The Dynamics of Disability: Evidence from a Cohort of Back Pain Patients

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We are grateful to the Social Security Administration and to the NIA for financial support
## Disabled Workers Receiving SSDI 1996 & 2009

<table>
<thead>
<tr>
<th></th>
<th>1996</th>
<th>2009</th>
<th>% Change</th>
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<tr>
<td>Workers on Disability</td>
<td>4,400</td>
<td>7,788</td>
<td>77%</td>
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<td>Specific Disease Categories</td>
<td></td>
<td></td>
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<tr>
<td>Circulatory System</td>
<td>518</td>
<td>684</td>
<td>32%</td>
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<tr>
<td>Mental Disorders*</td>
<td>1,128</td>
<td>2,220</td>
<td>97%</td>
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<tr>
<td>Musculoskeletal</td>
<td>907</td>
<td>2,147</td>
<td>137%</td>
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A Key Policy Question

- “… are a substantial share of Disability Insurance recipients cheating?”

Autor and Duggan, 2006, p. 85
Standard Economist’s Model to Explain Application for SSDI

\[ D^* = \alpha(\text{Health}) + \beta(\text{Earnings}/\text{SSDI Benefits}) + \varepsilon \]

\[ D = 1 \text{ (apply for SSDI) if } D^* > C \]
Graphical Analysis showing who applies to SSDI (under the red line)

Source: Croda and Skinner, 2010
### Implications

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When wages fall and benefits rise, healthier applicants
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A Different Model

1. For lower educated workers, rapid depreciation of health capital raises current wages (Case & Deaton, 2005)

2. SSDI provides a guaranteed payment if health is lousy (e.g., Hubbard, Skinner, Zeldes, 1995)

3. An alternative option available to workers: depreciate health capital through risky work and consumption (smoking, obesity, opioid use). Then apply for SSDI.
The view from the trenches....

-....the backache is intolerable and disabling because the job is intolerable, unsatisfying, or insecure; the supervisor is insensitive, hostile, or cruel; coworkers are antagonistic; the worker feels undervalued or underpaid; or the worker is overburdened by personal baggage—and sees no way out. “I injured my back” is this semiotic. (Hadler, et al., 2007)
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Data (I)

- Health and Retirement Study (1992-2006)
- Education: proxy for market opportunities
- What fraction age 50-64 (by education) has applied for SSDI in the past 10 years?
- What is the average health of those who applied over time?
Fraction of Enrollees who Applied for SSDI

- < High School
- High School
- Some College
- College +
Fraction in Fair/Poor Health of Those Who Applied, by Education

- < High School
- High School
- Some College
- College +
The SPORT RCT: Surgery for Disk Herniation

Surgical vs Nonoperative Treatment for Lumbar Disk Herniation
The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial

James N. Weinstein, DO, MSc
Tor D. Tosteson, ScD
Jon D. Lurie, MD, MS
Anna N. Tosteson, ScD
Brett Hanscom, MS
Jonathan S. Skinner, PhD
William A. Abraham, MD, MS

Context Lumbar disectomy is the most common surgical procedure for back and leg symptoms in US patients, but the efficacy of the procedure and the role of nonoperative care remain controversial.

Objective To assess the efficacy of surgery for lumbar intervertebral disk herniation.

Design, Setting, and Patients The Spine Patient Outcomes Research Trial (SPORT) was a randomized clinical trial enrolling patients between March 2000 and November 2013 from 13 multidisciplinary spine clinics in 11 US states. Patients were 501 surgically treated (mean age, 42 years; 42% women) with imaging-confirmed lumbar intervertebral disk herniation.
### Summary Statistics

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<th>People who applied for SSDI (N=94)</th>
<th>People who didn’t (N =995)</th>
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<tr>
<td>Age</td>
<td>43.4</td>
<td>40.2</td>
</tr>
<tr>
<td>Black</td>
<td>.106</td>
<td>.053</td>
</tr>
<tr>
<td>Depression</td>
<td>.245</td>
<td>.108</td>
</tr>
<tr>
<td>Other joint problem</td>
<td>.187</td>
<td>.160</td>
</tr>
<tr>
<td>Stomach problems</td>
<td>.170</td>
<td>.102</td>
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<td>Current smoker</td>
<td>.404</td>
<td>.224</td>
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The Oswestry Low Back Pain Questionnaire

10 Categories
- Pain intensity
- Personal Care
- Lifting
- Walking
- Sitting
- Standing
- Sleeping
- Sex Life
- Social Life
- Traveling
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**Within “Standing”**
- I can stand as long as I want without increased pain.
- I can stand as long as I want but increases my pain.
- Pain prevents me from standing more than 1 hour.
- Pain prevents me from standing more than 1/2 hour.
- Pain prevents me from standing more than 10 minutes.
- Pain prevents me from standing at all.
Percentage Who Apply to SSDI, by Education

- < High School
- High School
- Some College
- College +
Percentage Who Apply to SSDI, and Oswestry Score at Application, by Education

- < High School
- High School
- Some College
- College +
Oswestry Score, by Education and Time Post-Baseline
Percentage Who Apply to SSDI, Relative to College Graduates

1. basic = (age & its square), race, Hispanic ethnicity, gender, year of enrollment dummies, & follow-up survey dummies.
Percentage Who Apply to SSDI, Relative to College Graduates

2. Baseline Health = Includes everything in (1) + baseline Oswestry score, SF-36 physical composite score, SF-36 mental score, dummies for baseline presence of hypertension, heart disease, cancer, stroke, depression, other (non-back) joint problems, diabetes, lung disease, and bowel disorder, & whether patient got back surgery.
Percentage Who Apply to SSDI, Relative to College Graduates

3. Current health = (2) + Oswestry score at follow-up, SF-36 physical score, SF-36 mental score, current smoker, obese (BMI>30).
Percentage Who Apply to SSDI, Relative to College Graduates

4. Earnings & other = (3) + annual earnings or wages (hourly workers)
6 categories, lifting is very important for job, lifting is somewhat important in job
## Scorecard

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Summing Up

• VERY preliminary results – additional analysis required

• Key objective: to reconcile with other disability facts (e.g., short-term application trends in Song and Manchester, 2011)
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• Further exploration of neurological/psychological issues surrounding pain
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• Next step: Provide mice with SSDI, measure pain
Additional Slides
Fraction in Fair/Poor Health of Those Who Did Not Apply, by Education