homes and long-term care facilities, can encounter in filling job vacancies:

...Shortages today are worse in some settings than others, especially SNFs and long-term care facilities. Students often graduate from schools and immediately go into acute care facilities because they feel that they will gain the most experience and be most employable in the future. However, some have a relatively short tenure in the acute care hospitals and move to other settings. SNFs and LTC facilities seem to face the most difficulty in recruiting and keeping physical therapists. These institutions have increased salaries and benefits in an effort to attract and keep physical therapists; however, raising salaries has not been that effective in attracting physical therapists to these facilities. Relative to other settings (such as private practice and), SNFs and LTC facilities face shortages mainly because working conditions are more difficult (and can be depressing). [Goldstein]

Another analyst (Gans) noted that pediatric physical therapists are difficult to find sometimes, as well as those with “certain exotic skills sets.” This analyst also echoed the sentiment that nursing homes often have more difficulties with respect to recruiting and keeping physical therapists – and as a result, are more likely to rely upon contract agencies for staffing. Nursing homes also may not have the need or infrastructure to support a full-time physical therapist, and thus, may be looking to recruit one or two part-time therapists. One advantage of using contract agencies is that employers do not have to worry about a physical therapists leaving or going on vacation (and not having coverage).

Finally, one analyst noted that like many other occupations general economic conditions can have a substantial effect on labor market conditions and especially turnover -- “With the onset of the recession in 2008, physical therapists have generally being staying put at their current jobs.” [Rao]
CHAPTER 5:
HOME HEALTH AND HOME CARE AIDES

We selected home health aides for a case study because there have been many reports in the media and academic literature about shortages in the field. The labor market for this profession is interesting for several reasons. As a low-skill occupation, one might expect that wages could be increased in the event of a shortage and potential entrants could enter the field rapidly. A key factor in the labor market is the high degree of regulation of health care in the United States, which can prevent the labor market from freely adjusting.

The aging of the U.S. population has been cited as a key factor in the demand for home health care services and, with a surge of baby-boomer moving into their 50s and 60s, it is anticipated that need for home health care services will continue to escalate over the next two decades. Although a shortage of home health care aides could result from rapidly increasing demand, other reasons to explore include the policies of various third-party insurance payers, such as the federal government, state governments, and insurance companies. Such policies, particularly with respect to reimbursement for services, can substantially affect wage rates within the home health field (which, in turn, can affect willingness of workers to enter and stay in the field). Additionally, there has been much focus on difficulties in attracting and retaining workers into the field. Rates of attrition (especially among new workers to the field) are often attributed to low pay, difficulties in piecing together full-time work over an extended period (across several patients), burn-out, and the need for reliable transportation and willingness to commute. The supply of workers into the field can be substantially affected by overall labor market conditions
(i.e., availability of jobs in other low-wage sectors), immigration, and state policies with regard to families/friends providing care.

A. Background and Description of the Occupation

The primary duty of home health aides is to help elderly and disabled people live in their homes rather than in health care facilities. Health care aides provide health-related services, such as giving the patient medications under the direction of nursing or medical staff. Home health aides may perform a number of activities, including: check the patient’s pulse rate, temperature, and respiration rate; help with prescribed exercises; and help the patient bathe, dress, groom, etc. Home health aides with training and experience may also assist with medical equipment, such as ventilators, to help a patient breathe. Many home health aides work with elderly and disabled people who need more extensive care than family or friends can provide. Other home health aides help discharged hospital patients with fairly short-term needs. Oftentimes, home health agencies have a registered nurse, physical therapist, or social worker supervise and assign specific duties to home health aides. The home health aide usually keeps records of the services performed, and records each patient’s process, reporting changes in the patient’s condition to their supervisor or the case manager (U.S. Department of Labor, 2010).

Personal and home care aides have the same primary duty as home health aides—to assist elderly, disabled, ill, or mentally disabled individuals live in their own homes or in residential care facilities rather than in health facilities or institutions. However, personal and home care aides provide mainly housekeeping and routine personal care services rather than health-related services. One interviewee for this study drew the following distinction between home health workers and home care aides:

...Home health aides and home care aides are different occupations and function in quite different markets. In part, this is because home health aides are covered by Medicare, as
well as Medicaid. Because home health care is an entitlement under Medicare, the market is more formal. There are fewer self-employed home health aides (they are more likely to be employed through nursing homes, home care agencies, etc.), and this occupation requires more formal training and has certifications requirements. [Howes]

Personal and home care aides are sometimes called homemakers, caregivers, companions, or personal attendants. Personal and home care aides often clean clients’ houses, do laundry, change bed linens, cook, run errands, and help the client bathe, groom, dress, and get in and out of bed. Personal and home care aides provide instruction and psychological support to their patients and may advise the patient’s family members on nutrition, cleanliness, and household tasks. Personal and home care aides may also work for a home health agency, where a registered nurse, physical therapist, or social worker provides assignments and supervision and the aide records the patient’s progress providing updates to the supervisor or case manager (U.S. Department of Labor, 2010).

The establishment of Medicare and Medicaid under the Social Security Act Amendments of 1965 brought regulations for home care services as well as reimbursement mechanisms. Medicare is the federal health insurance program for Americans age 65 or older, regardless of their income or medical history. Most people age 65 and older are entitled to Medicare Part A (which covers hospital services) if they or their spouse are eligible for Social Security payments and have made payroll tax contributions for 10 or more years. In 1972, Medicare was expanded to include some disabled people under age 65 with permanent disabilities and end stage renal (kidney) disease. Medicare Part A covers inpatient services provided by hospitals, skilled nursing facilities, hospice care, and home health services, and accounted for 36 percent of Medicare benefit spending in 2009. Medicare Part B, the supplementary medical insurance, covers physician, outpatient, preventative services, and home health visits, and accounted for 29

Originally, Part A of Medicare covered home health agency services after a period of hospitalization and required no cost sharing, whereas Part B covered home health agency services and required beneficiaries to meet an annual deductible. The initial legislation in 1965 included a number of qualifications that beneficiaries had to meet in order to receive homecare services under Medicare, and limited the number of days service could be provided. The Omnibus Budget Reconciliation Act of 1980 reduced barriers to the use of home health services by eliminating the 100-day visit limit, the requirement for a prior hospital stay of three days, the Part B deductible, and the requirement for proprietary agencies to be licensed by the state. In addition, the Omnibus Budget Reconciliation Act of 1987 instituted competency exams and/or training requirements for home health aides employed by Medicare certified home health agencies. The specific education and training requirements for home health aides are discussed later in the Qualifications and Entry Requirements section of this chapter.

In 2007, Medicare accounted for 41 percent of total national personal health expenditures on home health care services in the United States ($24 billion of a total of $59 billion expended on home health care services) (Henry J. Kaiser family Foundation, 2009). Medicare covers home health care if: the doctor determines that medical care at home is needed; the person needs intermittent skilled nursing care, physical therapy, speech-language pathology services, or continued occupational therapy; the home health agency is Medicare certified; and the person is homebound or normally unable to leave home unassisted. If a recipient is eligible for home health care, Medicare will cover home health aide services on a part-time or intermittent basis, which includes help with personal care, such as bathing, using the toilet, or dressing. Medicare
will not cover home health aide services unless the recipient is also getting skilled care such as nursing care or other therapy from a home health agency. In addition, the home health aide services must be part of the care for the recipient’s injury or illness. Medicare does not cover 24 hour a day care, meal delivery, or homemaker services, such as shopping, cleaning, and laundry (U.S. Department of Health and Human Services, 2007).

The Centers for Medicare and Medicaid Services (CMS) administers the Medicare program and certifies home health agencies by using the Institute of Medicine’s definition of quality care, which includes effectiveness, efficiency, equity, patient centeredness, safety, and timeliness. The quality of care is measured by the Outcome and Assessment Information Set (OASIS), which currently gathers information on 41 home health quality measures, such as improvements in bathing, transferring, and management of oral medication. In 2008, there were over 9,000 Medicare certified home health agencies throughout the United States. In 2008, 3.1 million Medicare beneficiaries were served by home health agencies that made nearly 120 million visits (an average of 38 visits per person served).

The original intent of Medicaid was to assist elderly Americans cover their health care costs that Medicare did not address. The Medicaid program was later expanded to include many low-income families unable to afford health care in our private health care system. Medicaid eligibility is extended to two main groups, the categorically needy and the medically needy. Included among the categorically needy are Supplemental Security Income (SSI) recipients and families who meet states' Temporary Assistance for Needy Families (TANF) eligibility. Those

eligible for Medicaid also include the elderly who qualify for Medicare but cannot afford the Part A hospital deductible or the Part B premium, with about 25 percent of Medicare recipients also qualifying for Medicaid. Disabled people, pregnant women, and children from low-income families also qualify for Medicaid. In 2007, Medicaid provided health insurance coverage for 58 million beneficiaries, including 6 million seniors, 8.8 persons with disabilities (including 4 million children), 29 million children, and 15 million adults (primarily poor working parents). In 2008, home health care and personal care accounted for 14.1 percent of overall Medicaid expenditures (totaling $339 billion).

The Social Security Act authorizes many waivers and demonstration programs, and this gives states flexibility in designing their Medicaid programs, including a waiver program for community-based care that has been available since 1981. The Centers for Medicare and Medicaid Services’ (CMS) Home and Community-Based Services (HCBS) Waiver allows long-term services to be provided in a community setting as an alternative to institutional settings. Federal requirements for states choosing to implement an HCBS waiver program include: demonstrating that providing waiver services to a target population is no more costly than the cost of services these individuals would receive in an institution; ensuring that measures will be taken to protect the health and welfare of consumers; providing adequate and reasonable provider standards to meet the needs of the target population; and ensuring that services are provided in accordance with a plan of care. The original intent of community-based services was

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to reduce the costs of health care services under Medicaid, but the program has greatly expanded since the U.S. Supreme Court case *Olmstead v. L.C.* in 1999. In 2006, 48 states (excluding Arizona and Vermont) and the District of Columbia offered services under the Medicaid 1915(c) Home and Community-Based Service (under 269 HCBS waivers); however, who is eligible and what services are covered vary from state to state.\(^{40}\)

The *Olmstead* decision has been very important in expanding the option of community-based care to people with disabilities. The *Olmstead* case called into question whether or not unnecessary institutionalization of those with disabilities constitutes discrimination and the steps states should take to integrate people with disabilities into society. From this case, many other individuals have followed suit claiming violations of the Americans with Disabilities Act. The *Olmstead* decision has resulted in an expansion of community-based care efforts and motions by states to incorporate such care into their health programs.

**B. Training and Recruitment of Workers into the Occupation**

This section discusses the educational requirements and qualifications to be a home care or home health aide, the factors affecting those requirements, and the employment characteristics of home care and health aides. This examination of the means by which individuals enter the occupation lays the groundwork for the analysis later in the chapter.

1. **Educational Qualifications and Entry Requirements**

Specific education and training requirements for home health and care aides vary by state and work setting. A high school diploma is required for many health aide positions, such as

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\(^{40}\) The Kaiser Commission on Medicaid and the Uninsured (KCMU) and The University of California at San Francisco's (UCSF) analysis based on The Centers for Medicare & Medicaid Services (CMS) Form 372, December 2009, Table 5. Medicaid 1915(c) Home and Community-Based Service Programs: Data Update available at http://www.kff.org/medicaid/7720.cfm accessed on August 22, 2010.
nursing and psychiatric aides, but a high school diploma is generally not required for jobs as home health and care aides. Some states only require on-the-job training, which is usually provided by the employer. Registered nurses, licensed practical nurses, or experienced aides may provide on-the-job training, or employers may provide classroom instruction for newly hired aides. Training includes instruction on how to properly cook for a client, including information on nutrition and special diets, and basic housekeeping tasks, such as keeping the home safe and sanitary for the patient. Aides are usually taught how to respond to an emergency situation and basic safety techniques. An aide may also be required to take a competency examination to ensure that he/she can perform the required tasks. Some states require formal training, which is typically offered at community colleges, vocational schools, elder care programs, and home health care agencies. A physical examination, including state-regulated tests like those for tuberculosis, may be required. A criminal background check, credit check, and good driving record may also be required since aides are responsible for their own transportation and work in people’s homes (U.S. Department of Labor, 2010).

As discussed, the federal government has issued guidelines for employers of home health aides that receive reimbursement from Medicare. The Omnibus Budget Reconciliation Act of 1987 established qualifications for home health care aides who provide services for Medicare certified home health agencies. As of August 14, 1990, certified agencies cannot use home health aides for Medicare patients, unless the individual completes a training program and competency evaluation program, or passes a competency evaluation program without training; and the individual is competent to deliver home health services. The training component is not necessary if a home health care worker can pass a competency exam without it. The training and competency evaluation programs must meet the minimum standards established by the
Department of Health and Human Services as outlined in 42 CFR 484.36. Training is to be a minimum of 75 hours, with at least 16 hours of classroom training, followed by at least 16 hours of supervised practical skills.

The 75-hour standard was adopted by the Health Care Financing Administration (now CMS) to reflect the statutory requirements for nurse aides in Medicare and Medicaid certified nursing facilities. Federal regulations also specify requirements for instructors and training content. The training must cover 12 specific items, mostly health-related, that CMS developed based on a model curriculum of the Foundation for Hospice and Homecare. In addition, home health agencies must conduct performance evaluations of each home health care aide at least once a year and provide at least three hours of in-service training each calendar quarter. Home health agencies are required to maintain documentation for their employees showing that the training and competency requirements of the home health aides are met.41

States may also have their own specific requirements for home health agencies to receive reimbursements, and some states require home health aides to be licensed. In addition, the National Association for Home Care and Hospice (NAHC) has offered voluntary certification for home health and care aides since 1990. Certification of an aide by NAHC is a demonstration that the aide has met industry standards. NAHC certification requires the completion of a 75-hour course, observation and documentation of 17 skills for competency assessed by a registered nurse, and passage of a written exam (National Association for Home Care and Hospice, 2009).

2. Methods Employers Use to Recruit Workers and Methods Workers Use to Obtain Employment in the Occupation

Word-of-mouth is among the most frequently used methods that home care workers employ to find jobs. For example, home care workers often hear about job openings from other

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home care workers, as well as informally through talking/networking with families and friends. Home care workers also increasingly look on the websites of home care agencies to see if they have vacancies or may directly contact such providers and inquire about job openings. Those interested in become home health or home care attendants may first volunteer at a local nursing home, hospice, or hospital to gain experience and contacts (and to gauge their interest in entering the field). New entrants to the field, who may have completed a certified nursing assistant (CNA) program or another care giver program may hear about openings from other trainees, instructors, or administrators. Community colleges and other proprietary schools typically have placement offices to help graduates find employment and often receive job listings from larger employers in their localities.

Home care workers may also use more general approaches—scanning newspaper advertisements for openings, using employment websites with job listings, or looking for job openings in listings maintained at public employment service offices or other staffing agencies. Over the past decade, the ability to search for job openings over the Internet (through search engines and by accessing websites for specific employers hiring large numbers of home care workers) has become an increasingly important way in which workers look for and secure jobs in the industry. Other ways in which workers may learn about job openings are through advertisements on the radio, television, buses, and subways; attending meetings at (and networking at) community groups and churches; and looking at job listings or meeting with staff/case managers at welfare offices and other community-based organizations. Workers also may attend job fairs sponsored by public employment agencies or associations of health care providers.
Employers use many of these same procedures to attract workers—listing job openings on their websites or more generalized employment websites, listing openings with public employment agencies and staffing agencies, and advertising through various media. They also may rely to some extent on their existing workforce to outreach and recruit family, relatives, friends and acquaintances. With some states, such as California, adopting consumer-directed initiatives, consumers are increasingly involved in identifying and recruiting individuals (often family members or friends) to serve as care givers.

C. Characteristics of Workers in the Occupation

In 2008, about one-third (31 percent or about 285,000 workers) of home health aides worked in home health care services agencies. The second largest setting for home health care aides was residential mentally disabled facilities, accounting for about 15 percent of home health care aide employment (156,000 workers), which was followed closely by community care facilities for the elderly accounting for 14 percent of home health aides (141,000 workers), and services for the elderly and persons with disabilities accounting for 13 percent of home health aide employment (113,000 workers). Interestingly, only 2 percent of home health aides (about 16,400 workers) were self-employed.42

In 2000, according to 2000 Census data, only about one-third (34.3 percent) of home care workers worked full-time year round. This points to the often part-time nature of home care work and, together with the relatively low wage levels (see the next section of the report), suggests that total earnings for home care workers on an annual basis are low. The average age of home care workers was 35 with a majority of the workers being between the ages 25 to 45.

Home care workers tend to be female, as only 8 percent of home care workers were male according to the 2000 Census. Over half (57 percent) of home care workers were white, 28 percent were African American, and 8 percent were Hispanic or Latino. However, 15 percent of home care workers spoke a language other than English at home, and about 12 percent of home care workers were foreign born. Nearly all home care workers (96 percent) did not have a college degree, with 29 percent having less than a high school education, 38 percent being high school graduates, and 30 percent having some college education (Montgomery et al., 2005).

D. Employment and Earnings Trends within the Occupation

1. Employment Trends

Employment Levels and Change. Exhibit 5-1 shows the trends in the number of home health aides and personal and home care aides compared to health care support occupations, personal care and service occupations, and all workers from 2004 to 2008. As the table shows, the number of home health aides and personal and home care aides have increased every year over this five-year period. From 2004 to 2008, the number of home health aides increased by 49.7 percent, which is much higher than for all workers (5.5%) and for all health care support workers (15.5%) over the same time period. From 2004 to 2008, the number of personal and home care aides increased by 15.5 percent, which is also higher than all the comparison occupations, except for home health aides. The near doubling in the number of health care aides over the past five years is indicative of strong demand for workers within the field. As discussed later in this chapter, rapid growth in the number of workers within the home health care field is a reflection of expanding demand for services (e.g., as the U.S. population ages and many more older individuals require such services) and availability of resources from Medicare, Medicaid, and other third party payers to reimburse for the cost of home health care services.
Exhibit 5-1: Employment Trends: Number and Percentage Change in Home Health and Care Aides, Comparison Occupations, and All Workers, 2004-2008

Percentage Change, 2004-08

Number and Percentage Change, 2004-08

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Health Aides</td>
<td>596,330</td>
<td>663,280</td>
<td>751,480</td>
<td>834,580</td>
<td>892,410</td>
<td>49.7%</td>
</tr>
<tr>
<td>Nursing Aides, Orderlies, and Attendants</td>
<td>1,384,120</td>
<td>1,391,430</td>
<td>1,376,660</td>
<td>1,390,260</td>
<td>1,422,720</td>
<td>2.8%</td>
</tr>
<tr>
<td>Psychiatric Aides</td>
<td>54,520</td>
<td>56,150</td>
<td>57,000</td>
<td>58,310</td>
<td>59,050</td>
<td>8.3%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>3,271,350</td>
<td>3,363,800</td>
<td>3,483,270</td>
<td>3,625,240</td>
<td>3,779,280</td>
<td>15.5%</td>
</tr>
<tr>
<td>Personal and Home Care Aides</td>
<td>532,490</td>
<td>566,860</td>
<td>578,290</td>
<td>595,350</td>
<td>614,190</td>
<td>15.3%</td>
</tr>
<tr>
<td>Child Care Workers</td>
<td>513,110</td>
<td>557,680</td>
<td>572,950</td>
<td>576,680</td>
<td>581,670</td>
<td>13.4%</td>
</tr>
<tr>
<td>All Personal Care and Service Occupations</td>
<td>3,099,550</td>
<td>3,188,850</td>
<td>3,249,760</td>
<td>3,339,510</td>
<td>3,437,520</td>
<td>10.9%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>128,127,360</td>
<td>130,307,840</td>
<td>132,604,980</td>
<td>134,354,250</td>
<td>135,185,230</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Unemployment Trends. Another key indicator of labor market conditions for a given occupation is the annual average unemployment rate. Occupations experiencing tight labor market conditions, in which the number of vacancies is greater than the number of qualified applicants, are likely to have very low unemployment rates because those searching for jobs find them quickly so are unemployed for a very short period. There are, however, exceptions to this trend, particularly in occupations with high turnover. Exhibit 5-2 illustrates the trend in the annual unemployment rate for home health aides, personal and home care aides, comparison occupations, and all workers from all occupations. However, the Bureau of Labor Statistics groups home health aides with nursing and psychiatric aides for calculating unemployment rates. The annual unemployment rate for personal and home care aides averaged nearly 7 percent between 2004 and 2008 compared to nearly 6 percent for nursing, psychiatric, and home health aides and about 5 percent for all workers from all occupations. Over the past five years, the unemployment rate for personal and home care aides has fluctuated slightly with a low of 5.9 percent and a high of 7.7 percent, but has remained slightly above average. Similarly, the unemployment rate for nursing, psychiatric, and home health aides has fluctuated slightly over the past 5 years with a low of 5.2 percent and a high of 6.7 percent, but remains fairly average.

Although home health aides’ and personal and home care aides’ unemployment rates are about average and a low unemployment rate tends to indicate a tight labor market, it does not necessarily indicate that a shortage is absent. As discussed below, because of a variety of factors (e.g., low wages, sometimes difficult working conditions and long commutes, turnover of patients, burnout, and a variety of other factors) there are high rates of attrition and much churning of workers within the home care sector. Interviewees for this study (knowledgeable about the home care industry and employment patterns) were all in agreement about the high
### Exhibit 5-2: Average Annual Unemployment Rate: Home Health Aides and Personal and Home Care Aides, Comparison Occupations, and All Workers, 2004-2008

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing, psychiatric, and home health aides</td>
<td>6.7%</td>
<td>5.7%</td>
<td>5.6%</td>
<td>5.2%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Physical therapist assistants and aides</td>
<td>3.4%</td>
<td>1.2%</td>
<td>0.6%</td>
<td>0.4%</td>
<td>3.2%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>5.5%</td>
<td>4.7%</td>
<td>4.6%</td>
<td>4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Personal and home care aides</td>
<td>7.4%</td>
<td>7.7%</td>
<td>6.4%</td>
<td>5.9%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Child care workers</td>
<td>6.9%</td>
<td>7.5%</td>
<td>5.7%</td>
<td>6.2%</td>
<td>7.4%</td>
</tr>
<tr>
<td>All Personal Care and Service Occupations</td>
<td>5.4%</td>
<td>5.6%</td>
<td>4.7%</td>
<td>4.8%</td>
<td>5.7%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>5.1%</td>
<td>4.7%</td>
<td>4.2%</td>
<td>4.2%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

**Source:** Current Population Survey (2004-2008). Table 3: Annual average employed and experienced unemployed persons by detailed occupation and class of worker.
levels of turnover among workers in the sector, in particular among those newly entering the profession. For example, according to one interviewee: “The problem in this occupation is there is huge turnover – this is a very unstable occupation, with high turnover rates...Turnover can be very high in first 3 months – you have the problem of churning.” [Stone] This constant turnover might explain why employers (e.g., home care agencies) on the one hand indicated that they have almost constant job vacancies that they have difficulty filling, and yet unemployment rates within the occupation remain slightly above average (indicating a sizable potential pool for filling vacancies within the occupation).

**Projections for Future Employment Growth within the Occupation.** Although employment growth in home health and home care aides has been rapid in recent years, the future is anticipated to see even further growth as shown in Exhibit 5-3 below. The Bureau of Labor Statistics estimates that between the years 2008 and 2018, the total number of home health aides will increase by 50 percent, compared to the estimated 19 percent increase for nursing aides, orderlies, and attendants and 6 percent for psychiatric aides. In addition, the increase in home health worker employment is expected to greatly exceed the increase for all workers in all occupations, estimated at about 10 percent for this time period. Others have projected trends beyond the next decade and suggested that employment in the home care industry will continue to grow through at least the middle of the century due to demographic trends. For example, the U.S. Department of Health and Human Services (2003) has projected high continued growth for direct care workers in long-term care settings due primarily to demographic trends. According to estimates developed by HHS's Office of the Assistant Secretary for Planning and Evaluation (ASPE), after 2010, the demand for direct care workers in long-term care settings becomes even greater as the baby boomers reach age 85, beginning in 2030. ASPE estimates project the
**Exhibit 5-3: Employment Projections: Home Health Aides, Comparison Occupations, and All Workers, 2008 and Projected 2018**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>2008</th>
<th>2018 (Projected)</th>
<th>Percent Change, 2008-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Health Aides</td>
<td>921,700</td>
<td>1,382,600</td>
<td>50%</td>
</tr>
<tr>
<td>Personal and home care aides</td>
<td>817,200</td>
<td>1,193,000</td>
<td>46%</td>
</tr>
<tr>
<td>Nursing Aides, Orderlies, and Attendants</td>
<td>1,469,800</td>
<td>1,745,800</td>
<td>19%</td>
</tr>
<tr>
<td>Psychiatric Aides</td>
<td>62,500</td>
<td>66,100</td>
<td>6%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>150,932,000</td>
<td>166,206,000</td>
<td>10%</td>
</tr>
</tbody>
</table>


Demand for direct care workers to grow to approximately 5.7-6.6 million workers in 2050, an increase in the current demand for workers of between 3.8 million and 4.6 million (200 percent and 242 percent respectively). This increase in demand will be occurring at a time when the supply of workers who have traditionally filled these jobs is expected to increase only slightly. These projections indicate that it is critical to retain existing long-term care workers and attract new ones. Since many industries will be competing for the supply of workers, pay and working conditions will play a key role in attracting new workers and consequently influencing the supply of long-term care services.

The interviewees for this study all agreed that employment growth would be robust in the field, pointing to the inevitability of demographics (the aging population) driving demand. For example, according to one interviewee:

...*Our organization relies on the concept of “care gap”—the gap between demand for workers and supply. In the past, our organization did this in a crude (proxy) way, looking at the number of women expected to enter workforce age 25-55 and comparing this to what is known about expected demand for home care workers (using occupational projections from BLS). This type of analysis reveals a long-term challenge—you see a trickle of women coming into the workforce in the relevant age group compared to the...*
future demand for services as the population ages (and medical technology keeps people living longer). For example, in upstate NY there is a shrinking number of workers going into the workforce and yet increasing demand for home care services. [Seavey]

2. Earnings Trends

The relative wage rate change in an occupation is often an important indicator of labor market dynamics, especially in the short run. In occupations where market forces move freely, a rapid rise in wages may indicate the presence of a shortage. While, home health aides and personal and home care aides have seen an increase in median hourly wages from 2004 to 2008 (as shown in Exhibit 5-4), this increase is very similar to that of comparison occupations and all workers. Home health aides’ wages have consistently increased over the past five years, experiencing an 11.7 percent increase from $8.81 in 2004 to $9.84 in 2008. Personal and home care aides had a slightly larger increase over the five-year period of 13.5 percent, from $8.12 in 2004 to $9.22 in 2008.

The experts interviewed for this study, as well as the literature, all note that relatively low-wage rates for home care workers is a critical factor both in terms of recruitment of new workers into the field and, once in the field, retaining workers. As discussed later in this chapter, public sector programs—in particular, the Medicare and Medicaid programs—reimburse home care providers for a large portion of home care services. As a result, the government sector, in conjunction with health insurers, is largely responsible for setting wage levels within the industry (and for home care workers). With wages set at relatively low levels, it is not unusual for employers (and analysts) to observe that home care providers are in competition with fast food restaurants and other low-wage industry sectors for workers. For example, several of the
### Exhibit 5-4: Median Hourly Earnings and Change: Home Health Aides and Personal and Home Care Aides, Comparison Occupations, and All Workers, 2004-2008

#### Percentage Change, 2004-08

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Health Aides</td>
<td>$8.81</td>
<td>$9.04</td>
<td>$9.34</td>
<td>$9.62</td>
<td>$9.84</td>
<td>11.7%</td>
</tr>
<tr>
<td>Nursing Aides, Orderlies, and Attendants</td>
<td>$10.09</td>
<td>$10.31</td>
<td>$10.67</td>
<td>$11.14</td>
<td>$11.46</td>
<td>13.6%</td>
</tr>
<tr>
<td>Psychiatric Aides</td>
<td>$11.19</td>
<td>$11.02</td>
<td>$11.49</td>
<td>$12.25</td>
<td>$12.77</td>
<td>14.1%</td>
</tr>
<tr>
<td>All Healthcare Support Occupations</td>
<td>$10.45</td>
<td>$10.64</td>
<td>$11.00</td>
<td>$11.45</td>
<td>$11.80</td>
<td>12.9%</td>
</tr>
<tr>
<td>Personal and Home Care Aides</td>
<td>$8.12</td>
<td>$8.34</td>
<td>$8.54</td>
<td>$8.89</td>
<td>$9.22</td>
<td>13.5%</td>
</tr>
<tr>
<td>Child Care Workers</td>
<td>$8.06</td>
<td>$8.20</td>
<td>$8.48</td>
<td>$8.82</td>
<td>$9.12</td>
<td>13.2%</td>
</tr>
<tr>
<td>All Personal Care and Service Occupations</td>
<td>$8.68</td>
<td>$8.89</td>
<td>$9.17</td>
<td>$9.50</td>
<td>$9.82</td>
<td>13.1%</td>
</tr>
<tr>
<td>All Workers from All Occupations</td>
<td>$13.83</td>
<td>$14.15</td>
<td>$14.61</td>
<td>$15.10</td>
<td>$15.57</td>
<td>12.6%</td>
</tr>
</tbody>
</table>

interviewees for this study identified low pay (accompanied by a general lack of other fringe benefits) as hampering recruitment of new workers into the field and loss of existing workers into other low-wage jobs:

...Low pay (resulting from low reimbursement rates from states), inconsistent hours, and poor quality job conditions lead to turnover and make it difficult to attract and keep workers in the profession. About 40 percent of home care workers need public assistance (food stamps, TANF, Medicaid) to subsist because of poor pay and benefits. A major factor in shortages are public policies that do not encourage better pay/benefits, better training, and supervision done in a way that home care workers want to stay in their jobs. [Seavey]

E. Labor Market Factors Contributing to a Shortage

1. Demand-Side Factors

   a. Aging of the Population

   One of the most prominent factors cited in the literature (and in interviews conducted for this study) with respect to current and future concerns about potential shortfalls of home health care and home care workers is the aging of the U.S. population. The older population, those 65 years or older, has grown substantially in recent years and is expected to grow rapidly over the next quarter of a century. In 2008, there were over 38.9 million elderly people, which is a 13 percent increase of 4.5 million from 1998. In addition, 5.7 million Americans were over the age of 85 in 2008, which is projected to grow to 6.6 million in 2020. Older Americans, those over 65, comprised 12.8 percent of the U.S. population, over one in every eight Americans, in 2008 (U.S. Department of Health and Human Services, Administration on Aging, 2009). About 30.5 percent or 11.2 million non-institutionalized older people lived alone in 2008.

   A majority of Americans age 65 or older have at least one chronic health condition. From 2005 to 2007, the most common chronic conditions were: hypertension (41%), diagnosed arthritis (49%), heart disease (31%), cancer (22%), diabetes (18%), and sinusitis (15%). In 2005,
nearly 37 percent of older people reported a severe disability, and 16 percent reported that they
needed assistance as a result. In addition, chronic conditions and disabilities increase with age as
56 percent of people over 80 reported a severe disability and 29 percent of people over 80
reported they needed assistance (U.S. Department of Health and Human Services,
Administration on Aging, 2009). The recent and expected growth in the proportion of older
Americans is significant since older people tend to need and spend more on health care and, in
particular, are much more likely to require home health and other home care services than
younger individuals.

As discussed earlier, Medicare is the public insurance program for Americans over the
age of 65. In 2008, almost all (94 percent) non-institutionalized persons 65 and over were
covered by Medicare. In addition, about 9 percent of the non-institutionalized elderly were
covered by Medicaid, the public insurance program for the medically and categorically needy.
Among Medicare beneficiaries, 25 percent of those living in the community had difficulty
performing one or more activities of daily living (ADLs) and an additional 15 percent reported
difficulties with instrumental activities of daily living (IADLs) (U.S. Department of Health and
Human Services, Administration on Aging, 2009).43 As a result, about 11 percent or 3.7 million
older Medicare enrollees received personal care in 1999. Nearly all (91%) older people living in
the community with chronic conditions received either informal care from family or a
combination of formal and informal care. Nine percent of the chronically disabled elderly
received only formal care from home health care aides in 1999 (U.S. Department of Health and
Human Services, Administration on Aging, 2009). Hence, with the surge of baby boomers

43 ADLs include bathing, dressing, eating, and getting around the house. IADLs include
preparing meals, shopping, managing money, using the telephone, doing housework, and taking
medication.
moving into their 50s and 60s, it is projected that demand for home care services will continue to build until at least the middle of the century.

b. **Expansion of Publicly Funded Home Care Services**

As discussed earlier, there have been several legislative changes over the years that have expanded eligibility and services for home care covered by Medicare and Medicaid. The increasing availability of insurance—Medicare, Medicaid, and private insurance—to cover the cost of home health care services has made it possible for many older and infirm individuals to obtain home care services that might have otherwise been provided in an institutional setting (or by family members or not at all). The number of Medicare-certified home health care agencies, major employers of home care workers, has steadily grown to meet demand for services: between 2000 and 2007, the numbers of certified agencies increased by about 30 percent, from 7,125 providers to 9,284 providers (National Association for Home Care and Hospice, 2008).

Similar to Medicare, Medicaid spending on home and community-based services has been on the rise. Medicaid spending on home and community-based care also nearly doubled between 2000 and 2006 ($22.5 billion in 2000 to $44.7 billion in 2006). Medicaid expenditures as a percentage of total long-term care expenditures increased from 30 percent in 2000 to 41 percent in 2006. Spending patterns for Medicaid home and community-based services varies by state, but demand for these services is evidenced by the number of beneficiaries on waiting lists for home and community-based waiver services. In 2007, about 331,689 beneficiaries were on waiting lists for home care services in 33 states, which is an 18 percent increase from 2006 (Henry J. Kaiser Family Foundation, 2009). Both Medicare and Medicaid have seen an increase
in demand for home care services from their beneficiaries, which is likely due to the increase in home care options available from these public programs, as discussed earlier in the chapter.\footnote{Other public funding sources for home health care services include the Older Americans Act, Title XX Social Services Block Grants, the Veterans’ Administration, and Civilian Health and Medical Program of the Uniformed Services.} \footnote{In contrast to Medicare and Medicaid, the proportion of private funding sources, including private insurance and out-of-pocket expenses, paying for home health care services declined from 45 percent in 2000 to 21 percent in 2007.}

As discussed earlier, the literature and interviewees identified changes in public policies under Medicare and Medicaid on reimbursement for home health care services as key factors in the steady growth of demand for such services. Several interviewees pointed to the great importance of Medicare and Medicaid in shaping trends in the long-term sector (and escalating demand for workers to provide such services). For example, one interviewee observed that changes in Medicaid policies had had a profound effect on demand for home health care services dating back over a quarter century ago:

...Such shortages (i.e., for home health care workers) probably date back to 1975 when home care became an option under Medicaid. In 1975, states were given the option of covering personal care assistants. This greatly increased demand for home care workers. In 1981 waiver authority gave states right to waive some Medicaid rules to cover all categories of Medicaid recipients for LTC (e.g., women with infant children, SSI recipients, etc). This led to waivers in all states that usually expanded demand for home care and enabled states to deinstitutionalize many people from state hospitals and intermediate care facilities. [Howes]

More recently, states such as California and Vermont have initiated consumer-directed initiatives under their Medicaid programs, and these initiatives have substantially altered the ways in which patients in need of home care services recruit care givers and, according to one interviewee, has further induced demand for home care services:

...There are about 440,000 consumers receiving home care services in California and 120,000 home care workers visiting homes (95 percent paid by Medicaid). Providers are independent providers (hired/fired/supervised by consumer). This means that the consumer is almost always hiring someone they know—about half hire family members.
Formal provision of long-term care is very intertwined with informal care in the state. There is a lot of informal care—the demand for formal care is defined by the number of hours authorized to provide care—but authorized hours are often inadequate and so informal care needs to fill in where formal care falls short. Many times formal/informal care person is the same, so the informal care person fills in the gaps in care. In effect, this hides the extent of the labor shortage. Overall, the consumer-directed system used California induces demand for paid care. [Howes]

2. Supply-Side Factors
   
a. **Low Pay and Inadequate Fringe Benefits Make Recruitment and Retention Difficult into the Field**

   Much past research on the labor market conditions for home care workers has pointed to relatively low wage levels and the lack of fringe benefits as perhaps the greatest barrier to entry and a compounding factor when it comes to keeping workers within the field of home care. As discussed below, low wages together with often-difficult working conditions are among the key factors that lead to burnout and high rates of turnover (attrition) within the field. Interviewees were in agreement that low wage rates and fringe benefits tempered the enthusiasm of even the most highly motivated to enter and stay in the field of home health care. As displayed earlier in Exhibit 5-3, in 2008, the median hourly wage for home health aides was $9.84, an hourly wage not much above what workers might make as cashiers, working in fast food restaurant, or other low-paying service sector jobs. In fact, those working in the field often come from and later leave to take other low-paying service sector jobs, often moving to jobs with less stress, offering regular hours, and requiring much less driving. Interviewees noted that current wage levels of home care workers, together with difficulties in consistently putting together full-time hours (generally across several patients), meant that workers in the field may have to rely on Food Stamps and other assistance to make ends meet:

   ...Low pay (resulting from low reimbursement rates from states), inconsistent hours, and poor quality job conditions lead to high turnover and make it difficult to attract and keep workers in the profession. About 40 percent of home care workers need public
Exhibit 5-5: Benefits Offered to Home Health Aides: Percentage of Home Health Agencies Offering Each Benefit, 2008


Like many other low-paying jobs, fringe benefits for workers within the field of home health care can be meager, leaving workers (ironically) to fend for themselves even when it comes to securing health insurance (as they provide health care services for their insured patients). Exhibit 5-5 displays the types of fringe benefits home care agencies offer to caregivers. Slightly over half (56 percent) of the home health agencies offer aides paid time off, while slightly less than half (48 percent) offer health insurance. Other types of benefits are even less frequently offered to home health aides, such as retirement plans (38 percent), dental insurance (29 percent), and health saving accounts (11 percent).

b. **Difficult Working Conditions, Together with Low Pay and Inadequate Benefits Lead to High Turnover/Attrition**

Difficult working conditions, including inadequate training, heavy workloads, few tangible rewards for performance, and little or no supportive supervision, also contribute to the difficulties with recruitment and turnover (Benjamin et al., 2008). These challenging working
conditions are often further exacerbated by staff vacancies (due to high turnover) and the lack of a backup workforce. In addition, home health workers face other occupational hazards, including violence in neighborhoods and homes, lack of workstations, heavy patient lifting, improper disposal of dressings or sharp medical devices, and high productivity demands (Markkanen et al., 2007). The need for reliable transportation and a willingness to drive considerable distances to provide services (particularly in rural areas) are often requirements of being a home care worker. For example, a recent study found that health care workers drove nearly 5 billion miles to serve nearly 12 million elderly and disabled patients in the United States in 2006. Due to the recent increases in gas prices, many home health care providers have stopped providing service to remote areas of a state, reduced their service area, and lost home care workers who cannot afford the higher commuting costs.46

Both the literature and our interviews with experts indicate that poor pay and fringe benefits, combined with challenging working conditions, are key factors in high turnover rates within the home care field. A recent survey of home health agencies in New Hampshire found that turnover was not a problem in only 13 percent of the agencies surveyed, with 35 percent of respondents reporting turnover to be a somewhat serious or serious problem (Smith, 2009). In a 2005 survey of the literature, Wright (2005) found many studies indicating very high turnover among homecare workers and other direct care workers; for example, in one study, 35 of 44 states surveyed indicated that turnover was a serious issue in their state, and estimates of turnover in specific studies were often in the 25 percent to 50 percent range. Frequent turnover and the lack of a sufficient number of home health and home care aides may also result in poor

quality of care for patients, disruptions in continuity of care, reduced access to care, increased pressure on family caregivers, or increased rates of injuries or accidents (Stone, 2004).

Interviewees for this study were in agreement that high rates of turnover, especially among new entrants and younger home care workers, was a particular problem afflicting the home care industry – and one that has led to much churning and at the very least a perception on the part of home care agencies that they needed to be on the constant look out for qualified new entrants to fill vacant home care positions. According to one interviewee, there are a number of factors (including general economic conditions) that are responsible for high turnover rates in the occupation:

...We see a lot of turnover and movement in the sector – when economy gets more robust, people are looking to get paid higher and leave the field. We have found in interviews with home care workers that they see their profession as a caring one (also, their life is their own; they have little supervision; work in homes). Many prefer to work in a home care setting to nursing homes, but pay is not as much, getting enough hours can be a problem, and travel can be an issue. [Stone]

A second interviewee viewed wage levels as a critical determinant of turnover rates within a particular locality:

...Turnover is related to wages paid—we have found that turnover drops significantly for new entrants if wage rates are 20 percent above the 10th decile of income in a locality...In California, you see turnover is lower in counties where there have been wage increases; and more importantly, where health insurance has been offered of a certain scale. You are most likely to see shortages in low-wage urban areas where there have not been wage increases and rural areas where wages hover around minimum wage. [Howes]

c. Other Potential Supply Factors

Interviewees indicated that at the same time that the U.S. population is aging there is a demographic factor that is a drag on the supply of new workers to the home care field: women between the ages of 25 and 45—the primary population group that has traditionally provided home care services—is not growing. Additional opportunities within and outside of the health
care field have also opened up to women who may have in the past taken jobs in the home care field. Several interviewees also pointed to the apparent increasing difficulties of bringing young workers into the field of home care, as well as very high rates of attrition from the field during the initial three months after entry.

General labor market conditions, according to study interviewees, can also play an important role in the overall supply of available (low-wage) workers and their willingness to take home care jobs. When economic conditions are good, and there are other better or similar paying opportunities available, home health agencies may encounter much greater difficulties in filling vacant home care positions. For example, according to one interviewee, there has been considerable flux in general labor market conditions affecting the hiring prospects of home care providers:

Anecdotally, home care workers are staying longer in jobs than in the past because it is hard to get a job. The labor market changes over time. In the late 80s, there was a significant shortage (of home care workers); in the early 2000s, there was a workforce crisis in terms of workers...The recession has made it less of a problem. Right now, it is not clear if there is a shortage – the recession has had such an impact on labor market conditions. Shortages are always more of a problem in good (economic) times. [Stone]

F. Assessment of Labor Market/Shortage Conditions

Typically, dynamic labor markets tend to respond to a mismatch between supply and demand by improving wages, benefits, and working conditions. However, the home health worker labor market faces the additional constraint of third-party payers, especially publicly-funded home health care services. As discussed earlier, Medicare and Medicaid account for well over half the reimbursement for long-term care services provided in the United States. In having such a dominant share of the total market for home care services, these two programs play a key role in determining reimbursement levels and restrict the flexibility of home care agencies to change wage levels in response to labor market conditions. Medicare, Medicaid, other public
long-term care programs, and even private insurers to a large extent determine the amount they are willing to pay for home health care services per client, per illness, or per visit. In addition, public programs often add the extra burden of additional requirements, such as specific qualifications to provide services and paperwork required to receive reimbursement. Therefore, third-party payers affect the flexibility of major home care agencies to increase wages, benefits and improve working conditions to attract and retain home health aides.

Because of the informalities inherent in this labor market, e.g., family or friends will often fill the void when limits of care are reached or when it is problematic to arrange for care, it is not easy to detect whether shortages exist. The availability of informal care to some extent masks shortages—if care for pay cannot be arranged, a family member might step in to help out (e.g., in the evening or at night), as noted by one interviewee:

...It is important whether they are family/friend or unrelated (to the patient for whom care is being provided). In California, which has a huge consumer-directed program, 80 percent of caregivers are family/friends. It is very messy in California: How do you treat a family member who is paid? Do they have to go through the same kind of training program? There is a growing group of home care workers that are family members and paid for the home care services being provided. There is also a large shadow economy of home care workers who are being paid off the books. We are totally undercounting the number of workers because we are not taking into consideration the workers providing services in this shadow economy. [Stone]

Further, tight labor market conditions also might be mitigated to some extent by substitution of more costly inpatient care for services that might otherwise have been provided in a home or community setting.

There is further complication with regard to assessing shortages because, as two interviewees observed, there is a “quality” dimension to the care being provided and a perception on the part of the consumer as to the timeliness and quality of care received. With constraints on
wages, home care agencies may struggle to find qualified workers that can come up to the standards expected:

...Defining the characteristics of home care workers is an issue – I talk about the shortage of “good quality” home care workers—I distinguish between a warm body and a worker that is trained to perform the work (as a home care workers). We don’t know exactly what quality is—that is a loaded term. It is important to draw the distinction—you can literally get a warm body, but what does that mean? [Stone]

Detecting shortages within the field of home care is also complicated by the fact that with generally low wage rates being offered, the pool of workers available to fill open positions can expand and contract with general labor market conditions and with other low-wage opportunities within a given locality. The interviewees were in agreement that in good economic times the available labor force to fill home care positions to some extent dries up, as home care workers are lured from long-term care jobs into other positions and as the pool of potential new entrants to home care look to other job possibilities. On the other hand, as has been the case since the downturn of the U.S. economy beginning in late 2008, when economic conditions deteriorate and are less than robust, there is a much larger and more willing pool of low-wage workers to fill home health and home care positions.

Finally, several of the interviewees pointed not only to general economic conditions but to a “time and place” dimension to shortages (and perceived shortages)—that is, at any point in time, there may be certain localities, types of areas (e.g., rural areas), or even regions of the country where it is difficult for home care agencies to fill vacancies and for consumers in need of home care to secure such care. Several of the interviewees noted that labor markets could vary quite a bit by locality, and that varying conditions could at least in part be the result of variation across states in reimbursement policies, the structure of the home care system, and other unique
circumstances. For example, one interviewee (Stone) suggested that there is a lot of variation with regard to labor market conditions across the United States at any given time:

...I think about geographic variation in terms of pockets (where it is difficult to find workers). Areas heavily hit by recession are having an easier time getting people—Ohio, West Virginia, and parts of Pennsylvania. New York City is heavily unionized and has the highest wages for home care workers, so they have fewer problems in attracting people. [Stone]

A common problem in rural areas is finding home care workers willing to travel long distances between patients to provide care. Another analyst observed that the generosity of benefits/coverage can be a factor in recruiting and retaining home care workers:

There is not a shortage of home care workers in New York City. New York City has one of the most generous long-term care programs in the country—no caps on the number of hours that can be received per month (compared to California where there is a 283 hours per month cap). In New York City workers can make full time jobs out of caring for a single person. Workers don’t have to travel all over the City to care for a lot of people—so, it is a more stable job in New York City. [Howes]

Finally, a third interviewee underscored the difficulty in assessing shortages at a national level and pointed to a factor such as immigration as potentially affecting labor market conditions:

...With regard to how serious the current shortage is—the interviewee is not sure it makes sense to talk of the country as a whole—it probably makes more sense to look at regions or states. Shortages are typically less intense in areas where there is an influx of lower-income immigrant population; for example, in New York City conditions are better, but there are tremendous shortages in upstate New York where population is shrinking and there are not net new immigrants. [Seavey]

On balance, because wage rates are determined to a large extent by third party-payers (principally Medicaid and Medicare), employers in the home care sector do not enjoy the kind of flexibility that employers in other industry sectors may have to adjust wages to boost supply of new workers into the field (and retain existing ones). Low wage levels, a paucity of fringe benefits, and often demanding working conditions result in substantial churning of workers within the home care industry, and in some instances, loss of workers (especially in favorable
economic times) to other low-wage industry sectors. The literature and experts interviewed for this study suggested that in the past there have been periods of very tight labor markets for home care workers, and in some regions or localities, labor market tightness has bordered on shortages. The inability to rapidly make adjustments to wage levels and fringe benefits and the need for home health care workers to meet certain public sector training requirements are critical factors constraining employers from instituting changes to increase supply of new workers and holding on to existing workers. There have been some changes and innovations in recent years, notably a movement toward consumer-directed recruitment of workers, to attempt to bring new workers (especially family members and friends of patients) into the industry.

With persistently high levels of unemployment (hovering around 10 percent during much of the past two years), there does not appear to be a current shortage of home care workers in the United States, though it is possible that because of high rates of attrition and difficulties in attracting workers to certain localities, that there are home care agencies in some regions/localities of the country that still face hardships in terms of filling vacancies at prevailing wage levels that are fully reimbursable by third-party payers. With the aging of the U.S. population it is clear that strong demand for workers in this field will continue for many years to come. What is not clear (especially given budgetary constraints and calls for fiscal austerity in public sector programs such as Medicare and Medicaid) is whether wage rates will be able to rise fast enough to bring enough workers into the home care sector to meet surging demand for home and community-based services. The slow growth in wages levels within the occupation in recent years is not encouraging for the future.
CHAPTER 6:  
CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER ACTION

We first looked at occupational shortages 17 years ago (Trutko et al., 1993), and although we continue to define the economic concept of a labor shortage in the same manner, our specific findings on the presence or absence of shortages have changed over the years, and we have somewhat changed our views on how shortage data should be collected and used. It is not surprising that our findings on the existence of shortages have changed, as shortages are dependent on overall economic conditions and, in some instances, market regulation by the government or other parties, and economic conditions are quite different in 2010 than they were in 1993.\textsuperscript{47} The much looser labor market in the current environment is likely to dampen or eliminate any occupational shortage stemming from rapidly increasing demand. It is the lack of a shortage in the economic sense that has made us realize that what Arrow and Capron (1950) called a “social demand shortage” is of more than academic interest, and that issue is highlighted in the section below.

In this concluding chapter, three major topics are addressed. First, the primary overarching findings from the case studies are provided. Next, there is a discussion of the utility of occupational shortage data for various constituencies. Finally, the chapter includes a discussion of how better data on occupational shortages, or more generally labor market tightness, can be developed.

A. Conclusions from the Case Studies

Three overarching conclusions emerged from the case studies of the four occupations analyzed—special education teachers, pharmacists, physical therapists, and homecare workers.

1. Measuring Occupational Shortages is Difficult

Although it is not difficult to speak conceptually about what an occupational labor shortage is, documenting that a shortage exists is quite another matter. In this project, a shortage is defined as a sustained situation where the number of workers employers would like to hire exceeds the number of workers available at the prevailing wage. There are several reasons why this definition is difficult to apply to actual labor market situations.

First, the definition requires measurement of job vacancies for specific occupations. Unfortunately, there is no national job vacancy database. The Bureau of Labor Statistics (BLS) has conducted the Job Openings and Labor Turnover Survey (JOLTS) since December 2000, but the number of firms included in the survey is too small to generate openings by occupation (Clark and Hyson, 2001). As discussed later in this chapter, vacancy data is useful for a variety of purposes, and about 15 states and roughly the same number of local areas conduct their own vacancy data that does include job vacancies by occupation.

Second, even if vacancy data were available, it is not a simple matter to define what constitutes a shortage. There will always be some vacancies for jobs as part of the natural labor

48 It is possible to obtain jobs listed with the state Employment Service agencies, but such lists are not exhaustive and likely to be unrepresentative of all vacancies. Likewise, compilations of job openings posted on Internet sites or in newspaper want-ads suffer from similar problems.

49 The Employment and Training Institute of the University of Wisconsin Milwaukee has identified 15 states (Colorado, Connecticut, Florida, Kansas, Louisiana, Maine, Massachusetts, Minnesota, Nebraska, Nevada, New Jersey, Oklahoma, Rhode Island, Utah and Washington) and 16 metropolitan or regional areas that conduct job vacancy surveys. Information from http://www4.uwm.edu/eti/pages/surveys/jos.htm on August 17, 2010. The Institute also produced a manual on how to conduct such surveys, which can be obtained at http://www4.uwm.edu/eti/manual.htm (accessed on August 17, 2010).
market process. As is the case for unemployment, a certain proportion of vacancies could be considered as “frictional” and needed for the labor market to function well. Moreover, the length of time that a job is open could be an important factor in determining if a vacancy is a sign of a shortage or simply an indication of a well-functioning labor market. Finally, just as some occupations typically have higher unemployment rates among workers in the field, the level that is indicative of a shortage could and most likely does differ across occupations.

Third, the occupational classification system used by the U.S. government, the Standard Occupational Classification (SOC) system, does not correspond to the occupational concepts used by employers. One issue is that the SOC includes 840 detailed occupations, but employers do not necessarily define their jobs to conform to these definitions.\textsuperscript{50} Two studies by National Research Council (NRC) committees illustrate this problem. An NAS committee looking at the information technology (IT) workforce concluded that “Definitions of occupations—which are necessarily relatively stable over time—do not necessarily reflect the IT job titles of today because new types of jobs emerge quickly. In particular, occupational categories are generally too coarse and do not reflect important distinctions among IT jobs” (National Research Council, 2001, p. 278). For example, the SOC occupation “computer programmer” includes both Java programmers and Cobol programmers, but the skills required for the two types of programming are very different, so aggregate data on all computer programmers would be of little use in assessing the computer programmer labor market. Another NRC committee examined the workforce for the National Aeronautical and Space Administration (NASA), and the committee discovered similar problems in using BLS data to analyze the labor market for NASA:

\textsuperscript{50} The Bureau of Labor Statistics indicates that the 2010 SOC has 840 detailed occupations and 461 broad occupations. See http://www.bls.gov/SOC/#classification accessed on August 18, 2010.
“Furthermore, in the BLS classification of occupations, all aerospace engineers are grouped together, and important specialties such as systems engineering are not identified at all. NASA’s job definitions do not correspond with the standard occupational classifications produced by BLS, which lack sufficient detail to be useful for NASA planning” (National Research Council, 2007, p. 20.).

Finally, various parties have incentives to distort the labor market situation. Employers may wish to exaggerate the tightness of the labor market if they wish to import foreign labor, while unions and other worker organizations may wish to minimize the extent of a shortage to avoid increases in the use of foreign labor. Although interviews can be useful in assessing if there is a shortage, it is important to keep in mind that the people interviewed may not be objective in their assessments.

2. There Was No Strong Evidence of Occupational Shortages for Any of the Occupations Using an Economic Definition of a Shortage

In previous studies of occupational labor shortages, we frequently found evidence of shortages in one or more occupations, but in the current study none of the occupations exhibited strong evidence of a shortage. In all four occupations analyzed, the labor market was fairly tight, but there was no consistent evidence that vacancies cannot be filled without an extraordinary amount of time. Some individuals interviewed, particularly individuals with an employer perspective, did suggest that there is currently a shortage, but they meant that there was a decline in the quality of applicants, that there was a shortage in the “social demand shortage” sense, or they had no specific indication of the presence of a shortage. The market for special education teachers was tighter than the markets for homecare workers, pharmacists, and physical therapists, but even for that occupation, children with special needs were still being taught, albeit with less qualified teachers than might be desired (an issue that is examined further below).
It was clear from both the literature and the interviews that what distinguishes labor markets today from the times when our prior studies were conducted is the economy. The current recession has been characterized as the worst recession since the Great Depression, and it is clear that the only period since 1948 with unemployment rates comparable to today’s economy was in the 1982-1983 period; in the 1982-1983 period, the unemployment rate was 10 percent or higher for 10 months, but in the current recession there were only three months with an unemployment rate of at least 10 percent, and the peak rate was 10.1 percent compared to 10.8 percent in the earlier period.

The bad economy is likely to curtail occupational shortages for several reasons. First, the poor economy is likely to directly reduce demand for all types of labor as both families and government have less revenue to spend. On the supply side, workers are less likely to leave their current job during a recession for another job, possibly in another occupation, because they know or fear that few such opportunities are available. The JOLTS data track the quit rate from 2000 to 2010, and the data indicate that the monthly quit rate for all occupations dropped from a range of 1.8 percent to 2.5 percent from December 2000 through October 2008 to around 1.4 percent in recent months.51

Although little evidence of occupational shortages was found, as noted in Chapter 2, there is evidence of use of potentially less productive individuals for special education positions, and this issue is discussed in the next section. In the other three occupations analyzed, there was no evidence of a decline in the quality of workers coming into the field.

3. For Policy Purposes It Is Important to Go Beyond an Economic Concept of a Shortage

The economic definition of an occupational shortage is of interest for economists trying to understand how markets work and why they sometimes fail, but the social demand shortage concept introduced by Arrow and Capron (1959) is also of interest for policy purposes. For three of the occupations studied—pharmacists, physical therapists, and homecare workers—the market appears to be working reasonably well at this time. For special education teachers, however, the story is quite different. In this field, there has been a constant concern that there is a shortage of special education teachers. Cook and Boe (2007) trace the problem back to the passage of the Education of All Handicapped Children Act (now called Individuals with Disabilities Education Act or IDEA) in 1975, which required states to implement policies to assure that children with disabilities receive a free and appropriate education.

Cook and Boe claim that the demand for special education teachers can be decomposed into quantity demand and quality demand. Interestingly, they conclude that “It is obvious that there has been, and likely will be, sufficient quantity supply of teachers to meet future quantity demand” (Cook and Boe, 2007, p. 222). They go on to note that unless the teachers supplied are of adequate quality, “this is not an adequate solution.” Cook and Boe conclude that entering special education teachers fall short of the quality desired because “Only 46% of first-time [special education teachers] had both completed extensive teacher preparation specifically with degree majors in special education.”

On the surface, the lack of specific special education teacher training sounds bad, but does this constitute a shortage? It is important to note here the differences between a purely private service, such as hair stylists, and workers who provide publicly supported services, such as teachers. If market conditions led to many poorly qualified hair stylists, economists would not
consider this indicative of a shortage of stylists. But teachers are publicly supported, and public laws require that teachers have certain qualifications and, increasingly, that they be effective at teaching their students. Thus, although hiring less qualified teachers is a natural development in a tight labor market, it is only indicative of a shortage, in the economic sense, if the schools are failing to provide an education level mandated by law. In the case of special education teachers, it appears that this is not the case.

The No Child Left Behind (NCLB) legislation defines the concept of a “highly qualified teacher” as one with a bachelor’s degree, full certification, and demonstrated expertise in the subject matter of each core subject matter taught (Boe, 2006, p. 139). Moreover, Boe notes that the legislation requires that all public school teachers of core subject matters be highly qualified, and he thus concludes, “Thus, there is a federal statutory quality demand for teachers who attain all three qualifications” (Boe, 2006, p. 139). Boe measures the quality shortage of special education teachers by adding the number of vacant positions and the number of positions whose occupants are not fully certified. For the 1999-2000 school year, Boe estimates the quality shortage of special education teachers to be 13.7 percent for students ages 6 to 12, in contrast to a shortage of 10.5 percent for general education teachers.

Whether or not this situation constitutes a shortage in the economic sense depends on how the legal requirements of NCLB and IDEA are interpreted. Because schools appear to operate consistently without meeting the mandated requirements, one could argue that there is no economic shortage as the quality shortage appears to be a market solution that is tolerated. However, one could also argue that because the legal requirements of NCLB are not being met, there is a shortage in the economic sense.

Although it may be interesting for economists to argue about whether there is a shortage
of special education teachers in the economic sense, it is more important to consider how the nation’s children are affected by the fact that many special education teachers may not have the desired credentials. Of course, standards for teachers can be set too low even in the absence of a shortage, but in a tight labor market schools are more likely to lower standards to make certain that someone is teaching the children. Setting standards for highly qualified teachers provides a mechanism to alert communities when their teachers do not measure up to certain standards.

4. Some Occupations with Tight Labor Markets Have Increased Educational Standards in Recent Years

As previously discussed, employers frequently lower entry standards for workers during periods when there are tight labor markets. Such an approach is one way to attract more entrants to an occupation. Interestingly, two of the occupations analyzed, pharmacists and physical therapists, have increased the standards for entry in recent years, requiring entrants to the fields to obtain doctorate degrees. Schools of Pharmacy only offered doctor of pharmacy (PharmD) degrees after 2003, and the American Physical Therapy Association’s Vision Sentence for Physical Therapy 2020 states “By 2020, physical therapy will be provided by physical therapists who are doctors of physical therapy, recognized by consumers and other health care professionals as the practitioners of choice to whom consumers have direct access for the diagnosis of, interventions for, and prevention of impairments, functional limitations, and disabilities related to movement, function, and health.”52 Although the analysis conducted for this study did not indicate current shortages for the occupations, the labor markets for both pharmacists and physical therapists are currently fairly tight, and both occupations are judged to have had shortages in recent years.

There are several reasons why it may be advantageous to increase the educational preparation required for an occupation. Extending the preparation to the doctoral level provides entry-level practitioners with more thorough knowledge of the relevant theory and practice, and it permits workers in the occupation to gain experience and skills while in training rather than while in practice. In the case of physical therapists, an additional motivation for increasing the educational requirements is to increase the professional stature of physical therapists and permit physical therapists to have direct access to patients rather than work through physicians. In addition to the two occupations analyzed for this report that have recently increased educational requirements, there is an ongoing discussion in the nurse field of phasing out the two-year associate degree in nursing and requiring registered nurses to obtain a bachelor’s degree. Nursing has long been a field where the labor market has been tight, so it provides a third example of an occupation with a tight labor market where there may be an increase in the length of preparation time.

When an occupation is experiencing a shortage, however, increasing educational requirements can exacerbate the shortage. The greater expense and time required to qualify for the field may discourage some individuals from entering the field, although we have not seen evidence of this occurring in the occupations analyzed. Even if the supply of new workers is not reduced, extending the preparation period by a year will slow down the ability of an occupation to adjust to an increase in demand.

The decision on the length of preparation that should be required for an occupation is not a simple one, and there are many factors that should be considered. It is interesting, however, that in several instances there has been a strong interest in increasing preparation time when the occupation is experiencing a tight labor market or actual shortage.
B. Utility of Data Used to Analyze Occupational Shortages

As was discussed in Chapter 1, there is no simple way to determine if an occupation is experiencing a shortage, but obtaining certain information about the labor market for the occupation is essential. BLS already collects a great deal of data on earnings and employment that can be used to help determine if there is a shortage or a tight labor market, and much of this information was presented in the case studies. Examples of this type of data include hourly wage rates, annual earnings, and unemployment rates for workers in the occupation. For assessing whether there is a shortage, it is useful to compare the occupation with similar occupations and other occupations or occupational groups that can serve as benchmarks, and to look at the data over a number of years to see if patterns have changed. Such data are available over many years and at the state and local level as well as nationally. In addition, BLS produces projections of occupational employment for a ten-year horizon every two years; although the projections data does not provide information about whether there is currently a shortage, it is useful for gauging whether a current shortage is likely to endure. The primary data that are not collected by BLS, which are the most important data for assessing shortages, are job vacancy data by occupation.53

The same data that are useful for studying occupational labor shortages are also useful for important practical applications—providing labor market information for individuals engaged in career planning or job search, and as input into government policies and decisions about immigration and temporary visa policies when these decisions are based on labor market conditions for specific occupations.

Individuals interested in career planning or job search are likely to access relevant information either directly from the BLS Internet site, www.bls.gov, or by visiting state and local

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53 As noted earlier, the Job Openings and Labor Turnover Survey (JOLTS) does not produce vacancy data by occupation.
workforce investment programs either in person at One-Stop Career Centers or electronically through Internet sites maintained by states and local programs.\(^{54}\) Of course, there is a great deal of labor market information that can be useful for individuals interested in career planning and job search, produced by the federal government, state and local governments, and private parties. BLS publishes the *Occupational Outlook Handbook* (OOH) every two years, and the OOH provides descriptive information, data, and projections for hundreds of occupations. Other BLS publications that provide additional information are *Occupational Outlook Quarterly* and *Career Guide to Industries*.\(^{55}\) The U.S. Department of Labor’s Employment and Training Administration (ETA) is responsible for administering WIA and other programs that serve workers, and ETA also provides resources to individuals interested in labor market information.\(^{56}\)

As noted earlier, although BLS does not collect job vacancy data, about 15 states and roughly the same number of local areas do conduct job vacancy surveys, as do a number of other countries. These states collect the data, at their own expense, for a number of reasons. Massachusetts, for example, offers four reasons why the state has gathered such data since 2002:

- Identify and respond to turning points in the economy.
- Help analysts identify emerging labor and skill shortages.
- Design training programs that match the labor needs of the Massachusetts economy.

\(^{54}\) The Workforce Investment Act of 1998 (WIA) calls for the establishment of at least one comprehensive One-Stop Career Center in each of the over 600 local workforce investment areas in the country, but in some areas workforce services are also delivered at other locations such as local Employment Service offices or at satellite locations in places such as community colleges. Also, the One-Stops often have state or local brand names rather than being referred to as One-Stop Career Centers.


\(^{56}\) ETA publications, data, and information on programs and services can be found at [http://www.doleta.gov/jobseekers/](http://www.doleta.gov/jobseekers/) on August 21, 2010.
- Analyze labor needs and employment opportunities by economic region.
- Determine which segments of the work force are affected most adversely by economic changes (http://lmi2.detma.org/Lmi/LMIjobvacancy.asp accessed August 21, 2010).

Milwaukee, which was the first local area to collect job vacancy data, gathers such data “in order to assess the number and type of jobs available and the level of skill training employers need to fill openings” (http://www4.uwm.edu/eti/pages/surveys/jos.htm#other accessed August 21, 2010).

States and local areas vary in the frequency at which they gather job vacancy data. Some jurisdictions, such as Massachusetts, gather the data twice per year, but others, such as Milwaukee, conduct annual surveys. Although semi-annual surveys provide more current data, the costs for data collection and analysis are much higher. Because of financial pressure from the current recession, some states have cut back on their efforts. For example, until recently, Jacksonville, Florida contracted with a private firm to conduct job vacancy surveys but no longer does so, and Colorado now is purchasing data on help wanted on line rather than conducting its own survey.

Although states and local areas suggest that they conduct the job vacancy surveys in part to learn about occupational labor shortages, the published reports generally avoid specific statements about when an occupation has a shortage. One state official suggested that a rule of thumb is that a vacancy rate of 5 percent or higher is interpreted as a shortage for the occupation, but the state does not have a formal definition of a shortage occupation. To indicate the severity of labor market problems, states and local areas also publish worker per opening data.
C. Using Occupational Shortage Data for Immigration and Temporary Visas

Occupational shortage data can play an important role in the determination of which occupations are good candidates for admitting temporary or permanent foreign labor to fill vacancies. In this section we describe the approach developed for the United States by Malcolm Cohen and the system currently used in the United Kingdom.

The United States has retained Malcolm Cohen twice to develop approaches to use existing data to rank occupations as candidates for admission of foreign labor (Cohen, 1982 and Cohen, 1990). Cohen’s approach is somewhat similar to the approach used in this report. However, the Department of Labor wanted a quantitative ranking system based on regularly available data rather than a system that relied in part on interviews with knowledgeable parties.

Cohen identified seven indicators of occupational shortages based on economic theory:

- Employment change in the recent past
- Occupational unemployment rate in the recent past
- Wage change in the recent past
- Training required for the occupation
- Replacement demand
- Projected increase in occupational demand
- Immigrants certified in the recent past.

In his 1990 report, Cohen created an index of shortage by developing a seven-point scale for each indicator and summing the score of the seven indicators. Thus, an occupation could receive a score between 1 and 49; in the 1990 study, the occupations with the tightest labor markets were for physical therapists and registered nurses, each of which scored 39. Although both of Cohen’s reports were accepted by the Department of Labor, the Department of Labor has never...

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57 Cohen’s work for the Department of Labor was later published as Cohen (1995).
58 In a presentation made at the symposium held in conjunction with this project, Cohen indicated that job vacancies would be a good measure if it were available. See http://epi.3cdn.net/85ee6cf493f0f84caf_36m6bau5j.pdf accessed August 21, 2010.
implemented the type of scheme developed by Cohen.

The United Kingdom, on the other hand, has implemented a system that makes use of comprehensive occupational shortage data and feedback from interested parties to identify shortage occupations that are eligible for immigration.59 Under this system, the Migration Advisory Committee (MAC), which includes five economists and a representative of the UK Commission for Employment and Skills, makes recommendations to the government about which occupations are experiencing shortages. The MAC only deals with occupations with highly skilled workers (Tier 1) and skilled workers (Tier 2). To qualify for inclusion on the list, an occupation must be skilled, have a shortage, and be a “sensible” candidate for the list, and these three criteria are applied sequentially. The MAC uses both top-down and bottom-up approaches in its work, relying on labor market data from national surveys and presentations and meetings with stakeholders.

Once it is determined if an occupation uses enough skills to qualify for Tier 1 or Tier 2, an assessment is made on whether the occupation is experiencing a shortage. The MAC uses 12 indicators in four broad categories to determine if there is a shortage, which are:

**Employer-Based Indicators --**
- Skill shortage vacancies as a percentage of employment by occupation
- Skill shortage vacancies as a percentage of all vacancies
- Skill shortage vacancies as a percentage of hard to fill vacancies

**Price-Based Indicators --**
- Percentage change in median hourly pay for all employees
- Percentage change in mean hourly pay for all employees
- Relative premium to an occupation, given [skill level], controlling for region and age

**Volume-Based Indicators --**
- Percentage change in unemployed by sought occupation

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59 The description of the UK system is based on Downs (2009) and a presentation by Martin Ruhs at the symposium held for this project. The Ruhs presentation is available at [http://epi.3cdn.net/7329ec8745d286ac32_zbm6b9nzz.pdf](http://epi.3cdn.net/7329ec8745d286ac32_zbm6b9nzz.pdf) accessed August 21, 2010.
Indicators of Imbalance Based on Administrative Data --
Absolute change in median vacancy duration
Stock of vacancies/claimant count by sought occupation (Downs, 2009)

An occupation was considered to have a shortage if it exceeded the threshold established for at least 50 percent of the indicators; as there is no formulaic way to set the thresholds, they were established judgmentally. The “sensible” criterion is by nature subjective, and was usually analyzed by using the bottom-up data provided by various stakeholders.

The work done by Cohen (1982, 1990) in the United States and by the MAC in the United Kingdom indicates that it is feasible to use labor market data to assist in the process of determining shortages for admission of foreign workers on a temporary or permanent basis. Although Cohen (1990) developed a numerical scale to rank occupations and the MAC approach also includes quantitative components, the flexibility of the MAC approach used in the United Kingdom has the advantage of recognizing the lack of a clear measure of a shortage and permitting qualitative data to be used in the process.

D. Developing Better Occupational Shortage Data for the United States

Assessments of whether an occupation is experiencing a shortage can be made in the United States with available data. Cohen (1990) developed seven indicators and suggested aggregating them to rank occupations. Veneri (1999) uses employment growth, increases in earnings, and occupational unemployment rates as indicators, but she suggests that case studies be conducted to add qualitative data to the assessment. The approach used in this study, and the other shortage studies the authors have conducted, follow Veneri’s suggestion. The United Kingdom also combines data from administrative sources and national surveys with data from
various stakeholders, which is referred to as “bottom-up” information.

Although U.S. labor market data can be used to study occupational labor shortages, the data are not ideal for any of the purposes for which it is used—labor market information for job seekers and individuals conducting career exploration, labor market information for workforce investment programs such as WIA that need to know what training programs to make available to their customers, or for learning which occupations appear to have shortages. This is a difficult fiscal time for all levels of government, but good labor market information of all kinds can potentially provide significant benefits to youth exploring careers, job seekers, state and local workforce investment programs, employers, and federal officials trying to better understand and deal with the intertwined issues of occupational shortages and labor-related immigration and temporary visa programs. We suggest that the following actions be considered:

- **BLS should give further consideration to expanding the JOLTS program to provide job vacancy data at the national level.** There is clearly strong demand for such data, as many states and local areas have voted with their pocketbooks to conduct their own surveys. Such data would be valuable for workforce investment programs, job seekers, policy officials, and researchers.

- **If the JOLTS program cannot be expanded, BLS should explore the possibility of working with interested states and local areas in standardizing and possibly subsidizing job vacancy surveys.** There is already a loose consortium of states conducting these surveys, but the current economic and fiscal climate has led to at least one state abolishing its program. Only one of the 10 most populous states (Florida) has a statewide job vacancy program, so expanding the pool of participating states would require a great deal of effort to obtain a reasonable national picture. However, if a national survey cannot be implemented, such a strategy might be a reasonable second best strategy.

- **Job vacancy surveys should explore ways to obtain occupation data more fine grained than provided by the Standard Occupational Classification (SOC) codes.** As noted earlier in the report, although fine for many purposes, the SOC lacks sufficient detail in some instances to assess occupational shortages.

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60 State population data for 2009 were obtained at [http://www.census.gov/popest/states/NST-ann-est.html](http://www.census.gov/popest/states/NST-ann-est.html). A list of states with job vacancy surveys was from [http://www4.uwm.edu/eti/pages/surveys/jos.htm](http://www4.uwm.edu/eti/pages/surveys/jos.htm); both accessed on August 22, 2010
Computer programmers are not always good substitutes for one another, and employers may classify engineers in a more detailed manner than the SOC does. This is not a simple problem to deal with—adding more occupations to the SOC is an expensive proposition. One possible solution would be to permit employers to define openings with more detail than the finest SOC level. Note that there are other dimensions to job characteristics that go beyond occupational descriptions that could lead to shortages even if there are people available in the occupation—pay and experience, for example.

- If the data are improved, occupational shortage data should be systematically incorporated into the decision making process for programs that admit foreign labor to the United States for programs such as H1-b visas and alien worker certification. This project dealt only tangentially with these issues, but there is currently interest in reforming programs that admit foreign workers on a temporary or permanent basis to assure that such workers benefit the U.S. workforce rather than displace them. Good occupational shortage data could greatly improve the quality of the decisions made.

- Although currently available data can provide indicators of occupational shortages, much better determinations can be made with vacancy data and by including qualitative data gathered on a case-by-case basis. Although levels and changes in data on labor market characteristics can be used to identify tight labor markets, or at least increasing tightness in a labor market, all the theoretical studies and many of the applied studies point to the primary importance of job vacancy data as an indicator of a shortage. But job vacancy data are not sufficient to determine if there is an actual shortage or a tight labor market or if there is a shortage for some subcategory of the occupation. Veneri (1999) agrees with our conclusion here, and Downs (2009) documents how the “bottom-up” approach of gathering information from stakeholders is an important part of the United Kingdom’s process for identifying occupational shortages.

Occupational labor shortages have been studied by economists since the 1950s. Much of the early work focused on specific occupations with rapidly growing demand. More recently, studies have analyzed other potential causes of shortages, such as government regulation of the labor market or the service produced. The topic is of greater interest than ever, with increasingly sophisticated demands by workforce investment programs and job seekers, and the interest by many in seeing improvements in the process for assessing the need for foreign workers in the

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61 There were several presentations on the issue of criteria for admitting foreign workers at the symposium cosponsored by the Economic Policy Institute and this project. See http://www.epi.org/publications/entry/event_20090520/ accessed on August 22, 2010.
U.S. workforce. At the national level, the nation’s labor statistics efforts have not kept up with the demand. A national system for collecting occupation-specific job vacancy data would be an important next step in improving our efforts in this area.
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