

# How Do You Know a Labor Shortage When You See One?

Burt S. Barnow

Trachtenberg School of Public Policy and Public Administration

GW Health Workforce Institute

George Washington University

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# What Is a Labor Shortage?

- No universal definition
- Economists generally view a shortage as a situation where  $D > S$  at prevailing wage for a sustained period
  - This implies “excess” vacancies, but how many?
  - How long must the disequilibrium go on before considered a shortage?
  - Should time to fill vacancies be a criterion?
  - When is a market just “tight” v. having a shortage?



# “Social Demand Shortage”

- “Social demand shortage”: less than we would like to have, but market clears; not a shortage in economic sense
- Concept introduced by Arrow and Capron (1959)
- Social demand shortages are important for assessing social policy, but the solutions may be different from policies to deal with an economic shortage
- Much of the work on shortages in health occupations often uses this concept rather than an economic concept

# Lewin Group (2010) Suggests Three Methods of Determining Shortages

- ***Benchmarking/Extrapolation*** compares supply (current or projected) to clinical requirements
- ***Outcomes-Based Approach*** assesses if there is sufficient supply to achieve health outcomes desired
- ***Market-Based Approach*** seeks to determine if there is sufficient supply to meet demand at market prices
- Note that the first two approaches are variations on social demand model and the market-based approach is the economic model



# Why Might Labor Shortages Arise?

- Increase in demand for labor, perhaps arising from changing technology, with inability for supply to increase sufficiently or quickly enough (Blank-Stigler and Arrow-Capron models)
- Decrease in supply of labor to the occupation, perhaps due to retirement or movement to a similar occupation that pays better
- Restrictions in prices, where payments are made by third parties such as government or an insurance company, or where long-term contracts prohibit wage increases
- Time lags that cause adjustments to take place too slowly to alleviate the shortage
- Reason for shortage should be taken into account in developing policies: If there is a shortage of home care workers due to low prices paid to home care agencies, does it make sense to solve the problem through immigration or temporary foreign workers?

# Adjustments to Shortages by Employers

- Increase recruiting efforts
  - increase advertising in usual outlets
  - advertise in other media
  - expand the recruiting area
  - use public or private employment agencies
  - pay bonuses to employees who bring in workers



## Adjustments to Shortages by Employers (Continued)

- Increase use of overtime
- Reduce minimum qualifications for the job
- Restructure work to use less of “shortage” occupations
- Substitute machinery and equipment for labor
- Train workers for the jobs

## Adjustments to Shortages by Employers (Continued)

- Improve working conditions
- Offer bonuses to new workers
- Offer stock options to workers
- Improve pay and fringe benefits
- Contract out work
- Turn down work
- If you do not see these, can there really be a shortage?



# How Do You Know a Shortage When You See One?

- Look for an increase in the *number* and *duration* of vacancies--if you can find the data
- Ask employers, but also ask workers
- Look for evidence of the adjustments described above--if missing, ask employers why
- Look at changes in wages, especially relative wages
- Look for institutional rigidities that stop markets from adjusting: Wages might not adjust because reimbursements are fixed

# Combine Indicators into an Index?

- Malcolm Cohen proposed an index using 7 measures:
  - Employment change in the recent past
  - Occupational unemployment rate in the recent past
  - Wage change in the recent past
  - Training required for the occupation
  - Replacement demand
  - Projected increase in occupational demand
  - Immigrants certified in the recent past
- An index is a simple way to summarize indicators, but often it does so in an arbitrary way



# Use an Index Plus Judgment?

## The UK MAC System

- **Employer-Based Indicators**
  - Skill shortage vacancies as a percentage of employment by occupation
  - Skill shortage vacancies as a percentage of all vacancies
  - Skill shortage vacancies as a percentage of hard to fill vacancies
- **Price-Based Indicators**
  - Percentage change in median hourly pay for all employees
  - Percentage change in mean hourly pay for all employees
  - Relative premium to an occupation, given [skill level], controlling for region and age
- **Volume-Based Indicators**
  - Percentage change in unemployed by sought occupation
  - Percentage change in hours worked for full-time employees
  - Percentage change in employment
  - Absolute change in proportion of workers in occupation less than one year
- **Indicators of Imbalance Based on Administrative Data**
  - Absolute change in median vacancy duration
  - Stock of vacancies/claimant count by sought occupation.
- In the UK system, the 12 indicators are used to see if there is a shortage for skilled occupations and then whether use of immigrants is “sensible”

# Alternatives to Indicators

- The approach should depend on the goal
- Indicators or the UK system are useful for dealing with shortages
- Auctions will result in admission of migrants of most value to employers
- Quotas based on skills or education are useful if goal is to increase human capital of the country
- How to decide? Determine the objectives first, and that should point to the best approach



# Key Findings from Case Studies

- With support from the Sloan Foundation, we studied 4 occupations that have often been cited as having shortages
  - Home care workers
  - Pharmacists
  - Physical therapists
  - Special education teachers
- General approach to the study
  - Analyze government data from BLS and other agencies
  - Interviews with trade associations, employers, worker organizations, and academics
  - Literature review

# Key Findings from the Case Studies

- None of the four occupations appeared to be experiencing shortages using the economics definition during 2009-2012 period
- All the occupations may have had shortages in the past, based on our prior research and/or the interviews
  - Pharmacists experienced a shortage when the length of education was increased by one year and possibly when grocery stores added pharmacies with long hours
  - Our prior studies as well as the literature indicated past shortages in home care, and many think they will recur when high unemployment subsides
  - Our previous study of special education teachers found a shortage, and even today some could interpret the current situation as a shortage
  - Interviews indicated that there have been shortages of physical therapists in the past



## US Programs Find “Shortages” Even in Low-Skill Occupations: Top 10 Occupations Certified for H-2B Temporary Non-Agricultural Visas FY 2013

Occupation	Number of Positions Certified
Landscaping and groundskeeping workers	31,287
Forest and conservation workers	9,573
Amusement and recreation attendants	5,788
Maids and housekeeping cleaners	5,626
Meat, poultry, and fish cutters and trimmers	3,051
Construction laborers	2,106
Nonfarm animal caretakers	1,639
Waiters and waitresses	1,566
Coaches and scouts	1,553
Fishers and related fishing workers	1,282

# Projecting Future Shortages Even More Difficult

- Because of long lags in increasing supply, it is important to project future developments
- As noted, the health sector involves many nonmarket forces determining supply, demand, and prices
- Publications with projections are often vague by what is meant by term “shortage”
- Often disagreement on factors affecting S&D such as retirements, technological change, ability to substitute other labor, price regulation, etc.
- Track record of BLS in occupational projections mixed
- Many of the groups who sponsor projections have a stake in the outcomes



# Conclusions

- Measuring occupational shortages is difficult
  - Occupational vacancy data are needed but not available
  - Even with such data, it is difficult to differentiate between a shortage and a tight labor market
  - The SOC is too aggregate in nature to find shortages (e.g., programmers v. Java programmers)
  - Interviews have problems because employers, unions, and trade associations have incentives to misreport the situation
  - Presence of large self-employed population in some occupations makes measuring supply difficult
- There was no evidence of shortages in the occupations we studied
  - Employers frequently reported shortages, but in the “social demand” sense, not the economic definition
  - These occupations do have tight labor markets, but the severe recession precluded shortages

# Conclusions (continued)

- For policy purposes, it is important to go beyond the economic definition of a shortage, but analysts should say what they mean
- Public policy discussion goes beyond economic conception of shortages, and concepts like the social demand considerations raised by Arrow and Capron are important
- In the cases where employment and prices are highly regulated by the public sector, like most health-related jobs, we may not observe typical market responses to shortages
- Some occupations with tight labor markets have recently raised or are considering increasing educational requirements
  - Examples include physical therapists, pharmacists, and registered nurses
  - Although reasons are advanced for these changes, are the changes worth doing when it is already hard to get enough people in the occupation?
- Because of the importance of gathering good information on gathering data on shortages, consideration should be given to improving data on job vacancies and the detail of occupational measurement





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