Role of Environmental & Socio-Demographic Characteristics on Independent Living Function Among Community Living Adults with Disabilities

Andrew Houtenville, PhD
Vidya Sundar, PhD, OTR
Karen Conway Smith, PhD
Nick Rollins, MS
University of New Hampshire, Durham, NH

NARRTC
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Introduction

• Background
  – Enabling vs. disabling vs. environments
  – Cumulative effects of neighborhood characteristics on health & function
  – Current scholarship – focused on physical functioning or health among older adults, children and adolescents

• **Purpose:** To examine the role of natural, built environmental characteristics and socio-demographic characteristics in reporting an independent living difficulty among working age individuals living in the community
Data Source

• Data Source:
  – 3 year pooled data from the American Community Survey (ACS) 2008-2010
  – Matched census track data from
    • USDA Economic Research Service
    • City and County data book
Sample ACS Questions

- **Hearing Difficulty:** Is this person deaf or does he/she have serious difficulty hearing? [yes|no]
- **Vision Difficulty:** Is this person blind or does he/she have serious difficulty seeing even when wearing glasses? [yes|no]
- **Cognitive Difficulty:** Because of a physical, mental, or emotional condition, does this person have serious difficulty concentrating, remembering, or making decisions? [yes|no]
- **Ambulatory Difficulty:** Does this person have serious difficulty walking or climbing stairs?
- **Self-Care Difficulty:** Does this person have difficulty dressing or bathing? [yes|no]
- **Independent Living Difficulty:** Because of a physical, mental, or emotional condition, does this person have difficulty doing errands alone such as visiting a doctor’s office or shopping? [yes|no]
Measures

- **Local neighborhood characteristics** (Source: USDA, US Agricultural Research, City and County databook)
  - Natural Environment (Jan temp, July humidity, Topography)
  - Transportation and safety (Pct. walk to work, Pct. Use of public transport, Crime per 1000 persons, Population density in 2000)
  - Socio-economic status (Poverty rate and Unemployment rate)

- **Individual level characteristics** (Source: ACS)
  - Age, Gender, Race, Education, Household income

- **Housing characteristics** (Source: ACS)
  - Age of structure, # of units in structure
Analytical Plan

• Descriptive statistics
  – Prevalence of Independent Living difficulty among the sample and sub-populations

• Logistic regression (adjusted for survey design factors)
  – PUMA fixed effects/clustering
## Descriptive Statistics

<table>
<thead>
<tr>
<th>N = 5339104</th>
<th>Total Sample</th>
<th>Male</th>
<th>Female</th>
<th>Age group: 18-34</th>
<th>Age group: 35-54</th>
<th>Age group: 56-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals reporting IL difficulty</td>
<td>192,319 (3.60%)</td>
<td>85,730 (3.34%)</td>
<td>106,589 (3.84%)</td>
<td>35,981 (2.14%)</td>
<td>86,316 (3.54%)</td>
<td>70,022 (5.75%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N = 5339104</th>
<th>No disability</th>
<th>Any disability</th>
<th>Physical</th>
<th>Cognitive</th>
<th>Vision</th>
<th>Hearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals reporting IL difficulty</td>
<td>20,179 (0.42%)</td>
<td>172,140 (32.37%)</td>
<td>121,746 (41.60%)</td>
<td>105,578 (48.46%)</td>
<td>29,862 (32.84%)</td>
<td>21,327 (17.95%)</td>
</tr>
</tbody>
</table>

* All frequencies are un-weighted estimates
## Results – Some Highlights

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Men</th>
<th>Women</th>
<th>Ages 18-34</th>
<th>Ages 35-54</th>
<th>Ages 55-64</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.1 Natural Environment</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>-- January temp</td>
<td></td>
<td></td>
<td></td>
<td>p&lt;.01</td>
<td>p&lt;.05</td>
<td></td>
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<tr>
<td>-- July humid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p&lt;.05</td>
<td>p&lt;.01</td>
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<tr>
<td>-- Topography (1-21)</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td></td>
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<tr>
<td><strong>1.2 Neighborhood and safety</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>-- Pct. walk to work</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.05</td>
<td>p&lt;.01</td>
<td></td>
</tr>
<tr>
<td>-- Pct. use public transit to work</td>
<td>p&lt;.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>-- Crime per 1000 persons</td>
<td>p&lt;.05</td>
<td>p&lt;.05</td>
<td></td>
<td></td>
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<tr>
<td>-- Population density in 2000</td>
<td></td>
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<tr>
<td><strong>1.3 Socio-economic status (SES)</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>-- Unemployment rate</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
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<tr>
<td>-- Poverty rate</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.05</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
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<td><strong>2. Individual-level functional limitations</strong></td>
<td></td>
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<tr>
<td>- Hearing difficulty</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
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<tr>
<td>- Vision difficulty</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
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<tr>
<td>- Ambulatory difficulty</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
</tr>
<tr>
<td>- Cognitive difficulty</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
<td>p&lt;.01</td>
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</table>

* Odds ratio available on request
# Results – Some Highlights

<table>
<thead>
<tr>
<th>Observations</th>
<th>5339104</th>
<th>170740</th>
<th>38941</th>
<th>107367</th>
<th>69203</th>
<th>62835</th>
</tr>
</thead>
</table>

## 1. Neighborhood-level characteristics

### 1.1. Natural environment
- **January temp**: $p < .05$ $p < .01$
- **July humid**: $p < .01$ $p < .05$
- **Topography**: $p < .01$ $p < .05$

### 1.2. Neighborhood and safety
- **Pct. walk to work**: $p < .01$ $p < .05$ $p < .01$
- **Pct. use public transit to work**: $p < .01$
- **Crime per 1000 persons**: $p < .05$ $p < .01$
- **Population density in 2000**: $p < .05$

### 1.3. Socio-economic status
- **Unemployment rate**: $p < .01$ $p < .01$ $p < .01$
- **Poverty rate**: $p < .01$ $p < .01$ $p < .05$ $p < .01$

## 3. Individual-level characteristics

### - Age
  - $p < .05$ $p < .01$ $p < .01$

### - Age squared
  - $p < .05$ $p < .01$ $p < .01$

### - Female
  - $p < .01$ $p < .01$ $p < .05$ $p < .01$ $p < .01$

### - Race
  - **Black/African American only**: $p < .01$ $p < .05$
  - **Asian only**: $p < .01$
  - **Other**: $p < .05$

### - Hispanic
  - $p < .01$ $p < .01$ $p < .05$ $p < .05$

### - Doesn't speak English well
  - $p < .01$

### - Married
  - $p < .01$ $p < .01$ $p < .05$ $p < .01$ $p < .01$

### - Education
  - **HS diploma or equivalent**: $p < .01$ $p < .01$ $p < .01$ $p < .01$ $p < .01$
  - **Some college**: $p < .01$ $p < .01$ $p < .01$ $p < .01$ $p < .01$
  - **Bachelors or more**: $p < .01$ $p < .01$ $p < .01$ $p < .01$ $p < .01$
  - **Total family income/1000**: $p < .01$ $p < .01$ $p < .01$ $p < .01$ $p < .01$

*Odds ratio available on request*
Contributions to the field

• Focus on working age population
• Large sample size, national level data
• Function as a outcome
• Inclusion of both natural and built environment
• Conceptual framework to clarify relationship between environment and function
Questions or Comments?

Vidya Sundar, Ph.D. OTR
Assistant Professor
Department of Occupational Therapy
University of New Hampshire
Hewitt Hall, 4 Library Way
Durham, NH 03824
603-862-0284
Vidya.Sundar@unh.edu

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