

**Job Chains and Career Ladders in Health Care:
An Economic and Workforce Development Strategy
For Greater New Orleans**

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KEY WORDS

job chains; career ladder strategies; hospitals; workforce development; poverty reduction

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PROJECT ABSTRACT

The purpose of our project is three-fold. First, utilizing the “job chains approach” developed by Persky et al. (2004), we demonstrate that the impact of employment growth in health care—particularly hospitals—has the potential to outstrip the impact of producer services and tourism growth on unemployed or underemployed low-skilled, entry-level workers and summarize current knowledge on career ladder initiatives in health care services. Second, in collaboration with our non-profit sector partner, the New Orleans Regional Planning Commission (NORPC), we propose a coordinated, regional workforce development strategy for the health care sector to expand the regional health care workforce and to develop and implement career ladder initiatives for low-skilled entry-level workers in the region’s health care industry. Third, we propose an amendment to Title I Subtitle D of the Workforce Investment Act (WIA) of 1998, creating a new national program of grants to establish or expand multi-stakeholder industry or sector partnerships. Industry partnerships feature collaborative planning, resource alignment and training efforts across firms to promote both industry competitiveness and workers’ opportunity for retention, earnings gains and advancement. This could direct key resources to strategic workforce development efforts in Greater New Orleans and in other regions across the United States where the health care labor force is in demand and people—and communities—need good jobs.

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FINAL PAPER

I. Introduction

In New Orleans as in central cities across the country, the revitalization of economically distressed communities begins with the connection of unemployed and working poor individuals to labor market opportunities. As best practice research in the field has shown, the ability of community-based workforce development programs to help labor market entrants achieve earnings gains depends not only on investments in skills but also on career ladder strategies—interventions focused on creating opportunities to advance from low-paying entry-level positions to higher-paying jobs in key economic sectors. Workforce development innovators are increasingly collaborating with economic development professionals and employers to develop career-ladder initiatives in promising industry sectors. Evidence suggests that the health care sector, in particular its hospitals component, lends itself particularly well to a career ladder approach.

The purpose of our paper is three-fold. After reviewing the state of the New Orleans economy and the role of health care and biosciences industries within it, we demonstrate the potential of health care services – in particular, hospitals – to offer low- and semi-skilled workers viable employment and career advancement options. Utilizing the “job chains approach” developed by Persky et al. (2004), our research identifies occupational patterns and trends in the health care sector and evaluates the potential economic impact of new jobs in health care (and the job vacancies they open up with other employers) on a hypothetical region. We demonstrate that the impact of employment growth in health care has the potential to outstrip the impact of producer

services and tourism growth on unemployed or underemployed low-skilled, entry-level workers. We also summarize current knowledge on career ladder initiatives in health care services.

Second, in collaboration with our non-profit sector partner, the New Orleans Regional Planning Commission (NORPC), we propose a coordinated, regional workforce development strategy for the health care sector to be led by a New Orleans Regional Task Force on Health Workforce Training to be housed in the New Orleans Regional Medical Center (NOrMC).¹ The specific goals of this strategy would be to expand the regional health care workforce and to develop and implement career ladder initiatives for low-skilled, entry-level workers in the region's health care industry, beginning with its hospitals and drawing on best practices research from successful career ladder initiatives across economic sectors. Our strategy aligns with workforce development systems reform efforts already underway in the Greater New Orleans region, and with legislation to reform Louisiana's workforce training system recently proposed by Governor Jindal and passed by the state legislature. The strategy also complements NOrMC's regional biosciences workforce development activities.

Third, we propose an amendment to Title I Subtitle D of the Workforce Investment Act (WIA) of 1998, creating a new national program of grants to establish or expand multi-stakeholder industry or sector partnerships. Industry partnerships feature collaborative planning, resource alignment and training efforts across firms to promote both industry competitiveness and workers' opportunity for retention, earnings gains and advancement. Industry partnerships would form under the aegis of employer associations, educational institutions or Workforce Investment Boards, and apply for funding from state-level actors —Governors' executive staffs or state Departments of

¹ The NORPC is an ideal community partner for this project as it provides comprehensive economic development planning for the region; plays a key coordinating role among regional economic and workforce development stakeholders; and is a partner in health and bioscience development in the region. The NORPC also provides interim management to the Greater New Orleans Biosciences Economic Development District (GNOBEDD), a distinct geographic area located in New Orleans' medical district charged with growing health and biosciences investment in the district and region.

Labor and Industry. The funding would come from the national program provided for in the amended WIA legislation. This could direct key resources to strategic workforce development efforts in Greater New Orleans and in other regions across the United States where the health care labor force is in demand and people—and communities—need good jobs.

II. Background: Health Care and Hospitals in the New Orleans Economy

For decades before Hurricane Katrina, the Greater New Orleans region (defined as the seven parishes that make up the New Orleans-Metairie-Kenner Metropolitan Statistical Area) struggled with a stagnant economy and a declining urban core. The city had steadily lost population since 1960. Population decline was accompanied by concentrated poverty and high crime rates. The economic boom of the 1990s largely bypassed the region as employment in most sectors remained flat or declined.

The structure of the regional economy, which was, and remains, highly specialized in three key areas—oil and gas, port related activities and tourism— resulted in a highly polarized economy with few opportunities for advancement into better paying positions for the region’s lowest skilled workers. The limited educational attainment of many of the city’s residents contributed to their precarious employment status and high rates of poverty. In 2004, the city’s unemployment rate was 12 percent, more than double the national rate, while nearly a quarter (23 percent) of city residents were living below the poverty line compared to about 13 percent nationally. Median family incomes in New Orleans were only two thirds the national average (Holzer and Lerman, 2006).

a. The Greater New Orleans health care sector

Health care was one of the New Orleans region’s few growth sectors. In the five-year period just prior to Hurricane Katrina (July 2000-July 2005), the hospital industry added an estimated 2,000 jobs to the regional economy, an increase of 10.6 percent (BLS, 2008). Prior to the storm, the New Orleans region was the premier health care center along the Gulf Coast. The area had the most health care facilities in the state and the greatest concentration of institutions that train the health care labor force as well as the

largest cluster of health care related businesses, research institutions and government agencies (New Orleans Regional Task Force on Economic Development and Health Workforce Training, 2004). New Orleans was also the state's center for health and bioscience research.²

Within the metro region, health care employment, particularly in hospitals, was disproportionately concentrated in the city of New Orleans.³ Before Hurricane Katrina struck in 2005, the city had 9 acute care hospitals, four of which were located in the city's Downtown Medical District—the Medical Center of Louisiana at New Orleans' Charity and University Hospitals, Tulane University Hospital, and the Veterans Affairs Medical Center. In addition to these four teaching hospitals, the district included the LSU Health Sciences Center, the Tulane Medical Center, Xavier University, Delgado Community College, several associated biotech companies and the New Orleans BioInnovation Center (NOBIC), a business incubator created to foster entrepreneurship within the New Orleans bioscience community. While city and regional officials had historically overlooked the importance of health care to the local and regional economy, in the 1990s they began to take notice of the sector as an important area of future growth. The New Orleans Regional Medical Center (NOrMC), which was created to coordinate infrastructure development in the medical district and facilitate collaboration among regional health care and bioscience stakeholders, and NOBIC became the focus of regional efforts to diversify the economy through biosciences- and health care-based development.

As New Orleans' health care sector grew between 1990 and 2005, it faced a critical shortage of health care workers, especially in nursing and allied health occupations.

² In fiscal year 2005, for instance, the New Orleans region accounted for \$129.8 million in awards from the National Institute of Health (NIH), representing 74% of the total amount awarded within the entire state of Louisiana (BNOB, 2005: 11).

³ In 2004, 47.7 percent of regional health care jobs were located in the city compared to roughly 40 percent of total employment. Hospital employment was the most highly concentrated in the urban core. More than half of all hospital jobs in the region were located in New Orleans pre-Katrina (US Bureau of the Census, 2006).

According to a 2004 report by the New Orleans Regional Task Force on Economic Development and Health Workforce Training (NORTF), nearly 70% of the state's vacancies in health care jobs —more than 7,000 positions – occurred in the New Orleans metropolitan region. Recognizing the importance of the health care workforce to the delivery of health care to area residents, as well as the role of skilled employees in developing the region's nascent biosciences cluster, the NORTF recommended a number of measures to alleviate the worker shortage. Among its recommendations were calls for the development of retention and career pathways programs to enhance the skills of the entry-level health care workers. Nevertheless, there was little explicit discussion of connecting the region's unemployed and discouraged workers to careers in health care (NORTF, 2004).

b. Post-Katrina recovery

The floodwaters of Katrina forced the sudden closure of New Orleans' hospitals and displaced thousands of care providers along with roughly half of the city's population. Nearly three years after the storm, four of the city's nine acute care facilities remain shuttered including the New Orleans VA Medical Center and Charity Hospital in downtown New Orleans. Charity served as the primary safety net facility for the under- and uninsured and functioned as a major teaching hospital.

Although a significant number of health care positions were lost in the aftermath of Hurricane Katrina, the sector appears to be rebounding faster than others, and short-term expected job growth is strong. While the number of positions in November 2006 was just 63 percent of what it had been prior to the storm, between 2006 and 2011 the region is projected to gain 9,000 health care jobs, an increase of nearly 25 percent (GNO, Inc, 2007: 69). Jobs in health care occupations requiring two years or less of training are critical to the economic recovery of the Katrina affected area. According to a 2006 study commissioned by the Louisiana Recovery Authority (LRA), the health care sector accounts for the second largest source of demand for such positions, trailing only construction (Brady, 2006). It is also apparent to recovery officials and other regional

leaders that a functioning health care infrastructure is necessary to bring back former residents and employers, and to attract new ones.

Long-term efforts to rebuild the city's health care system, essential in meeting the health care needs of residents and attracting people back to the city, will further increase demand for health care workers. Key among these long-term developments are plans for a \$1.5 billion dollar academic medical complex in downtown New Orleans to be run jointly by Louisiana State University and the U.S. Department of Veterans Affairs.⁴ The complex, which will consist of two hospitals that share common facilities and potentially clinical services, will serve as a physical and intellectual anchor of the Downtown Medical District. While the exact size of the LSU facility remains unsettled, the hospitals are expected to employ a staff of 6,000 full-time equivalents and have an annual economic impact of \$1.2 billion after their scheduled opening in 2012 (GNO, Inc., 2007). Workforce development initiatives, necessary to fill these jobs and overcome health workforce shortages can also address the chronic underemployment and persistent poverty the city currently faces (and that it faced before the storm).

III. Prospects for Poverty Reduction through Hospital Career Ladders

Health care is among the largest sectors of the US economy, accounting for nearly 15 percent of GDP, or approximately \$1.8 trillion dollars (AHA, 2006). Hospitals play a central role in the sector, making substantial contributions to local and regional economies through the purchase of goods and services, the employment of workers and (in the case of research hospitals) contributing to the knowledge-based economy. Given the economic impacts of hospitals, their high visibility in many communities and their relative immobility, local officials throughout the U.S. are trying to reposition their cities and regions as medical hubs (The Economist, 2008). But despite their importance, hospitals have been understudied from an economic development perspective. The lack of attention is due, in part, to the perception of health care as a

⁴ Other projects in the district include a \$90 million Tulane-LSU Cancer Research Center under development and, scheduled to open in 2009, a permanent facility for NOBIC which will include a 66,000 sq. ft. state of the art wet lab incubator.

“non-basic” or locally serving activity that has little impact on driving metropolitan area economic development. Recent economic development literature has reconsidered this stance. Acute care hospitals are a central component of medical campuses which can anchor inner city neighborhoods, provide important training to medical professionals, and play a pivotal role in creating and transferring knowledge and innovation (Adams, 2003; Singh and Allen, 2006) and contributing to the export base of the region (Bartik and Erickcek, 2007; Nelson, *under review*).

Advocates of “job-centered economic development” (see Giloth 1998) emphasize the importance of considering economic sectors not for their growth potential alone but in terms of their capacity to provide low- and semi-skilled workers with viable employment options and with opportunities for advancement (Zandniapour and Conway 2001, Conway 2002, Fitzgerald and Green Leigh 2002, Conway et al. 2007). Evidence suggests that health care services, in particular its hospitals component, may lend itself particularly well to “career-ladder” strategies (Mitnik and Zeidenberg, 2007; Fitzgerald 2006; Wilson and Quimby 2002; Wilson 2006). Additionally, shortages of direct care workers and increasing concern about the quality of the care delivered by frontline health workers create an impetus from within the industry to reduce employee turnover and develop both the productivity of and the returns to human capital at all levels of the health care workforce (Dawson and Surpin 2002; Cheung and Aiken 2006; Fitzgerald 2006; Scala et al. 2008). There is a convergence occurring, as economic development literature uncovers the importance of central city medical facilities to economic growth, workforce development literature stresses the potential of sectoral workforce development strategies in health care, and the literature in health care administration focuses attention on the importance of workforce training and employee satisfaction to quality of care.

a. *Job chains analysis: The employment generation and welfare effects of hospitals in comparison with other urban services sectors*

The paper included as Appendix A contributes to the workforce development stream of the growing literature on health care by using a job chains approach to investigate the

workforce development potential of the hospital sector. We use the job chains method to compare hospitals with three other industry sectors highly concentrated in central cities and considered to be key components of the urban economic base in the post-industrial United States. In comparing the vacancy chains that new jobs set in motion in each of these four industries, we make a set of inferences about the likely impacts of public sector economic development investments in each of the sectors from the perspective of low-income entry-level employees. By inferring the welfare impact of economic development initiatives focused on hospitals, accommodations, and two advanced services subsectors, we gain insights that we hope will be useful to people who are puzzling through the question of how to conduct economic development that benefits unemployed and working poor city-dwellers.

The “job chains” approach to evaluating the impacts of economic development was devised by Persky, Felsenstein and Carlson (2004) and elaborated in their book *Does Trickle Down Work?: Economic Development Strategies and Job Chains in Local Labor Markets* (see also Felsenstein and Persky 1999, 2007). The chain metaphor has been applied in the housing literature to describe the induced effects of the production of new housing units; by vacating an existing housing unit to occupy a new one, a household triggers a “vacancy chain” that continues until it is terminated by a new entrant into the local housing market. In the same way, the generation of a new job in a local labor market – for example, through the siting of a new facility or expansion of an existing one– sets off a chain of job vacancies. With the creation of new jobs, people already in the regional labor force make welfare-improving moves, vacating their positions. These positions are subsequently taken either by others already in the labor force or by new labor market entrants: unemployed individuals, individuals previously not participating in the labor market, or in-migrants. The length of a chain depends on the number of new vacancies triggered by the creation of a new job. In effect, job chains analysis produces multipliers that project the number of job vacancies of certain types that will be created in reaction to a particular type of new job entering the “system.”

Persky et al., using data from the Panel Study of Income Dynamics (PSID), developed a probabilistic method of estimating job chain multipliers for the United States economy. Working with data on reported job changes over a period of five years by respondents to the PSID, they estimated three parameters of job chains. The first was the absolute length of a chain, i.e. the total number of vacancies generated as a result of the creation of one job opening at a given wage level. The second was the character of the vacancies generated – i.e. the wage level of each vacated position on the chain, regardless of the chain’s length. The third was the probability that an induced vacancy would be filled by an individual from a lower wage group, from the ranks of the unemployed, or through in-migration.⁵ The model provides practitioners with a tool to estimate, for any given economic development project, “not only who gets the newly created jobs but also who moves up to better positions through jobs chains generated by these new jobs” (Felsenstein and Persky, 2007:31).

The main aim of Persky et al.’s chain estimation exercise is to devise a method for overcoming the shortcomings of traditional economic development impact measurement.⁶ However, their analysis leads them to some general conclusions about both the efficiency and the distributional consequences of the job chains initiated by different types of economic development projects. First, they conclude, chains starting with high-skilled jobs are longer than chains initiated with mid- and low-skilled job openings, generating more total vacancies. However, they are less efficient, in that the total welfare gain, being concentrated among workers in higher wage groups and

⁵ A limitation of our analysis consists in the fact that Persky et al.’s sample of “job events” – defined as taking a position with a new employer or changing positions within their current employer – comes from the PSID for the years 1987-1992. To the extent that any of the structural parameters of vacancy chains have changed since that time, we are not able to capture this.

⁶ The authors argued that conventional impact analysis both overestimates and underestimates the welfare effects of subsidized job creation. It overestimates impact by equating welfare gain from the direct jobs created with the total earnings of the workers taking those jobs, where this is properly measured using opportunity costs – that is, the incremental difference between workers’ new earnings and what they earned in their previous jobs. At the same time, conventional impact measurement underestimates impact by failing to account for welfare improvements along the vacancy chains that unfold as new jobs become available and workers move into them, making their jobs available to other job movers or new labor market entrants. While most economic development impact studies take into account only the effects of jobs directly created by a stimulus, the job chains approach enables policy makers to measure the welfare gains by workers all along the chain of vacancies opened up when each new job is created.

among workers who are already employed, is lower than for shorter chains (2004: 92-94). Persky et al. come to this conclusion by estimating job changers' welfare gain in terms of opportunity costs – the difference between their wages in their previous positions and their wages in their new positions, or in the case of unemployed workers, the difference between reservation wages and earnings in new positions.⁷ Thus, in a hypothetical example comparing an instruments plant and a consulting firm, the welfare gain per dollar of economic development subsidy is greater for the instruments plant, because the instruments plant creates mid-level job positions that are likely to be filled by unemployed and underemployed people from the surrounding region. The consulting firm, in contrast, generates longer job chains, but these chains are more likely to be truncated by in-migrants to the region; furthermore, the consulting firm creates predominantly high-wage positions filled by people whose opportunity costs are relatively low (2004: 95-101). Another of Persky et al.'s general conclusions relevant to our research pertains to welfare gains resulting from between-firm moves. Comparing internal (within-firm moves) versus external (between-firm moves) job chains, they found between-firm moves to be particularly important for improving the situation of workers at the lowest rungs of the job ladder (2004: 115-117).

Our analysis is elaborated in Appendix A. Applying the basic origin-destination matrix and disaggregated multiplier matrix estimated by Persky et al., we estimate the total number of job vacancies in a local economy that would be created through the stimuli of 100 new jobs in four industries. Each of the industries in the analysis has a significant presence in central cities. They are hospitals (see section II), accommodations (an integral component of the tourist sector), and legal services and securities and commodities (two types of “advanced business services” or “producer services”). In addition to estimating total vacancies generated, we also predict the likelihood that each of these induced vacancies will be filled by discouraged and unemployed residents of

⁷ Persky et al. differentiate reservation wages for unemployed workers hired into the five wage groups (see 2004, 86-91).

the area, by in-migrants or by individuals “moving up” from less highly remunerated positions.

As Tables 1 & 2 show, an economic development investment that creates 100 new jobs in the four industries has differing implications for the total number of vacancies generated and for the origin characteristics of the workers who occupy those positions. In the hospital industry 100 new jobs results in 282 total vacancies compared to 182 vacancies in accommodations, 289 vacancies in legal services and 316 vacancies in securities and commodities (Table 1). As one would expect, the distribution of vacancies among wage groups closely mirrors the overall distribution of jobs in each industry. Job chains are longest in securities and commodities and shortest in accommodations.

TABLE 1 ABOUT HERE

The relatively short job chains in the accommodations industry are due to the large share of vacancies filled by the unemployed (21.01) and individuals out of the labor force (24.25) (Table 2). Of the four study industries, vacancies created in accommodations have the greatest immediate impact on a region’s unemployed and discouraged workers. However income gains are limited as most of the vacancies in the industry are in the lowest paid positions. Few people move directly from unemployment or out of the labor force into group 4 or higher wage vacancies and opportunities for advancement into better paying jobs within the industry are limited. Workers previously employed in a lower wage group fill less than 5 percent of total job openings in the industry. The mobility rate declines as wages increase indicating that among the limited opportunities for advancement, most are confined to positions on the lower-rungs of the wage ladder.

TABLE 2 ABOUT HERE

While job chains in securities and commodities and legal services have longer expected lengths than those in hospitals, hospital vacancies have a greater impact on

unemployed and discouraged workers. Unemployed workers and individuals out of the labor force fill nearly one in five job vacancies (19.1%) within hospitals compared to 15.77% in legal services and 11.51% in securities and commodities. In “chainwise” terms, it is more likely in a hospital than in a legal services or securities and commodities firm that a job chain will be terminated by an unemployed or discouraged worker, as opposed to an in-migrant.

The overall opportunities for mobility are greater in securities and commodities and legal services than in hospitals. More than a quarter (25.32 percent) of vacancies in securities and commodities are occupied by workers who had previously been employed in a lower wage group, compared to 22.93 percent in legal services and 18.78 percent in hospitals. An examination of the data by wage group, however, suggests that low- and moderately-skilled workers in hospitals have a better opportunity of moving into higher paying positions within the industry than similarly educated workers in securities and commodities and legal services. Most of the mobility in securities and commodities is confined to job moves into the highest wage groups with far fewer opportunities for advancement as wage rates decrease. The extensive education, training and experience requirements of jobs in groups 1 and 2, which include securities, commodities and financial services sales agents and financial analysts, put these jobs well beyond the reach of most low-wage workers.

In comparison, opportunities for advancement within the hospital industry are concentrated in mid-level positions in wage groups 2, 3 and 4. Although most group four occupations, such as registered nurses, require a bachelors or associates degree, a significant portion of jobs in the industry are available to individuals with less training or education and the employment structure of the industry lends itself well to career ladder strategies aimed at increasing mobility between wage categories 2 and 3 and 3 and 4 (see section VI below). The mobility rates in legal services also suggest the potential for low- and moderately-skilled workers to advance into mid-level positions with nearly 10 percent of total new jobs filled by workers who moved into wage group 3 from a lower group. The opportunity for mobility beyond this point, however, is extremely

limited given the relatively small share of legal services vacancies in wage group 4 and the requirement of an advanced degree, generally in law, for most level 5 positions.

Although high-wage jobs create longer job chains and thus generate more vacancies than lower-wage jobs, the trickle down effect on low-wage workers, the unemployed and discouraged workers is limited. Relatively small shares of vacancies in securities and commodities and legal services are filled by the region's unemployed and out of the labor force workers and vacancies and opportunities for upward mobility, particularly in securities and commodities, are highly concentrated in high-wage occupations beyond the reach of low- and moderately-skilled workers.

The creation of jobs in accommodations has by far the largest direct impact of all the study industries on low-wage workers, the unemployed and out of the labor force workers. However, the employment structure of the accommodations industry is heavily skewed toward low-wage occupations suggesting limited chances for advancement. Of the industries examined here, therefore, hospitals appear to have the greatest potential to provide advancement opportunities for disadvantaged workers. Job generation in hospitals creates the largest share of mid-level jobs, hospital vacancies are more likely to be filled by unemployed or discouraged workers than vacancies in securities and commodities and legal services, and the employment structure of hospitals lends itself well to career ladder strategies. This conclusion is supported by Mitnik and Zeidenberg (2007), who find, using Current Population Survey data, that those without college educations have higher upward mobility rates in hospitals than in other service industries.

b. Creating successful hospital-centered career initiatives

Our finding that job chains in hospitals are more efficient than job chains in hotels, legal services and securities and commodities at generating welfare gains for low-income groups, together with the finding that the structure of employment in hospitals is conducive to career ladder strategies, should prompt economic development practitioners to take the sector more seriously as a locus for attention and investment.

But to identify an industry as fertile from a career ladders perspective approach is only a first step. To maximize welfare gain and distributional equity, economic development policy makers must accompany investments in health care-based economic development both with strategies to promote skills attainment and credentialing among low-paid health care workers and with formal strategies to facilitate upward movement. An ample literature on workforce development in health care suggests that this is not a simple task.

A general labor market intermediation model proposed by Giloth (2004) and Kazis (2004) suggests that workforce development institutions must meet several criteria in order to improve the earnings prospects of less skilled job-seekers. They must pursue a “dual-customer” approach, responding both to employers in need of reliable, productive workers and lower turnover costs and to low-income individuals seeking to earn higher wages. Rather than simply matching workers to jobs, they must focus on improving the employability of workers (often through training and credentialization) and the quality of jobs (by exerting influence on employers to think differently about their hiring and internal advancement practices). They must also combine funding streams, often supplementing federal workforce grants with state and federal economic development promotion dollars and private foundation resources.

Scholars and practitioners focused on health care labor markets have adapted, expanded upon, and contributed to policy knowledge on labor market intermediation (Fitzgerald 2006; Hutson 2006; Wilson 2006; Klein-Collins and Starr 2007). As noted above, while long-term care facilities and home health care agencies employ large numbers of entry-level, low-skilled workers, most are difficult environments in which to structure upward mobility opportunities because of low pay and a scarcity of mid-level positions.⁸ Hospitals, as we have seen, employ low- and moderately-skilled workers along a graduated wage spectrum.

⁸ Fitzgerald highlights innovative efforts to improve the working conditions and earnings of paraprofessionals employed in long-term care and home health care. An increasing number of home care workers are represented by unions, for example, and some nursing homes and home care agencies have

At the first rung on the ladder are “environmental services” and basic customer service workers who clean rooms, transport equipment and patients, and serve meals. One rung above these workers are entry-level technicians, administrative assistants and paraprofessional workers such as nursing assistants who are involved in the direct care of patients. Workers who wish to advance beyond these positions typically require specialized certification or associates degrees; these positions include (in the technical field) lab technician, radiologic technologist, surgical technician and (in the patient care field) medical assistant, practical nurse and registered nurse.⁹ In a number of cases, hospitals and educational institutions, labor unions, and/or community based groups have formed partnerships or consortia to help employees advance along these vectors. In many cases, they correspond with Giloth’s and Kazis’ definition of workforce intermediaries, with the dual goal of promoting opportunities for entry-level workers and addressing hospitals’ need to reduce turnover, promote loyalty and worker retention, and fill mid-level positions for which shortages exist (Wilson 2006).

In the late 1990s and early 2000s, several “first-generation” hospital career ladder programs succeeded in engaging commitment from employers, the energy of community organizations and educational institutions, and pilot funding from government and philanthropic sources.¹⁰ The programs typically featured two types of occupational training: one aimed at unemployed and out-of-the-labor-force individuals who sought positions on the first rung of the ladder, the other aimed at first-level incumbent workers (orderlies, patient transporters, housekeepers) who wished to

created pay and skill tiers within occupational categories to reduce turnover and boost quality of care (2006: 31-38). See also Paraprofessional Healthcare Institute at phinational.org.

⁹ While the hospital career ladder at one time included the intermediate title of licensed practical nurse (LPN) between nursing assistant and registered nurse, hospitals have phased out the LPN position in recent years, choosing to increase the ranks of registered nurses and give them greater supervisory responsibility over direct care nursing assistants. LPNs continue to be in demand in long-term care settings.

¹⁰ Programs surveyed for this summary review include the Boston Healthcare and Research Training Institute, Partners in Career and Workforce Development (Boston), and the Harris County Hospital District Career Lattice Initiative (Houston area) (Council on Adult and Experiential Learning 2004, FutureWorks 2004, Hutson 2006).

advance to mid-level technical and patient care occupations. Participants in both types of training had access to career counseling and coaching, and their supervisors were brought into the process through training designed to help them become better mentors to their employees. The logic was that the two tracks would operate synergistically; as first-level workers were promoted into mid-level positions, they would generate vacancies that could be filled by workers just entering the hospital labor force. In the single rigorous longitudinal evaluation that could be found of a hospital career ladder program, both groups of workers (new entry-level employees and incumbents) had high retention rates and experienced significant earnings increases. However, the program encountered greater difficulty than expected in promoting career mobility, with only 10% of each group ascending the career ladders defined by program sponsors (Hutson 2006). Vacancies, especially at the first level, were more likely to be created by “churning” and turnover than by upward movement within the hospital job hierarchy. While workforce development organizations succeeded in helping unemployed and underemployed individuals gain access to job openings, they had a more difficult time helping them gain access to the vacancies created by job chains initiated further up the wage hierarchy.

A second generation of hospital programs is aiming to address major issues encountered in the early initiatives. It is clear, for example, that workers on low rungs in the hospital sector have persistent deficits in basic skills, a problem that intensifies as hospitals increase their use of technology to manage information and control costs without sacrificing quality of care (Hutson 2006). First-generation hospital programs were often not able to overcome these deficits through classroom training alone. The Baltimore Alliance for Careers in Healthcare, a second-generation program that is part of a national “Jobs to Careers” initiative funded by the Robert Wood Johnson and Hitachi Foundations, has incorporated work-based learning modules that are sequenced with classroom training. Rather than assuming that former environmental services workers will automatically thrive in higher-paid nursing assistant positions after a few months in the classroom, the program provides them with structured on-the-job instruction and mentoring. The Baltimore program also offers nursing assistants an

opportunity (after additional classroom instruction and more work-based learning) to enter the newly defined position of “nurse extender,” which provides a second increase in wages¹¹ (Klein-Collins and Starr 2007). This transition from nursing assistant to nurse extender replaces a bridge between entry-level and more advanced patient care that has been threatened by the elimination of the licensed practical nurse position from the hospital career ladder. Other programs in the “Jobs to Careers” initiative focus on career paths in medical informatics and technology in hospital settings.

It appears that in the hospital sector, a significant frontier is crossed when a worker is able to go from a level 5 job (defined in Persky et al.’s typology as a job with earnings between \$6.28 and \$9.90 per hour) to a job at level 4 or level 3.¹² Second generation hospital programs are busy providing training and supports to workers that enable this transition. Workforce intermediaries also work with employers to define and clarify job classifications, to educate their employees about opportunities to increase their earnings (for example, by earning credentials that enable them to move from direct care to technician work) and to make sure that increases in skill attainment are accompanied by great enough increases in compensation to motivate workers to acquire new skills.

Less-than-outstanding results in hospital career ladder programs to date are perhaps not surprising, given Persky et al.’s finding that within-firm moves are less likely than between-firm moves to improve the lot of people at the lowest level of the wage hierarchy (2004: 115-117). Hospital career ladder programs have traditionally aimed to improve low-level employees’ opportunities with their current employers as opposed to helping them move among employers in an industry or to employers in related

¹¹ Nurse extenders are “advanced nursing assistants,” trained to support registered nurses by performing tasks such as IV starts, EKGs and oxygen therapy (Klein-Collins and Starr 2007).

¹² The level 3 or 4 to level 2 transition is also significant, and typically requires community college-level certification or the attainment of an associates degree. Fitzgerald (2006) documents the bridge from practical to registered nursing, and several “Jobs to Careers” demonstration sites are also concentrated on this type of job move.

industries.¹³ Urban “biomedical complexes,” planned developments in which university teaching hospitals co-locate with life sciences research facilities, physicians’ offices, specialty medical facilities and even long-term residential care facilities, present an opportunity to map career pathways that span employers.¹⁴ However, to accurately characterize likely multi-employer pathways, and to secure the cooperation and participation of employers in workforce development efforts, will require particularly agile and intelligent workforce intermediation efforts.

IV. An economic and workforce development strategy for the health care sector in New Orleans

In New Orleans, area officials have begun to recognize the need and potential of targeted workforce development initiatives to address the critical shortage of health care workers in the region while simultaneously providing employment opportunities to low- and moderately-skilled workers. Two regional agencies, Greater New Orleans (GNO), Inc. and the Louisiana Public Health Institute, have even begun collaborating with area employers and education providers in the implementation of health care career ladder strategies as part of a state-initiated recovery workforce training program. In addition to the challenges facing hospital workforce strategies discussed above, these efforts have been stymied by the by a shortage of instructors for the training of nurses and allied health care professionals, and in some instances, a lack of buy-in from area hospitals recovering from the impacts of Katrina. With the continued closure of Charity Hospital, the major provider of health care for much of the region’s large un- or under-insured population before the storm, operating hospitals have had to increase the share of uncompensated care they provide. Preoccupied with achieving short-term financial stability, many hospital administrators have not prioritized workforce development initiatives, particularly those that do not center on registered nurses. The fragmented

¹³ Fitzgerald and Hutson both highlight the organizational dilemmas created by supervisor reluctance to ‘let go of’ the talented employees most likely to qualify for promotion. This problem is intensified even further with an employee’s prospective move to a different employer, perhaps a direct competitor.

¹⁴ A cursory scan of recent biomedical campus development reveals life sciences research facilities co-locating or preparing to co-locate with acute care and ambulatory care facilities in Aurora, CO, Baltimore, MD, New Orleans, LA and Philadelphia, PA.

and uncoordinated nature of state and regional workforce development efforts further hinder the development of comprehensive hospital career ladder strategies.

Recognizing the importance of an educated and qualified workforce to the economic recovery and future growth of the New Orleans region, GNO, Inc. released a regional workforce development redesign strategy in 2007. One overarching goal identified in the *Greater New Orleans Workforce Transformation Strategy* was the establishment of a regional intermediary to implement an integrated workforce system. Efforts to establish a regional intermediary are underway with the recent convening of South East Louisiana Regional Alliance (SELRA), a collaborative among the Workforce Investment Boards of the seven parishes that make up the Greater New Orleans region.

A second key contribution of the 2007 report was the identification and characterization of the region's top industry sectors, the largest of which are hospitality and tourism, health care, and building and construction. Area economic development leaders believe that the optimal way forward for the new regional workforce intermediary is to embrace a sectoral approach and move ahead as soon as possible on initiatives tailored to the specific needs of industries that have current demand-supply gaps and that are projected to experience strong additional labor demand in the next decade. Given its importance to the recovery of the region, its potential for future job growth and the worker shortages currently facing the sector, health care is understood to be one of the industries in which this approach is most urgently needed.

Coincident with the development of a Greater New Orleans workforce transformation strategy, the state recently adopted legislation to reform Louisiana's workforce training efforts (LA HB 1104). The comprehensive workforce redesign seeks to integrate workforce development programs from across state agencies into a single, demand-driven system, to strengthen the role of community and technical colleges in workforce development, to target funding for worker training in high-demand sectors and to promote the development of career pathways. To support redesign efforts, Governor Jindal has dedicated \$4.5 million to cultivate alternative career pathways through the

support of vocational education and training in high schools and established an annual \$10 million dollar rapid response fund in his executive budget for worker training aimed at meeting priority workforce needs. These training resources supplement a recent \$250 million commitment from the state to expand Louisiana Community and Technical College System (LCTCS) facilities.

a. *Implementation strategy: Addressing the health care worker shortage in New Orleans and enhancing opportunity for entry-level workers*

To address the critical shortage of health care workers in the New Orleans region while simultaneously providing jobs for low- and moderately-skilled workers with opportunities for advancement, we propose a coordinated, regional workforce development strategy for the health care sector to be led by a New Orleans Regional Task Force on Health Workforce Training to be housed in the New Orleans Regional Medical Center (NOOrMC). The specific goals of this strategy are to:

- Expand the regional health care workforce
- Develop and implement successful career ladder initiatives for low-skilled entry-level workers in the region's health care industry, beginning with its hospitals

This strategy aligns with regional health care career ladder programs, the Greater New Orleans workforce transformation strategy and legislation to reform Louisiana's workforce training efforts discussed above. The strategy also complements NOOrMC's current workforce development activities.

As a collaborative of regional health care and bioresearch institutions, NOOrMC is uniquely positioned to convene and oversee the New Orleans Regional Task Force on Health Workforce Training. NOOrMC has an established record of coordinating health care and bioresearch efforts in the region and recognizes the importance of workforce development to the overall development and growth of the health care and bioscience sectors. The task force will include representatives from Delgado Community College, LSU Health Sciences Center, Xavier University, Tulane University Medical Center, the

Louisiana Technical and Community College System, the New Orleans Metropolitan Hospital Council, Medical Center of Louisiana at New Orleans, GNO Inc., Greater New Orleans Biosciences Economic Development District (GNOBEDD), the Louisiana Public Health Institute, and area Workforce Investment Boards.

b. Implementation plan: Actors, resources, timeline

Goal 1: Increase the regional supply of trained nurses and allied health professionals

- Identify the health care sector's skill and human resource requirements

Working with area Workforce Investment Boards through the newly formed SELRA, and drawing on health care sector studies currently underway, the New Orleans Regional Task Force on Health Workforce Training will analyze sector needs and supply data to identify high priority health care occupations, working closely with the Occupational Forecasting Conference in the Louisiana Workforce Commission. Data collection and analysis will begin in fall 2009.

- Expand capacity of existing training institutions through the recruitment of nursing and allied health instructors

The New Orleans region has a well-developed network of community and technical colleges and medical institutions that provide high quality health care workforce training. However, the region suffers from a severe shortage of nursing and allied health instructors and trainers necessary to expand its training capacity. The task force will hire an individual to manage a recruitment drive for nursing and allied health instructors who can be placed at the region's community and technical colleges. The task force will hire the recruitment manager in fall 2009. It is expected that Louisiana's new rapid response fund for worker training will cover recruitment expenses.

- Generate interest among high school students in health care careers.

To stimulate interest in health care careers among high school students, the New Orleans Regional Task Force on Health Workforce Training will work to encourage the development of health care program offerings in area high schools. High school programs can raise awareness of career paths in patient care, medical informatics and the allied health fields as they link the acquisition of basic skills in math, science and English with the attainment of industry-specific skills. The task force will hire a coordinator to build the collaborative partnerships among high schools, higher education institutions and employers to develop foundational curricula for students interested in pursuing short-term certifications or 2- and 4-year degrees in nursing, allied health or hospital-specific clerical work. The task force will hire the coordinator in fall 2009. The health care programs will begin in fall 2010. It is expected that the \$4.5 million fund to cultivate alternative career pathways will cover these expenses.

Goal 2: Develop and implement successful career ladder initiatives for low-skilled entry-level workers in the region's health care industry, beginning with its hospitals

While investments in the training of nurses and allied health workers will bring immediate improvement to the economic vitality of the region's health care sector, NOOrMC and its partners will also draw on the insights of job chains analysis to prioritize efforts to help less skilled un- and underemployed New Orleanians launch health careers. In this project, they are advantaged by a growing best practices literature documenting and critiquing prior health care career ladder initiatives and recommending ways of improving upon their results. Parallel with its efforts to expand the pool of skilled patient care workers, NOOrMC will initiate a multi-stakeholder industry partnership whose primary objectives are to:

- Focus the attention of hospital and nursing home administrators on the importance of the frontline patient care workforce (certified nurse assistants, patient care assistants, home health aides), as well as frontline clerical and administrative staff, to quality of care, productivity of health care facilities, and health outcomes

- Recruit employees into “first-rung” positions and inform them about the opportunities further up the career ladder, both within their employers and with other employers in the health care/life sciences
- Help hospitals and nursing facilities design and pilot “advanced nursing assistant” or “nurse extender” positions that bridge the gap between entry-level and higher-skilled patient care positions and offer a way for workers on low rungs to link improved skills with enhanced compensation relatively quickly. These positions would also need to be vetted with nursing accreditation boards.
- Organize community and technical colleges to provide training and mentoring for individuals, with some of it likely to be workplace-based
- Commission research that explores skills complementarities between entry-level positions in hospitals and residential care facilities and entry and mid-level positions in research labs and biotechnology companies, with an eye to building multi-employer career ladders over time.

These efforts will require a second full-time program coordinator, who will be housed at NORMC and report to the taskforce. The coordinator will be hired in fall 2009. It is anticipated that resources for the position will be available from the state fund for the cultivation of career pathways and the national program provided for in the amended WIA legislation (see section V).

The annual budget for the proposed health care workforce initiative amounts to approximately \$275,000. This includes office space plus two and one half full-time equivalent positions: a half-time instructor recruitment manager, a full-time high school career program coordinator and a fulltime coordinator of the career ladder initiative for entry-level workers. The New Orleans Bioscience Industry Collaborative (NOBIC) will provide office space and support as an in-kind contribution; salaries and benefits can

reasonably be expected to be covered in substantial part by the new state funding sources created by LA HB 1104 (see below).

V. National Legislative Strategy

Our national legislative strategy aligns with significant workforce policy reform legislation recently passed by the State of Louisiana. In embracing a strong role for state government in focusing resources on sectoral partnerships and career ladders in industries characterized by demand-supply gaps, Louisiana joins a growing list of states that are investing their own state dollars—or using a small allowed portion of formula dollars under the federal Workforce Investment Act—to undertake innovative sector-specific programs (others include Arkansas, Pennsylvania, Massachusetts, Michigan, and Washington). Despite progress in some states, however, the federal workforce development system currently features no designated investments for sectoral partnerships, nor does it outline performance criteria for evaluating their success (see Workforce Alliance 2007). This National Urban Policy Initiatives proposal advocates an amendment to the Workforce Investment Act (WIA), that would make sectoral partnerships a standard part of state workforce development systems.

The Workforce Investment Act, in effect since 1998, provides federal funds to states and localities for several purposes: maintaining labor market information, matching workers to employers through labor exchange, and providing training, for both new and incumbent workers, that raises living standards and meets the economy's changing needs.¹⁵ WIA specifies an administrative infrastructure that features One-Stop Career and Business Solutions Centers – labor exchange hubs typically operated by city and county governments – and local Workforce Investment Boards (WIBs) whose members (drawn from industry, educational institutions, labor, community organizations and government) set policy and priorities for the expenditure of workforce development funding. State Departments of Labor and Industry also play a role in the allocation of funding under WIA.

¹⁵ Prior to WIA, these were fragmented among distinct and uncoordinated delivery systems housed in the U.S. Departments of Labor, Education, Health and Human Services, Veterans' Affairs and others.

Sectoral partnerships showed both promise and success throughout the 1990s, and the U.S. Department of Labor under both the Clinton and Bush Administrations sponsored grant programs that supported them. As noted above, innovative states have also used federal WIA dollars to jump-start their own sector-based programs. These programs, however, have never been formally linked to WIA, the workforce system legislated and evaluated by Congress.

We propose that Congress, as it completes a long-overdue reauthorization of the Workforce Investment Act, amend Title I Subtitle D of the legislation to create a new national program of grants to establish or expand multi-stakeholder industry or sector partnerships. As noted above, such partnerships feature collaborative planning, resource alignment and training efforts across firms to promote both industry competitiveness and workers' opportunity for retention, earnings gains and advancement. Industry partnerships would form under the aegis of employer associations, educational institutions or Workforce Investment Boards, and apply for funding from state-level actors —Governors' executive staffs or state Departments of Labor and Industry. The lead organization in the partnership would recruit and convene stakeholders in the target cluster, identify skill gaps and training demand among the employers and workers in the cluster, and facilitate the alignment of educational institutions' curricula and programs to meet that demand.

In Louisiana, and specifically in Greater New Orleans, the creation of a federal funding stream for sectoral partnerships would come at an auspicious time. Governor Jindal has signaled a desire to make the state's workforce system more aggressive in addressing supply-demand gaps in key occupations, a number of which are health care occupations. Plans for the downtown medical complex, and for other regional medical facility enhancements, are well underway, but not so far along that it would be difficult to incorporate a workforce strategy into the planning process. Federal funding dedicated to a targeted health care workforce strategy in Greater New Orleans could make the difference between a situation in which the supply-demand gap in health care had to be

addressed through the importation of workers and a situation in which at least some workers could be “grown in place.” It could do the same in other localities across the United States where the health care labor force is in demand and people need good jobs.

a. *Evaluation of the Legislation*

Sectoral partnerships have the potential to accomplish outcomes that activities currently funded under standard WIA allocations do not. For example, they can help employers and training providers evolve common skill standards for key occupations in an industry. They can develop industry-certified curricula used by training providers in preparing workers for those occupations. In health care, their major impact may be to create and improve infrastructure for multi-employer “career pathways” whereby workers can advance along an occupational trajectory toward “living wage” jobs, even if there are no promotion opportunities with their current employer.

Benchmarks for evaluating the proposed amendment to Title I subtitle D should therefore include:

- the number of workers receiving industry-recognized credentials
- the number and percentage of workers with increased wages, the percentage of workers with increased wages, and the average wage increase;
- for non-incumbent workers the number of workers placed in sector-related jobs
- the creation (or updating) of an industry-wide plan to meet current and future workforce demand;
- the creation (or updating) of published industry-wide skill standards or career pathways;

- the exposure of potential entrants into occupations in an industry sector or cluster to information and counseling about alternative career pathways in the industry.

b. Text of legislation and funding source

Draft text for this amendment to Title 1 Subtitle D of WIA is currently being developed by the Workforce Alliance, a Washington, D.C.- based coalition whose members include community-based organizations, community colleges, unions, business leaders and local officials advocating for public policies that invest in the skills of America's workers. The Alliance has identified, as a proposed funding source for the new program, “that part of H-1B Visa fees (collected from employers importing skilled foreign workers) made available to USDOL to support workforce development efforts” (Workforce Alliance 2007: 1).

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Table 1
Total Vacancies by Wage Group and Industry

Number/share	Wage Groups					Sum
	1	2	3	4	5	
Hospitals						
Total Vacancies	11.0	127.5	60.3	76.2	7.3	282.3
Total Vacancies (%)	3.9	45.2	21.4	27.0	2.6	100.0
Accommodations						
Total Vacancies	0.5	5.9	23.0	49.3	103.6	182.3
Total Vacancies (%)	0.3	3.2	12.6	27.0	56.8	100.0
Legal Services						
Total Vacancies	113.1	13.2	124.8	35.9	2.2	289.1
Total Vacancies (%)	39.1	4.6	43.2	12.4	0.8	100.0
Securities & Commodities						
Total Vacancies	150.5	85.6	54.7	24.6	0.2	315.6
Total Vacancies (%)	47.7	27.1	17.3	7.8	0.1	100.0

Calculated by authors with data from Persky et al. (2004): Table 5.1 (p. 82) and Table 5.2 (p. 85).

Table 2
Share of Total New Jobs Filled by Previous Employment Status

Share of New Jobs Filled by	Wage Groups					Sum
	1	2	3	4	5	
Hospitals						
Unemployed	0.09	1.39	2.14	5.26	1.18	10.06
Out of labor force	0.13	1.39	1.66	4.49	1.46	9.12
In-migrant	0.64	5.70	3.40	3.33	0.49	13.55
Workers from a lower wage group	1.01	8.73	4.61	4.42	--	18.78
Accomodations						
Unemployed	0.00	0.06	0.82	3.40	16.72	21.01
Out of labor force	0.01	0.06	0.63	2.91	20.65	24.25
In-migrant	0.03	0.26	1.30	2.15	6.90	10.65
Workers from a lower wage group	0.05	0.40	1.76	2.86	--	5.07
Legal Services						
Unemployed	0.94	0.14	4.43	2.48	0.35	8.35
Out of labor force	1.30	0.14	3.43	2.12	0.44	7.42
In-migrant	6.53	0.59	7.04	1.57	0.15	15.87
Workers from a lower wage group	10.40	0.90	9.55	2.08	--	22.93
Securities & Commodities						
Unemployed	1.25	0.93	1.94	1.69	0.03	5.86
Out of labor force	1.73	0.93	1.50	1.45	0.04	5.65
In-migrant	8.70	3.82	3.08	1.07	0.01	16.69
Workers from a lower wage group	13.84	5.86	4.19	1.43	--	25.32

Calculated by authors with data from Persky et al. (2004): Table 5.1 (p. 82) and Table 5.2 (p. 85).



Department of Planning and Urban Studies

July 3, 2008

To Whom It May Concern:

This letter verifies that letter of commitment for the “Job Chains and Career Ladders in the Health Care Sector: Prospects for Poverty Reduction through Workforce Development in New Orleans” proposal remains valid. Please note that we have slightly modified the title of the proposal.

Sincerely,

Marla Nelson, Ph.D.
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**Job Chains and Career Ladders in Health Care:
An Economic and Workforce Development Strategy
For Greater New Orleans**

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- 1996-2002 SENIOR RESEARCH ASSOCIATE, Rutgers Regional Report, Rutgers University. Collected and analyzed data on employment, office market, housing and demographic trends in the New York metropolitan region for quarterly publication and a variety of issue papers.
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Laska, S., M. Gremillion, and M. Nelson. 2007. "Planning District 6 Resident and Neighborhood Recovery Survey." University of New Orleans, Center for Hazards Assessment Response and Technology. April.

Laska, S., M. Nelson, M. Gremillion and A. Hernandez. 2006. "Planning District 5 Resident and Neighborhood Recovery Survey." University of New Orleans, Center for Hazards Assessment Response and Technology. September.

Hughes, J., Wells, J. and M. Nelson. 2000. "Union county baseline report for the new millennium." *Report prepared for the Union County Alliance.*

Servon, L., and M. Nelson. 1999. "Creating an information democracy: The role of community technology programs and their relationship to public policy." *Report submitted to the Aspen Institute Nonprofit Sector Research Fund.*

Non-refereed proceedings

Nelson, M. 1999. "Casino gambling in Atlantic City: A sure bet for whom?" *Proceedings of the 1999 APA National Planning Conference.* April. Seattle.

GRANTS AND CONTRACTS

Grants and Contracts Received

2007 Co-Principal Investigator (with Jane Brooks), Local Partner, Rockefeller Foundation
Redevelopment Fellowship Program, (\$40,000) Rockefeller Foundation.

2004 Co-Principal Investigator (with David Gladstone), Health Services and Economic
Development in U.S. Metropolitan Areas, Research Competitiveness Program,
(\$105,753) Louisiana Board of Regents Support Fund.

2001 Co-Principal Investigator (with Susan Fainstein), Doctoral Dissertation
Improvement Grant, (\$10,000) National Science Foundation.

2001 Principal Investigator, Dissertation Fellowship, (\$5,000) Lincoln Institute of Land Policy.

2000 Principal Investigator, Doctoral Dissertation Research Grant, (\$15,000) U.S. Department of Housing and Urban Development.

Grants and Contracts Applied For

2007 Co-Principal Investigator (with Renia Ehrenfeucht). From Planned Shrinkage to Clustering: The Effects of and Opportunities for Participatory Decision Making in New Orleans Redevelopment Policy. (\$55,493.50) RAND Gulf States Policy Institute. (Passed initial screening stage).

2003 Co-Principal Investigator (with David Gladstone), Research on the Socio-Economic Change in Cities: Are Health Services the Cure for What's Ailing America's Central Cities? (\$40,000) U.S. Department of Housing and Urban Development.

2003 Co-Principal Investigator (with Alan Artibise), Regional Cluster Analysis, (\$189,030), Office of Business Development, Louisiana Department of Economic Development.

2003 Co-Principal Investigator (with Alan Artibise), Making Smart Growth Work: Streamlining Development and Regulatory Reform, (\$198,031), United States Environmental Protection Agency.

SELECT CONFERENCE PRESENTATIONS

“Reviving New Orleans’ Health Care System: The Intersection of Service Delivery, Economic Development & Downtown Revitalization” (with Robert Habans). Presented at the Annual Meeting of the Urban Affairs Association, Seattle, WA, April 2007.

“Planning in the aftermath of Katrina: The role of community-university planning initiatives in New Orleans.” Presented at the Annual Meeting of the American Collegiate Schools of Planning, Arlington, TX October 2006.

“Equity in a divided city: Evaluating Louisiana’s Housing Recovery Programs” (with Renia Ehrenfeucht). Presented at Race, Place and the Environment After Katrina conference, Dillard University and Deep South Center for Environmental Justice, New Orleans, LA October 2006.

“Assessing interregional trade in health services: The hospital sector in New Orleans & Pittsburgh.” Presented at the Annual Meetings of the American Collegiate Schools of Planning, Kansas City, MO October 2005.

“Reinterpreting producer service suburbanization: The public accounting industry in Chicago and Minneapolis-St. Paul.” Presented at the Annual Meetings of the Urban Affairs Association, Salt Lake City, UT, April 2005.

“Searching for the missing middle of central city employment: A comparison of health services, producer services, and tourism.” (with David Gladstone). Presented at the Annual Conference of the American Collegiate Schools of Planning, Portland, OR, October 2004.

“A cure for what’s ailing central cities? Examining the importance of health services.” (with David Gladstone). Presented at the Annual Meetings of the Urban Affairs Association, Washington, D.C., March 2004.

“Rethinking agglomeration economies and the role of the central city: The public accounting industry in Chicago and Minneapolis-St. Paul.” Presented at the International Sociological Association, Research Committee on Urban and Regional Development, Milan, Italy, September 2003.

“Producer services, agglomeration economies and intra-metropolitan location: The public accounting industry in the Chicago and Minneapolis-St. Paul regions.” Presented at the Annual Meetings of the Urban Affairs Association, Cleveland, OH, March 2003.

OTHER SCHOLARLY AND PROFESSIONAL ACTIVITIES

Service in Role of Officer of Professional Organization

- 2007- Steering Committee Member, Planners Network

- 2006-2007 Co-Conference Chair, 2007 Planners Network Conference, Planners Network

- 2005- Co- Professional Development Officer, Louisiana Chapter of the American Planning Association (LA APA).

- 2005- Member, Louisiana Chapter of the American Planning Association (LA APA) Education and Research Foundation

Professional Society Membership

Association of Collegiate Schools of Planning

American Institute of Certified Planners

American Planning Association

Research Committee on Urban & Regional Development, International Sociological Association

Planners Network

Urban Affairs Association

AWARDS, LECTURESHIPS, OR PRIZES

- 2007 Invited speaker, “Post-Katrina Human Right, Economics, Labor and the Law in New Orleans,” Plenary Session, National Bar Association, National LRE Leadership Conference, New Orleans, LA, September.
- 2005 Invited participant, Lincoln Institute summer seminar on Local Government Finance for Planners in Cambridge, Massachusetts, July.
- 2004-2005 Recipient, Outstanding Teacher Award, College of Urban and Public Affairs Student Association, University of New Orleans
- 2003 Recipient, Susan S. Fainstein Distinguished Doctoral Scholarship Award, Rutgers, the State University of New Jersey
- 2003 Invited participant, Writing for Scholarly Publication: From Idea to Article workshop, Journal of Planning Education and Research and the School of Urban Studies and Planning of Portland State University in Portland, Oregon, August.
- 1999 Member of panel voted “Best of the ACSP”, American Collegiate Schools of Planning.

ACADEMIC SERVICE

On-campus

- 2007- Member, Faculty Search Committee, College of Urban and Public Affairs,
University of New Orleans
- 2005 Member, Faculty Search Committee, College of Urban and Public Affairs,
University of New Orleans
- 2004 Member, College of Urban & Public Affairs Structure Committee, University of
New Orleans
- 2004 Member, Faculty Search Committee, College of Urban and Public Affairs,
University of New Orleans
- 2003-7 Member, University Research Council, University of New Orleans
- 2002- Peace Corp Fellows / USA Program Coordinator, College of Urban and Public
Affairs/Department of Planning and Urban Studies, University of New Orleans
- 2002- Ph.D. Executive Committee, College of Urban and Public Affairs/Department of
Planning and Urban Studies, University of New Orleans
- Off-campus**
- 2006-2007 Member, City-wide planning team, Unified New Orleans Plan, Worked on the
Community Facilities portion of the plan. Funded by the Rockefeller Foundation.
- 2006-2007 Co-Principal Investigator (with Shirley Laska), Designed and implemented resident
and neighborhood recovery survey of planning districts 5 (Gentilly) and 6
(Lakeview). Funded by the University of New Orleans.
- 2006 Invited speaker, “Rebuilding the Gulf Coast”, Rutgers, the State University of
New Jersey, New Brunswick, NJ, October 12.

- 2005 Invited speaker, “The old and new New Orleans – Culture and nature, A delicate balance”, University of Albany, Albany, NY, November 11.
- 2005 Invited speaker, “Rebuilding New Orleans after Katrina: Planning and policy implications”, Rutgers, the State University of New Jersey, New Brunswick, NJ, October 13.
- 2002 Participant, Committee for a Better New Orleans/Metropolitan Area Committee, MAC Leadership Forum
- 2001-2002 Member, Legal and Institutional Subcommittee, Lower Raritan Watershed Management Area, Raritan Basin Watershed Management Project
- 1998 Member, Board of Directors, New Brunswick City Market Special Improvement District



Laura Wolf-Powers, Ph.D.

Assistant Professor

Department of City and Regional Planning

June 13, 2008

Education

Ph.D., Urban Planning and Policy Development, Edward J. Bloustein School of Planning and Public Policy, Rutgers University, 2003

Master of Public Affairs with a certificate in urban planning, Woodrow Wilson School of Public and International Affairs, Princeton University, 1997

Bachelor of Arts in American Studies, Yale University, 1990 (*Summa cum Laude*)

Academic Appointments

Assistant Professor of City and Regional Planning, School of Design, University of Pennsylvania, January 2008-

Chairperson, Graduate Center for Planning and the Environment, School of Architecture, Pratt Institute, July 2005-July 2007

Assistant Professor of City and Regional Planning, School of Architecture, Pratt Institute
September 2002-June 2005

Courses Taught

At Rutgers University:

- Introduction to Urban Studies
- Development and Theory of Urban Planning (co-taught), Fall 2000

At the Milano School of Management and Urban Policy, New School University:

- Political Economy of the City, Spring 2001 and Spring 2002

At Pratt Institute:

PLAN 650 Advanced Methods of Planning Analysis, Fall 2002, Fall 2003, Fall 2005

PLAN 653 Planning Studio (co-taught), Spring 2003, Fall 2003, Spring 2007

PLAN 655 PLAN 655 Visual and Verbal Representation in Planning and Historic Preservation
(co-taught), Fall 2006

PLAN 657 Economic Development Spring 2003, Spring 2004

PLAN 658 History and Theory of City Planning, Fall 2002

PLAN 659a Introduction to Urban Economics and Public Finance, Spring 2004, Spring 2005

PLAN 671a/b Thesis/Demonstration of Professional Competence, Spring 2003, Fall 2003,
Spring 2004, Spring 2005

At the University of Pennsylvania:

CPLN 633 Urban and Regional Economics, Spring 2008

Publications

Chapters or Essays in Books

Laura Wolf-Powers (forthcoming), "Keeping Counterpublics Alive in Planning" In Peter Marcuse, James Connolly, Johannes Novy, Ingrid Olivo, Cuz Potter and Justin Steil eds., *Searching for the Just City*, Routledge, 2008.

Laura Wolf-Powers, "Beyond the First Job: career-ladder initiatives in telecommunications and related information technology industries." In Edwin Melendez ed. *Communities and Workforce Development*. W.E. Upjohn Institute. 2005, pp 253-283.

Laura Wolf-Powers, "Building a Workforce Infrastructure." In R. Hanley ed., *Moving People, Goods and Information in the Twenty-First Century: The New Economy, Urban Technologies, and Cutting-Edge Infrastructures*, Routledge, 2004, pp. 245-259.

Michael Oden, Laura Wolf-Powers and Ann Markusen. "Post-Cold War Conversion: Gains, Losses and Hidden Changes in the US Economy" In S. DiGiovanna, A. Markusen, and Y.S. Lee, eds. *From Defense to Development? Military Industrial Conversion in the Developing World*. Routledge, 2003, pp. 15-42.

Refereed Journal Articles

Laura Wolf-Powers (forthcoming), "Expanding Planning's Public Sphere: STREET Magazine, Activist Planning and Community Development in Brooklyn, NY 1971-75," forthcoming in the *Journal of Planning Education and Research*, 2008.

Laura Wolf-Powers, "Reading rival union responses to the localization of technical work in the US telecommunications industry." In *Environment and Planning A* 38:1, pp. 398-416, (2007)

Laura Wolf-Powers, "Up-Zoning New York City's Mixed Use Neighborhoods: Property-Led Economic Development and the Anatomy of a Planning Dilemma," In *Journal of Planning, Education and Research* 24:4, pp. 379-393, (2005)

Laura Wolf-Powers, "Technology and Urban Labor Markets in the United States." *International Journal of Urban and Regional Research* 25:2, pp. 427-437 (2001).

Other Articles or Publications

Laura Wolf-Powers, "Is New Orleans a Shrinking City?" *PLACES: A Forum of Environmental Design*. 19:2, 2007, pp 45-48.

Laura Wolf-Powers, "Dossier: New York chantiers: Atlantic Yards." *Revue Urbanisme* n°350 September/October 2006, pp. 46-47.

Articles About Work

Laura Wolf-Powers, Review of Anna Klingman, *Brandscapes: Architecture in the Experience Economy* and Mike Davis and Daniel Bertrand Monk eds. *Evil Paradises: Dreamworlds of Neo-Liberalism*. In *The Architect's Newspaper*. September 19, 2007.

Laura Wolf-Powers, Review of Kyong Park, *Urban Ecologies: Detroit and Beyond*. In *The Architect's Newspaper*. March 8, 2006.

Laura Wolf-Powers, Review of Walter Thabit, *How East New York Became a Ghetto*. In *Journal of Housing and the Built Environment* 19: 409-411. (2004)

Laura Wolf-Powers, Review of Benjamin Miller, *Fat of the Land: Garbage of New York, the Last 200 Years*. In *Journal of Urban Technology* 8:3, 141-147 (2001)

Laura Wolf-Powers, Review of R. Freeman and P. Gottschalk eds, *Generating Jobs: How to Create Demand for Low-Skilled Workers*. In *Journal of the American Planning Association* 67:2 235-36 (2001)

Funded Research

National Urban Policy Initiative Competition, 2008 – finalist (winners still to be decided) (With Dr. Marla K. Nelson)

Workforce Development in Greater Philadelphia's Life Sciences Cluster: Can Systems Change Support the Integration of Less Educated Workers? Sponsored by University Research Foundation, University of Pennsylvania, July 2008-July 2009.

City Legacies: A Research Project and Symposium on early Pratt Planning Papers and STREET Magazine, Sponsored by Pratt Institute Faculty Development Fund, June 2004-October 2005 (with William Menking).

Working Papers

Laura Wolf-Powers with Jeremy Reiss and Margaret Stix, *Building In Good Jobs: Linking Workforce Development with Real Estate-Led Economic Development*, 2006, Pratt Center for Community Development, 47 pages.

Brad Lander and Laura Wolf-Powers, *Remaking New York City: Can Prosperity Be Shared and Sustainable?*. 2004, Pratt Institute Center for Community and Environmental Development

Laura Wolf-Powers *The Telecommunications Infrastructure Industry in New York City: Framing Issues for Workforce Developers*, 2002, City University of New York Workforce Development Initiative.

Laura Wolf-Powers, *Beyond the First Job: Career-ladder initiatives in telecommunications and related information technology industries*, 2002, Community Development Research Center, New School University.

Laura Powers and Ann Markusen, *A Just Transition? Lessons from Defense Worker Adjustment in the 1990s*, 1999, Economic Policy Institute.

Professional Practice

Pratt Center for Community Development, Faculty affiliate 2004-2007

Projects:

- Digitization of the Pratt Planning Papers and STREET Magazine (completed 2005)
- Research on workforce development-real estate development linkages, funded by the Garfield Foundation (completed 2006)
- Consultancy to the New York City Economic Development Corporation to recommend workforce development/real estate development linkage policies, funded by the Garfield Foundation (completed 2007)
- Two-day curriculum on Community Benefits Agreements for community development practitioners, funded by the Lincoln Institute of Land Policy (completed 2007)

Professional and Community Service

New York City Bar Association Committee on Land Use Policy and Zoning, 2005-2007

Editorial Advisory Board, PLACES Magazine, 2005-2007

Advisory Board , Pratt Center for Community Development 2005-2007

Shelter Project Volunteer, Park Slope United Methodist Church 2006-present

University, School and Department Committee Service

Chairperson, Graduate Center for Planning and the Environment, School of Architecture, Pratt Institute, 2005-2007

Faculty Advisor, Pratt Institute Planning Students Association, 2005-2007

Elected Representative, Pratt Institute Academic Senate 2004-2007

Invited Representative, School of Architecture Faculty Governing Group, Pratt Institute, 2002-2007

Fellowships

Doctoral Dissertation Research Fellowship, U.S. Department of Housing and Urban Development, 2000

Bevier Fellowship, Rutgers University Graduate School of Arts and Sciences, 2000

Excellence Fellowship, Rutgers University Graduate School of Arts and Sciences, 1997, 1999

Honors and Awards

Barclay Gibbs Jones Award for Best Dissertation in Planning. Association of Collegiate Schools of Planning, 2004

Susan S. Fainstein award for outstanding doctoral scholarship, Edward J. Bloustein School of Planning and Public Policy, Rutgers University, 2003.

Memberships

American Planning Association, 2003-present

Urban Affairs Association, 2004-present

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CAITLIN L. CAIN

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New Orleans, Louisiana 70115

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EDUCATION:

Master of Urban Planning (MUP), **University of Michigan**: May 2001

Bachelor of Arts with Honors, **University of Toronto**, Trinity College: June 1999

Majors: Political Science and Environmental Studies

Center for Bilingual Studies, Cuernavaca, Mexico: Summer 1996

EXPERIENCE:

Economic Development Director, *New Orleans Regional Planning Commission: 2005 to present*

- Secured investment needed to implement a master plan and economic recovery strategy (approximately \$1million) for the New Orleans Medical District
- Created, and continue to lead, the economic recovery strategy for the New Orleans Medical District; utilized a collaborative approach involving public, private and not-for-profit groups
- Secured funding and implemented a Smart Growth redevelopment process and vision for a major mixed-use opportunity in New Orleans; utilized significant public outreach and regional collaboration which resulted in enhanced public awareness of Smart Growth policies

- Created and secured funding for the Orleans Neighborhood Business Development (ONBD) and Main Street program - a five year, city-wide commercial revitalization initiative built upon multi-party cooperation at the local and state levels
- Led and facilitated a strategic planning process for the Main Street/ONBD program which resulted in local, regional and state partnerships and program adoption
- Helped to create a regional comprehensive planning process and visioning summit to guide post Katrina redevelopment within the 5 parish region, which focused on educating the public sector about urban planning and development best practices
- Created partnerships with professional associations, not-for-profits, governmental entities and private businesses to help guide the redevelopment process

Economic Development Program Manager, *New Orleans Regional Planning Commission:*
2003-2005

- Obtained over \$3.5 million in federal and state grants supporting development planning, gap financing and coalition-building projects
- Completed cutting edge GIS research that assessed the relationship between growing regional economic clusters and current land use practices (findings published in Spring 2005 edition of *IEDC Now*)
- Created, administered and implemented the New Orleans Regional Smart Growth Summit (May 2005)
- Managed the Southeast Louisiana regional Brownfields program including administration of the Revolving Loan Fund
- Provided tax incentive information and technical assistance to businesses and governmental entities

Economic Development Coordinator, *Grandmont Rosedale Development Corporation:* 2002-2003

- Directed the commercial revitalization of Grand River utilizing the Main Street approach

- Developed city-wide commercial revitalization policies and procedures through the Mayor's Office of Neighborhood Commercial Revitalization (ONCR)
- Managed volunteer-based committees: Economic Development, Promotion, Organization, and Clean & Safe
- Provided technical assistance to area business associations in the form of planning, budgeting, and outreach
- Created a business attraction campaign focusing on incentives, demographics and land assembly

Project Manager, Urban Planning & Market Analysis, Gibbs Planning Group: 2001-2002

- Coordinated the research and writing of market and planning studies for municipalities and developers; conducted void analysis to determine supportable retail and appropriate tenant mix
- Provided retail planning services and strategies to strengthen existing retail centers and urban corridors.
- Drafted and reviewed Traditional Neighborhood Development codes, ordinances, and site plans

LEADERSHIP EXPERIENCE:

- President of the Orleans/Jefferson Economic Collaborative which oversees all planning and development within the federally designated Renewal Community
- Chair of the New Orleans Main Street Advisory Committee
- Chair of the Southeast Louisiana Smart Growth Coalition
- Chair of the Smart Growth Summit Planning & Coordination Committee

PROFESSIONAL VOLUNTEER EXPERIENCE:

Chair of Economic Development Committee, Downtown Development Authority - Ferndale, Michigan

- Provided guidance and assistance to DDA staff. Conducted market research through consumer and merchant surveys. Developed and implemented business attraction and retention strategies.

Common Ground Planning Center, Rochester, NY

- Provided fund-development consultation for on-going projects and programs

PROFESSIONAL ACCREDITATIONS:

- Working towards obtaining IEDC professional accreditation

PUBLICATIONS:

- “The Decision to Build or Buy in New Home Purchases”, University of Michigan Press, 2001.
- “Fostering Economic Growth through Land Use Planning: Lessons Learned from the New Orleans Region”, Spring 2005 edition *IEDC Now*.

SPEAKING ENGAGEMENTS:

- American Planning Association (APA) 2006 National Conference
- EPA Region 6 Conference 2005, *Smart Growth and Brownfields Best Practices*
- New Orleans Regional Leadership Institute, 2004-2005, *Smart Growth and Economic Development Best Practices*
- Myriad of local organizations and professional business associations in the New Orleans region

PROFESSIONAL SKILLS:

- Strong relationship building skills resulting in joint-ventures between private, public and not for profit entities
- Strong facilitation skills allowing me to build cross jurisdictional consensus

COMPUTER SKILLS:

- Literate in: ScanUS, GIS, Microsoft Office, Access, Illustrator, PhotoShop, Power Point

AWARDS:

- Economic Development Administration (EDA) award for Excellence in Economic Restructuring, 2007
- Urban Land Institute (ULI) Student Award for Excellence in real estate development, March 2001

REFERENCES: Available upon request

**Job Chains and Career Ladders in Health Care:
An Economic and Workforce Development Strategy
For Greater New Orleans**

TAX IDENTIFICATION NUMBERS

The University of New Orleans--72-0702000

The University of Pennsylvania-- 23-1352685

Regional Planning Commission—72-0595531

**Job Chains and Career Ladders in Health Care:
An Economic and Workforce Development Strategy
For Greater New Orleans**

**APPENDIX A:
CHAINS AND LADDERS:
EXPLORING THE OPPORTUNITIES FOR WORKFORCE DEVELOPMENT AND
POVERTY REDUCTION IN THE HOSPITAL SECTOR**

**CHAINS AND LADDERS:
EXPLORING THE OPPORTUNITIES FOR WORKFORCE DEVELOPMENT
AND POVERTY REDUCTION IN THE HOSPITAL SECTOR**

**Marla Nelson, Assistant Professor
Department of Planning and Urban Studies, University of New Orleans**

**Laura Wolf-Powers, Assistant Professor
Department of City and Regional Planning, University of Pennsylvania**

I. Introduction

One of the nation's most pressing community revitalization priorities is the connection of unemployed and working poor individuals to labor market opportunities. As job decentralization continues in metropolitan areas, poor employment and earning outcomes for residents of segregated cities and inner-ring suburbs contribute to persistent poverty (see Ihlanfeldt and Sjoquist 1998, Chapple 2006). At the same time, the retirement of the Baby Boom generation and other demographic changes are leading economists to predict labor and skills shortages (Toossi 2002).

One sector already experiencing shortages is health care. Labor shortages are projected to escalate as demand for health care increases primarily in response to the needs of a growing and aging population. Health care employment is concentrated in central cities (Nelson and Gladstone n.d.) and medical institutions are among the largest employers in many urban areas (Harkavy and Zuckerman 1999). However, these industries have attracted comparatively little attention from economic development researchers.

In this paper we investigate the potential of hospitals, specifically acute care facilities that tend to be located in central cities - increasingly as part of "medical

campuses” that also include facilities dedicated to long-term care, outpatient care, biomedical research, and medical education - to offer low- and semi-skilled workers employment and advancement options. We do this by applying the “job chains” approach described by Joseph Persky, Daniel Felsenstein and Virginia Carlson in their 2004 book *Does Trickle Down Work?: Economic Development Strategies and Job Chains in Local Labor Markets* (see also Felsenstein and Persky 1999, 2007). Specifically, we combine chain multipliers derived by Persky et al. with industry specific occupational employment and wage estimates from the Bureau of Labor Statistics to compare hospital sector job chains to chains in accommodations, legal services and securities and commodities. Our findings suggest that growth in hospital employment has the potential to far outstrip the impact of growth in advanced services and tourism on the well-being of low-income workers.

To impact poverty in low-income communities surrounding health care facilities, investments in hospital-based economic development should be accompanied by strategic attention to workforce training and career ladder development. Persky et al.’s model suggests that it is in the middle of the wage distribution that vacancies generate the greatest welfare impact. Careful attention to training and educational requirements for these occupations, combined with an understanding of opportunities for advancement from job to job in hospitals (and in institutions that might be co-located with hospitals on urban medical campuses), can help ensure that cities and states leverage health care-related economic development investments to the greatest extent possible from the perspectives of both efficiency and distributional fairness.

II. The Economic Development Potential of Hospitals

Health care is among the largest sectors of the US economy employing nearly 13 million workers in 2007 in three industries or subsectors— ambulatory health care services, hospitals, and nursing and residential care facilities (U.S. Department of Labor, 2008). The sector has experienced tremendous growth in

recent decades and is expected to continue adding jobs to the national economy in response to the long-term health care needs of an increasing elderly population and the general growth of the industry (U.S. Department of Labor, 2007).

The hospital industry, which includes general medical and surgical hospitals, or acute care hospitals, psychiatric hospitals and specialty hospitals, has traditionally been the backbone of the US health care delivery system. The shift toward treatment in outpatient care settings due to advances in medical technology, changing consumer preferences, and cost containment measures, specifically, the lowering of government and private reimbursements for inpatient care (Adams, 2003; Engel, 1999; Robinson, 1994) has challenged the dominance of hospitals in recent years. Meanwhile the aging of the population has increased demand for nursing and residential care facilities. In response to increased competition, many hospitals have cut labor costs by decreasing employment and substituting lower paid employees for more highly compensated workers (Engel, 1999) and have diversified into outpatient and long-term care services through the establishment of ambulatory surgery centers and nursing home facilities (Robinson, 1994)

Despite changes in health care delivery towards ambulatory and long term care facilities, hospitals remain a key component of the health care sector accounting for more than a third of all health care employment (U.S. Department of Labor, 2008). According to Bureau of Labor Statistics projections, general medical and surgical hospitals will add over 690,000 new jobs between 2006 and 2016, more job gains than any other detailed health care industry. Economy-wide, general medical and surgical hospitals rank third in terms of projected absolute employment growth (U.S. Department of Labor, 2007).

Hospitals employ nearly 60 percent of registered nurses and 30 percent of nursing aides, orderlies and attendants, two of the top ten occupations projected

to post the largest gains between 2006 and 2016 (U.S. Department of Labor, 2007). Significantly, workers in these occupations tend to earn more when employed in a hospital setting than if they are employed in ambulatory care or nursing care facilities (U.S. Department of Labor, 2008). Furthermore, recent research on employment trends in hospitals suggests that jobs in the industry are relatively immune to economic downturns and thus, can contribute to regional stability (Goodman, 2006: 7). Because hospitals are among the largest employers in many central cities (Harkavy and Zuckerman, 1999), even relatively small changes in hospital employment rates can have significant impacts on local economies.

Recent research on “eds and meds” highlights the contribution hospitals make to cities in terms of expenditures, employment and real estate development and identifies hospitals as “fixed assets” given their heavy investment in facilities and specialized equipment (Adams 2003; Bostic et al., 2006; Harkavy and Zuckerman, 1999). Acute care hospitals are a central component of medical campuses which can anchor inner city neighborhoods and play a pivotal role in training medical professionals, and in creating and transferring knowledge and innovation (Adams, 2003; Singh and Allen, 2006) and contributing to the export base of the region (Bartik and Erickcek, 2007; Nelson, *under review*).

Advocates of “job-centered economic development” (see Giloth 1998) emphasize the importance of considering economic sectors not for their growth potential alone but in terms of their capacity to provide low- and semi-skilled workers with viable employment options and with opportunities for advancement (Zandniapour and Conway 2001, Conway 2002, Fitzgerald and Green Leigh 2002, Conway et al. 2007). Evidence suggests that health care services, in particular its hospitals component, may lend itself particularly well to “career-ladder” strategies (Mitnik and Zeidenberg, 2007; Fitzgerald 2006; Wilson and Quimby 2002; Wilson 2006). Additionally, shortages of direct care workers and increasing concern about the quality of the care delivered by frontline health workers create an impetus from

within the industry to reduce employee turnover and develop both the productivity of and the returns to human capital at all levels of the health care workforce (Dawson and Surpin 2002, Cheung and Aiken 2006, Fitzgerald 2006, Scala et al. 2008). There is a convergence occurring, as economic development literature uncovers the importance of central city medical facilities to economic growth, workforce development literature stresses the potential of sectoral workforce development strategies in health care, and the literature in health care administration focuses attention on the importance of workforce training and employee satisfaction to quality of care.

III. A Chain-Wise Analysis

This paper contributes to the workforce development stream of the growing literature on health care by using a job chains approach to investigate the workforce development potential of the hospital sector. Namely, it links the job chains approach to measuring economic development impacts with the practical challenges facing workforce development professionals. We use the job chains method to compare hospitals with three other industry sectors highly concentrated in central cities and considered to be key components of the urban economic base in the post-industrial United States. In comparing the vacancy chains that new jobs set in motion in each of these four industries, we make a set of inferences about the likely impacts of public sector economic development investments in each of the sectors from the perspective of low-income entry-level employees. By inferring the welfare impact of economic development initiatives focused on hospitals, accommodations, and two producer services subsectors, we gain insights that we hope will be useful to people who are puzzling through the question of how to conduct economic development that benefits unemployed and working poor city-dwellers.

The “job chains” approach to evaluating the impacts of economic development was devised by Persky, Felsenstein and Carlson (2004) and elaborated in their book *Does Trickle Down Work?: Economic Development Strategies and Job*

Chains in Local Labor Markets (see also Felsenstein and Persky 1999, 2007). The chain metaphor has been applied in the housing literature to describe the induced effects of the production of new housing units; by vacating an existing housing unit to occupy a new one, a household triggers a “vacancy chain” that continues until it is terminated by a new entrant into the local housing market. In the same way, the generation of a new job in a local labor market – for example, through the siting of a new facility or expansion of an existing one– sets off a chain of job vacancies. With the creation of new jobs, people already in the regional labor force make welfare-improving moves, vacating their positions. These positions are subsequently taken either by others already in the labor force or by new labor market entrants: unemployed individuals, individuals previously not participating in the labor market, or in-migrants. The length of a chain depends on the number of new vacancies triggered by the creation of a new job. In effect, job chains analysis produces multipliers that project the number of job vacancies of certain types that will be created in reaction to a particular type of new job entering the “system.”

Persky et al., using data from the Panel Study of Income Dynamics (PSID), developed a probabilistic method of estimating job chain multipliers for the United States economy. Working with data on reported job changes over a period of five years by respondents to the PSID, they estimated three parameters of job chains. The first was the absolute length of a chain, i.e. the total number of vacancies generated as a result of the creation of one job opening at a given wage level. The second was the character of the vacancies generated – i.e. the wage level of each vacated position on the chain, regardless of the chain’s length. The third was the probability that an induced vacancy would be filled by an individual from a lower wage group, from the ranks of the unemployed, or through in-migration.¹⁶ The model provides practitioners with a tool to estimate,

¹⁶ A limitation of our analysis consists in the fact that Persky et al.’s sample of “job events” – defined as taking a position with a new employer or changing positions within their current employer – comes from the PSID for the years 1987-1992. To the extent that any of the structural parameters of vacancy chains have changed since that time, we are not able to capture this.

for any given economic development project, “not only who gets the newly created jobs but also who moves up to better positions through jobs chains generated by these new jobs” (Felsenstein and Persky 2007:31).

The main aim of Persky et al.’s chain estimation exercise is to devise a method for overcoming the shortcomings of traditional economic development impact measurement.¹⁷ However, their analysis leads them to some general conclusions about both the efficiency and the distributional consequences of the job chains initiated by different types of economic development projects. First, they conclude, chains starting with high-skilled jobs are longer than chains initiated with mid- and low-skilled job openings, generating more total vacancies. However, they are less efficient, in that the total welfare gain, being concentrated among workers in higher wage groups and among workers who are already employed, is lower than for shorter chains (2004: 92-94). Persky et al. come to this conclusion by estimating job changers’ welfare gain in terms of opportunity costs – the difference between their wages in their previous positions and their wages in their new positions, or in the case of unemployed workers, the difference between reservation wages and earnings in new positions.¹⁸ Thus, in a hypothetical example comparing an instruments plant and a consulting firm, the welfare gain per dollar of economic development subsidy is greater for the instruments plant, because the instruments plant creates mid-level job positions that are likely to be filled by unemployed and underemployed people from the

¹⁷ The authors argued that conventional impact analysis both overestimates and underestimates the welfare effects of subsidized job creation. It overestimates impact by equating welfare gain from the direct jobs created with the total earnings of the workers taking those jobs, where this is properly measured using opportunity costs – that is, the incremental difference between workers’ new earnings and what they earned in their previous jobs. At the same time, conventional impact measurement underestimates impact by failing to account for welfare improvements along the vacancy chains that unfold as new jobs become available and workers move into them, making their jobs available to other job movers or new labor market entrants. While most economic development impact studies take into account only the effects of jobs directly created by a stimulus, the job chains approach enables policy makers to measure the welfare gains by workers all along the chain of vacancies opened up when each new job is created.

¹⁸ Persky et al. differentiate reservation wages for unemployed workers hired into the five wage groups (see 2004, 86-91).

surrounding region. The consulting firm, in contrast, generates longer job chains, but these chains are more likely to be truncated by in-migrants to the region; furthermore, the consulting firm creates predominantly high-wage positions filled by people whose opportunity costs are relatively low (2004: 95-101). Another of Persky et al.'s general conclusions relevant to our research pertains to welfare gains resulting from between-firm moves. Comparing internal (within-firm moves) versus external (between-firm moves) job chains, they found between-firm moves to be particularly important for improving the situation of workers at the lowest rungs of the job ladder (2004: 115-117).

IV. Data and Methodology

As noted above, our analysis draws on the “chainwise” method developed by Persky, Felsenstein and Carlson (2004). Applying the basic origin-destination matrix and disaggregated multiplier matrix estimated by those researchers, our paper estimates the total number of job vacancies in a local economy that would be created through the stimuli of 100 new jobs in four industries. Each of the industries in the analysis has a significant presence in central cities. They are hospitals (see section II) accommodations (closely related to the tourist industry), and legal services and securities and commodities (two types of “advanced business services” or “producer services”). In addition to estimating total vacancies generated, we also predict the likelihood that each of these induced vacancies will be filled by discouraged and unemployed residents of the area, by in-migrants or by individuals “moving up” from less highly remunerated positions.

To begin, we utilized industry-specific occupational employment and wage estimates from the Bureau of Labor Statistics to distribute employment in each of our four focus industries among Persky et al.'s wage categories (Table 1).¹⁹ The

data reveal differences in the occupational structure of the study industries. Within hospitals employment is heavily concentrated in middle wage occupations, groups 2, 3, and 4, with relatively few jobs in the highest and lowest wage groups. In contrast, nearly 90 percent of all jobs in the accommodations industry fall within the lowest two wage categories. In legal services, the bulk of employment is split between groups 3 and 1. The share of jobs in securities and commodities increases significantly with wages with more than 40 percent of all jobs in the industry in the highest wage category.

Our second step is to posit a hypothetical situation in which, through economic development subsidy, 100 new jobs are created in hospitals, accommodations, legal services, and securities and commodities respectively. We assume that the 100 new jobs generated in each sector track the occupational distribution shown in Table 1: for example, that about three of the 100 new jobs in the hospital sector will go to workers in wage category 1, about 37 to workers in wage category 2, etc. To characterize the job vacancies in a local economy that will be created through the stimuli of 100 new jobs in the four study industries we multiply the employment distributions in Table 1 by Persky et al.'s basic origin-destination matrix and disaggregated multiplier matrix (Tables 2 and 3). Our industry-specific results are displayed in Tables 4 and 5.²⁰

V. Findings

The basic origin-destination matrix (Table 2), provides estimates of the probability that a particular vacancy will be filled by a worker from one of the five wage groups or three residual categories: unemployed, out of the labor force, or

¹⁹ Each wage group's lower bound is approximately two-thirds of its upper bound (Persky et al., 2004)

²⁰ Persky et al's PSID sample was too small to generate vacancy chain estimates for specific industries. Our estimates require an assumption that the operation of job chains in each of the four industries examined here looks exactly like their operation in the overall economy. More direct empirical research in the individual industries would be required in order to relax this assumption. In addition our analysis examines only the job chains associated with the 100 direct jobs created in each industry. Job chains associated with induced jobs are not included.

in-migrant.²¹ Among job vacancies in the highest wage group, for instance, workers already in wage group one – i.e. workers making effectively lateral moves from other level 1 jobs – will occupy 41.1 percent of the new level-1 jobs generated. In-migrants will fill an additional 20.1 percent. The probabilistic model created by Persky et al. from the PSID data suggests that most job changes are within wage groups, particularly in groups 2, 3, and 4, upward job movements are limited largely to workers from immediately lower groups and the likelihood that a vacancy will be filled by an unemployed worker or individual from out of the labor force tends to increase as wages decrease. This means that the total number of vacancies brought about by the creation of low-wage jobs is significantly lower than the number brought about by the creation of higher-wage jobs.

The disaggregated multipliers matrix, displayed in Table 3, provides estimates of job chain lengths associated with the creation of a new job and the expected number of vacancies generated at each level.²² Each group 1 job, for example, generates a total of 3.48 vacancies, with 1.7 vacancies in wage group 1, .9 vacancies in wage group 2 and so on. From the data we can see that expected number of vacancies brought about by the creation of low-wage jobs is significantly lower than the number brought about by the creation of higher-wage jobs.

An economic development investment that creates 100 new jobs in the four industries has differing implications for the total number of vacancies generated and for the origin characteristics of the workers who occupy those positions. In

²¹ Persky et al. (2004: 80-82) used PSID answers on job moves to estimate the probability that a job at a given level is filled from a worker in the same wage group, from a lower wage group or from the unemployed population, from the “out of labor force” population, or from a outside the region. Persky et al. assume that downward job movements are exogenous to the vacancy chain created by the generation of a new job and thus allocated downward moves to all other categories.

²² Persky et al. (2004) arrived at the disaggregated multipliers matrix by applying matrix inversion to the basic origin-destination matrix.

the hospital industry 100 new jobs results in 282 total vacancies compared to 182 vacancies in accommodations, 289 vacancies in legal services and 316 vacancies in securities and commodities (Table 4). As one would expect, the distribution of vacancies among wage groups closely mirrors the overall distribution of jobs in each industry. Job chains are longest in securities and commodities and shortest in accommodations.

The relatively short job chains in the accommodations industry are due to the large share of vacancies filled by the unemployed (21.01) and individuals out of the labor force (24.25) (Table 5). Of the four study industries, vacancies created in accommodations have the greatest immediate impact on a region's unemployed and discouraged workers. However income gains are limited as most of the vacancies in the industry are in the lowest paid positions. Few people move directly from unemployment or out of the labor force into group 4 or higher wage vacancies and opportunities for advancement into better paying jobs within the industry are limited. Workers previously employed in a lower wage group fill less than 5 percent of total job openings in the industry. The mobility rate declines as wages increase indicating that among the limited opportunities for advancement, most are confined to positions on the lower-rungs of the wage ladder.

While job chains in securities and commodities and legal services have longer expected lengths than those in hospitals, hospital vacancies have a greater impact on unemployed and discouraged workers. Unemployed workers and individuals out of the labor force fill nearly one in five job vacancies (19.1%) within hospitals compared to 15.77% in legal services and 11.51% in securities and commodities. In "chainwise" terms, it is more likely in a hospital than in a legal services or securities and commodities firm that a job chain will be terminated by an unemployed or discouraged worker, as opposed to an immigrant.

The overall opportunities for mobility are greater in securities and commodities and legal services than in hospitals. More than a quarter (25.32 percent) of vacancies in securities and commodities are occupied by workers who had previously been employed in a lower wage group, compared to 22.93 percent in legal services and 18.78 percent in hospitals. An examination of the data by wage group, however, suggests that low- and moderately-skilled workers in hospitals have a better opportunity of moving into higher paying positions within the industry than similarly educated workers in securities and commodities and legal services. Most of the mobility in securities and commodities is confined to job moves into the highest wage groups with far fewer opportunities for advancement as wage rates decrease. The extensive education, training and experience requirements of jobs in groups 1 and 2, which include securities, commodities and financial services sales agents and financial analysts, put these jobs well beyond the reach of most low-wage workers.

In comparison, opportunities for advancement within the hospital industry are concentrated in mid-level positions in wage groups 2, 3 and 4. Although most group four occupations, such as registered nurses, require a bachelors or associates degree, a significant portion of jobs in the industry are available to individuals with less training or education and the employment structure of the industry lends itself well to career ladder strategies aimed at increasing mobility between wage categories 2 and 3 and 3 and 4 (see section VI below). The mobility rates in legal services also suggest the potential for low- and moderately-skilled workers to advance into mid-level positions with nearly 10 percent of total new jobs filled by workers who moved into wage group 3 from a lower group. The opportunity for mobility beyond this point, however, is extremely limited given the relatively small share of legal services vacancies in wage group 4 and the requirement of an advanced degree, generally in law, for most level 5 positions.

Although high-wage jobs create longer job chains and thus generate more vacancies than lower-wage jobs, the trickle down effect on low-wage workers,

the unemployed and discouraged workers is limited. Relatively small shares of vacancies in securities and commodities and legal services are filled by the region's unemployed and out of the labor force workers and vacancies and opportunities for upward mobility, particularly in securities and commodities, are highly concentrated in high-wage occupations beyond the reach of low- and moderately-skilled workers.

The creation of jobs in accommodations has by far the largest direct impact of all the study industries on low-wage workers, the unemployed and out of the labor force workers. However, the employment structure of the accommodations industry is heavily skewed toward low-wage occupations suggesting limited chances for advancement. Of the industries examined here, therefore, hospitals appear to have the greatest potential to provide advancement opportunities for disadvantaged workers. Job generation in hospitals creates the largest share of mid-level jobs, hospital vacancies are more likely to be filled by unemployed or discouraged workers than vacancies in securities and commodities and legal services, and the employment structure of hospitals lends itself well to career ladder strategies. This conclusion is supported by Mitnik and Zeidenberg (2007), who find, using Current Population Survey data, that those without college educations have higher upward mobility rates in hospitals than in other service industries.

VI. Creating successful hospital-centered career initiatives

Our finding that job chains in hospitals are more efficient than job chains in hotels, legal services and securities and commodities at generating welfare gains for low-income groups, together with the finding that the structure of employment in hospitals is conducive to career ladder strategies, should prompt economic development practitioners to take the sector more seriously as a locus for attention and investment. But to identify an industry as fertile from a career ladders perspective approach is only a first step. To maximize welfare gain and

distributional equity, economic development policy makers must accompany investments in health care-based economic development both with strategies to promote skills attainment and credentialing among low-paid health care workers and with formal strategies to facilitate upward movement. An ample literature on workforce development in health care suggests that this is not a simple task.

A general labor market intermediation model proposed by Giloth (2003, 2004) and Kazis (2003) suggests that workforce development institutions must meet several criteria in order to improve the earnings prospects of less skilled job-seekers. They must pursue a “dual-customer” approach, responding both to employers in need of reliable, productive workers and lower turnover costs and to low-income individuals seeking to earn higher wages. Rather than simply matching workers to jobs, they must focus on improving the employability of workers (often through training and credentialization) and the quality of jobs (by exerting influence on employers to think differently about their hiring and internal advancement practices). They must also combine funding streams, often supplementing federal workforce grants with state and federal economic development promotion dollars and private foundation resources.

Scholars and practitioners focused on health care labor markets have adapted, expanded upon, and contributed to policy knowledge on labor market intermediation (Fitzgerald 2006, Hutson 2006, Wilson 2006, Klein-Collins and Starr 2007). As noted above, while long-term care facilities and home health care agencies employ large numbers of entry-level, low-skilled workers, most are difficult environments in which to structure upward mobility opportunities because of low pay and a scarcity of mid-level positions.²³ Hospitals, as we have seen, employ low- and moderately-skilled workers along a graduated wage spectrum.

²³ Fitzgerald highlights innovative efforts to improve the working conditions and earnings of paraprofessionals employed in long-term care and home health care. An increasing number of home care workers are represented by unions, for example, and some nursing homes and home care agencies have created pay and skill tiers within occupational categories to reduce turnover and boost quality of care (2006: 31-38). See also Paraprofessional Healthcare Institute at phinational.org.

At the first rung on the ladder are “environmental services” and basic customer service workers who clean rooms, transport equipment and patients, and serve meals. One rung above these workers are entry-level technicians, administrative assistants and paraprofessional workers such as nursing assistants who are involved in the direct care of patients. Workers who wish to advance beyond these positions typically require specialized certification or associates degrees; these positions include (in the technical field) lab technician, radiologic technologist, surgical technician and (in the patient care field) medical assistant, practical nurse and registered nurse.²⁴ In a number of cases, hospitals and educational institutions, labor unions, and/or community based groups have formed partnerships or consortia to help employees advance along these vectors. In many cases, they correspond with Giloth’s and Kazis’ definition of workforce intermediaries, with the dual goal of promoting opportunities for entry-level workers and addressing hospitals’ need to reduce turnover, promote loyalty and worker retention, and fill mid-level positions for which shortages exist (Wilson 2006).

In the late 1990s and early 2000s, several “first-generation” hospital career ladder programs succeeded in engaging commitment from employers, the energy of community organizations and educational institutions, and pilot funding from government and philanthropic sources.²⁵ The programs typically featured two types of occupational training: one aimed at unemployed and out-of-the-labor-force individuals who sought positions on the first rung of the ladder, the other aimed at first-level incumbent workers (orderlies, patient transporters,

²⁴ While the hospital career ladder at one time included the intermediate title of licensed practical nurse (LPN) between nursing assistant and registered nurse, hospitals have phased out the LPN position in recent years, choosing to increase the ranks of registered nurses and give them greater supervisory responsibility over direct care nursing assistants. LPNs continue to be in demand in long-term care settings.

²⁵ Programs surveyed for this summary review include the Boston Healthcare and Research Training Institute, Partners in Career and Workforce Development (Boston), and the Harris County Hospital District Career Lattice Initiative (Houston area) (Council on Adult and Experiential Learning 2004, FutureWorks 2004, Hutson 2006).

housekeepers) who wished to advance to mid-level technical and patient care occupations. Participants in both types of training had access to career counseling and coaching, and their supervisors were brought into the process through training designed to help them become better mentors to their employees. The logic was that the two tracks would operate synergistically; as first-level workers were promoted into mid-level positions, they would generate vacancies that could be filled by workers just entering the hospital labor force. In the single rigorous longitudinal evaluation that could be found of a hospital career ladder program, both groups of workers (new entry-level employees and incumbents) had high retention rates and experienced significant earnings increases. However, the program encountered greater difficulty than expected in promoting career mobility, with only 10% of each group ascending the career ladders defined by program sponsors (Hutson 2006). Vacancies, especially at the first level, were more likely to be created by “churning” and turnover than by upward movement within the hospital job hierarchy. While workforce development organizations succeeded in helping unemployed and underemployed individuals gain access to job openings, they had a more difficult time helping them gain access to the vacancies created by job chains initiated further up the wage hierarchy.

A second generation of hospital programs is aiming to address major issues encountered in the early initiatives. It is clear, for example, that workers on low rungs in the hospital sector have persistent deficits in basic skills, a problem that intensifies as hospitals increase their use of technology to manage information and control costs without sacrificing quality of care (Hutson 2006). First-generation hospital programs were often not able to overcome these deficits through classroom training alone. The Baltimore Alliance for Careers in Healthcare, a second-generation program that is part of a national “Jobs to Careers” initiative funded by the Robert Wood Johnson and Hitachi Foundations, has incorporated work-based learning modules that are sequenced with classroom training. Rather than assuming that former environmental services

workers will automatically thrive in higher-paid nursing assistant positions after a few months in the classroom, the program provides them with structured on-the-job instruction and mentoring. The Baltimore program also offers nursing assistants an opportunity (after additional classroom instruction and more work-based learning) to enter the newly defined position of “nurse extender,” which provides a second increase in wages²⁶ (Klein-Collins and Starr 2007). This transition from nursing assistant to nurse extender replaces a bridge between entry-level and more advanced patient care that has been threatened by the elimination of the licensed practical nurse position from the hospital career ladder. Other programs in the “Jobs to Careers” initiative focus on career paths in medical informatics and technology in hospital settings.

It appears that in the hospital sector, a significant frontier is crossed when a worker is able to go from a level 5 job (defined in Persky et al’s typology as a job with earnings between \$6.28 and \$9.90 per hour) to a job at level 4 or level 3.²⁷ Second generation hospital programs are busy providing training and supports to workers that enable this transition. Workforce intermediaries also work with employers to define and clarify job classifications, to educate their employees about opportunities to increase their earnings (for example, by earning credentials that enable them to move from direct care to technician work) and to make sure that increases in skill attainment are accompanied by great enough increases in compensation to motivate workers to acquire new skills.

Less-than-outstanding results in hospital career ladder programs to date are perhaps not surprising, given Persky et al.’s finding that within-firm moves are less likely than between-firm moves to improve the lot of people at the lowest

²⁶ Nurse extenders are “advanced nursing assistants,” trained to support registered nurses by performing tasks such as IV starts, EKGs and oxygen therapy (Klein-Collins and Starr 2007).

²⁷ The level 3 or 4 to level 2 transition is also significant, and typically requires community college-level certification or the attainment of an associates degree. Fitzgerald (2006) documents the bridge from practical to registered nursing, and several “Jobs to Careers” demonstration sites are also concentrated on this type of job move.

level of the wage hierarchy (2004: 115-117). Hospital career ladder programs have traditionally aimed to improve low-level employees' opportunities with their current employers as opposed to helping them move among employers in an industry or to employers in related industries.²⁸ Urban "biomedical complexes," planned developments in which university teaching hospitals co-locate with life sciences research facilities, physicians' offices, specialty medical facilities and even long-term residential care facilities, present an opportunity to map career pathways that span employers.²⁹ However, to accurately characterize likely multi-employer pathways, and to secure the cooperation and participation of employers in workforce development efforts, will require particularly agile and intelligent workforce intermediation efforts.

VII. Conclusions/Directions for further research

The results of our relatively simple application of the job chains method underscore a conclusion drawn by Felsenstein and Perky nearly a decade ago: "The occupational distributions of new jobs strongly affect the degree to which jobs translate into local welfare improvements" (1999: 50). At base, our results suggest that if local and regional officials are seeking to maximize returns on economic development subsidy, they should concentrate on industry sectors in which job chains are medium-length, and where vacancies generated by job growth fall solidly in the middle of the earnings distribution. Economic development scholarship urging a conceptual shift toward occupational targeting (see Markusen 2004, Koo 2005) can be strengthened and elaborated by the investigation of industry occupational structure and of job chains. The directive to "target occupations" has, in our view, led in practice to a fixation with attracting "knowledge workers" to cities and regions. A job chains approach has the

²⁸ Fitzgerald and Hutson both highlight the organizational dilemmas created by supervisor reluctance to 'let go of' the talented employees most likely to qualify for promotion. This problem is intensified even further with an employee's prospective move to a different employer, perhaps a direct competitor.

²⁹ A cursory scan of recent biomedical campus development reveals life sciences research facilities co-locating or preparing to co-locate with acute care and ambulatory care facilities in Aurora, CO, Baltimore, MD, New Orleans, LA and Philadelphia, PA.

potential to re-focus attention on sectors and firms without sacrificing the valuable insights of the occupational perspective.

As noted above, Persky et al.'s PSID sample was too small to generate vacancy chain estimates for specific industries. Our estimates rely on the inference that the operation of job chains in each of the four industries examined here looks exactly like their operation in the overall economy. More direct empirical research on individual industry sectors would be required in order to relax this assumption. Future research should investigate job chains at the industry level.

Our results also point, in combination with other recent work (see Bartik and Erikcek 2007, Nelson under review) to the potential of hospitals as a growth driver and expander of opportunity in central cities. High-profile projects in tourism and services can lead central-city economic development officials to overlook the potential of “meds and eds” (see also Adams 1993), and we hope that our conclusions prompt officials to take a closer look at hospitals. More research clearly is needed on the economic impacts of urban “biomedical campuses,” in which university teaching hospitals co-locate with life sciences research facilities, physicians’ offices, specialty medical facilities and even long-term residential care facilities. However, our preliminary investigation suggests that with concerted investment in human capital, the biomedical campus phenomenon, in addition to physically revitalizing neighborhoods and bolstering important city economic assets, could be a springboard to economic self-sufficiency for unemployed and working poor urban dwellers.

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Table 1
Percentage of Industry Employment by Wage Group All Occupations

	Wage Group				
	1	2	3	4	5
Hospitals	3.17	36.53	22.08	33.27	4.79
Accommodations	0.15	1.69	8.43	21.53	67.69
Legal Services	32.49	3.77	45.71	15.67	1.43
Securities & Commodities	43.26	24.52	20.03	10.72	0.14

Note: Wage groups taken from Persky et al., 2004 (p. 81), adjusted to 2007 dollars
Wage group 1: \$37.69-\$59.11; Wage group 2: \$24.24-\$37.69; Wage group 3: \$15.52-\$24.24;
Wage group 4: \$9.90-\$15.52; and Wage group 5: \$6.28-\$9.90.

Table 2
Basic Origin-Destination Matrix

Origin Wage Groups	Destination Wage Groups				
	1	2	3	4	5
1	41.1				
2	25.0	52.9			
3	4.8	22.1	46.6		
4	2.2	1.5	18.5	47.3	
5	0.0	0.3	2.4	13.3	34.5
unemployed out of labor force	2.9	3.8	9.7	15.8	24.7
in-migrant	4.0	3.8	7.5	13.5	30.5
TOTAL	20.1	15.6	15.4	10.0	10.2
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: Persky et al. (2004): Table 5.1 (p. 82).

Note: All values expressed as percentage of hires in the new wage group.
Columns may not sum due to rounding.

Table 3
Disaggregated Multiplier Matrix

Origin Wage Groups	Destination Wage Groups				
	1	2	3	4	5
1	1.70				
2	0.90	2.12			
3	0.52	0.88	1.87		
4	0.28	0.37	0.66	1.90	
5	0.08	0.12	0.20	0.39	1.53
TOTAL	3.48	3.49	2.73	2.29	1.53

Source: Persky et al. (2004): Table 5.2 (p. 85).

Table 4
Total Vacancies by Wage Group and Industry

Number/share	Wage Groups					Sum
	1	2	3	4	5	
Hospitals						
Total Vacancies	11.0	127.5	60.3	76.2	7.3	282.3
Total Vacancies (%)	3.9	45.2	21.4	27.0	2.6	100.0
Accomodations						
Total Vacancies	0.5	5.9	23.0	49.3	103.6	182.3
Total Vacancies (%)	0.3	3.2	12.6	27.0	56.8	100.0
Legal Services						
Total Vacancies	113.1	13.2	124.8	35.9	2.2	289.1
Total Vacancies (%)	39.1	4.6	43.2	12.4	0.8	100.0
Securities & Commodities						
Total Vacancies	150.5	85.6	54.7	24.6	0.2	315.6
Total Vacancies (%)	47.7	27.1	17.3	7.8	0.1	100.0

Calculated by authors with data from Tables 1 and 3.

Table 5
Share of Total New Jobs Filled by Previous Employment Status

Share of New Jobs Filled by	Wage Groups					Sum
	1	2	3	4	5	
Hospitals						
Unemployed	0.09	1.39	2.14	5.26	1.18	10.06
Out of labor force	0.13	1.39	1.66	4.49	1.46	9.12
In-migrant	0.64	5.70	3.40	3.33	0.49	13.55
Workers from a lower wage group	1.01	8.73	4.61	4.42	--	18.78
Accomodations						
Unemployed	0.00	0.06	0.82	3.40	16.72	21.01
Out of labor force	0.01	0.06	0.63	2.91	20.65	24.25
In-migrant	0.03	0.26	1.30	2.15	6.90	10.65
Workers from a lower wage group	0.05	0.40	1.76	2.86	--	5.07
Legal Services						
Unemployed	0.94	0.14	4.43	2.48	0.35	8.35
Out of labor force	1.30	0.14	3.43	2.12	0.44	7.42
In-migrant	6.53	0.59	7.04	1.57	0.15	15.87
Workers from a lower wage group	10.40	0.90	9.55	2.08	--	22.93
Securities & Commodities						
Unemployed	1.25	0.93	1.94	1.69	0.03	5.86
Out of labor force	1.73	0.93	1.50	1.45	0.04	5.65
In-migrant	8.70	3.82	3.08	1.07	0.01	16.69
Workers from a lower wage group	13.84	5.86	4.19	1.43	--	25.32

Calculated by authors with data from Tables 1 and 2.

