

## Preparing for the Silver Tsunami

The Demand for Higher Education  
among Older Adults

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## Support and Disclaimer

- This material is based upon work supported by the Association for Institutional Research, the National Center for Education Statistics, the National Science Foundation, and the National Postsecondary Education Cooperative under Association for Institutional Research Grant Number 09-135.
- Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Association for Institutional Research, the National Center for Education Statistics, the National Science Foundation, or the National Postsecondary Education Cooperative.

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## Rationale

- Here come the Boomers!
  - Between 2010 and 2020, the U.S. Population:
    - ✦ 55+ will increase by 28%
    - ✦ < 55 will increase by 10%
    - ✦ 55+ will move from 25% to 29% of the population

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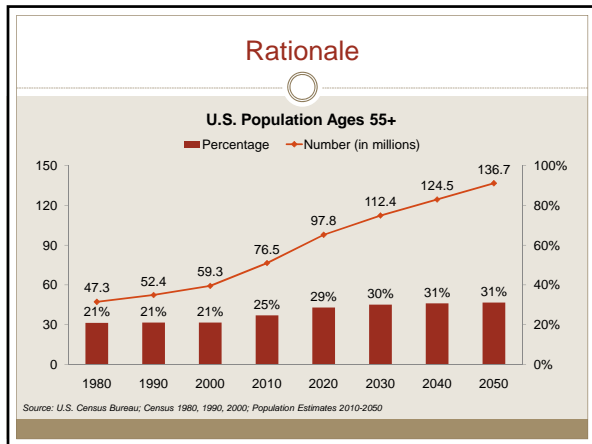
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- ### Rationale
- Welcome to the *Third Age!*
    - Boomers are challenging long-held notions of “retirement”
    - Many Boomers are planning to:
      - ✦ Keep working after entering traditional retirement years
      - ✦ Pursue avenues for lifelong learning
    - This means that postsecondary institutions have opportunities to:
      - ✦ Provide work-related training or retooling
      - ✦ Create and market courses that match personal interests

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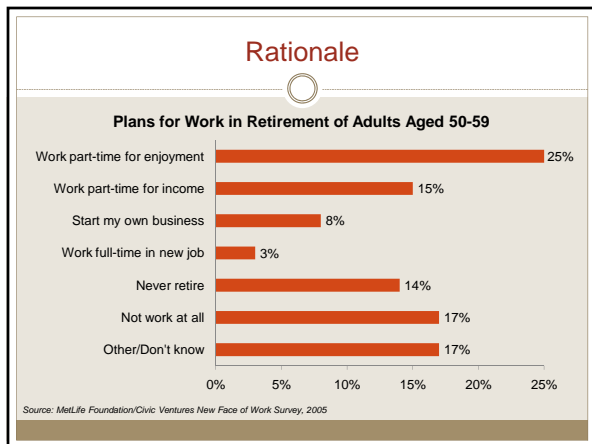
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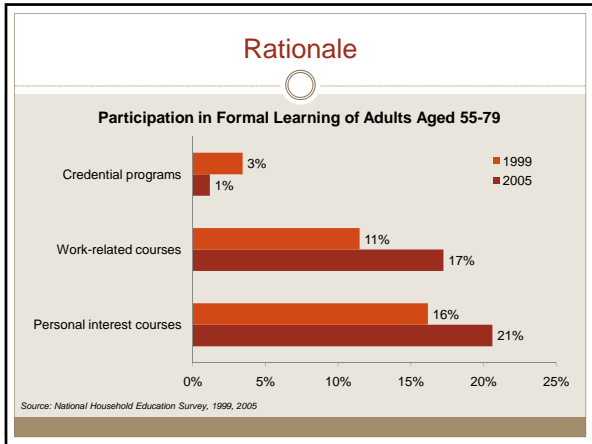
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- ### Rationale
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- What are work-related and personal interest courses?
    - Formal courses, seminars, or training not part of a degree program
      - ✦ Taken for work-related reasons regardless of employment status or
      - ✦ Taken in pursuit of personal interests or hobbies
    - Include a range of subjects typically taught by postsecondary inst.
      - ✦ Business management
      - ✦ Computer science and systems
      - ✦ English literature
      - ✦ Fine and performing arts
      - ✦ Foreign languages
      - ✦ Physical education

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- ### Rationale
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- Popular work-related course subjects:
    - Self-help & Personal Health
    - Computer Science & Systems
    - Education
    - Allied Health
  - Popular personal interest course subjects:
    - Physical Education & Leisure
    - Computer Science & Systems
    - Personal Awareness/Improvement
    - Self-help & Personal Health

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## Rationale

- Postsecondary institutions are not the only providers:
  - Other schools or school districts
  - Private businesses/companies/hospitals
  - Government agencies (federal, state, local)
  - Professional associations/organizations/unions
  - Public libraries
  - Community/religious organizations, nonprofits
- But...
  - Boomers have higher levels of ed. attainment than previous gen.
  - More likely to be connected to a postsecondary institution
  - More likely to value and better able to navigate postsecondary ed.

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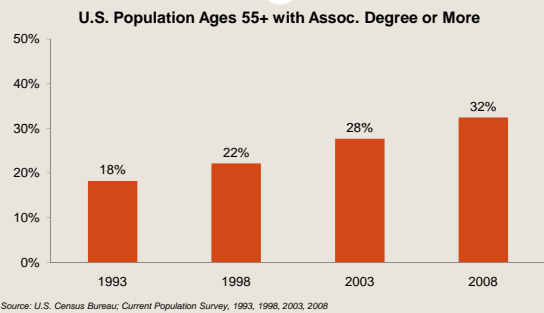
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## Rationale



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## Rationale

- American Council on Education
  - Reinvesting in the Third Age: Older Adults and Higher Education
    - × *Framing New Terrain: Older Adults and Higher Education* (2007)
      - Motivations, needs, and obstacles to higher education
    - × *Mapping New Directions: Older Adults in Higher Education* (2008)
      - How higher education is currently serving older adults
  - Findings and recommendations of these reports
    - × Based largely on descriptive and anecdotal evidence
    - × Require some support using sound theory and inferential analysis

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## Purpose

- To better understand the commitments and constraints that are related to participation in formal learning among older adults ages 55 to 79.
- Address this purpose using:
  - Conceptual Model: Consumer Choice Theory
  - Data set: National Household Education Surveys Program (2005)
  - Analytic Method: Hurdle Model that analyzes participation rates

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## Conceptual Model

- Consumer Choice Theory
  - A model for describing consumer behavior
  - Has been applied to college choice decisions
  - Consumer decision-making (rational choice) is based on:
    - ✦ Consumer preferences (subjective and unique)
    - ✦ A set of constraints (real or perceived)
    - ✦ Goal: Maximizing utility (or well-being) under constraint

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## Conceptual Model

- Consumer Choice Theory
  - Preferences
    - ✦ Values, interests, opinions, tastes
    - ✦ Subjective and specific to individual
    - ✦ Four assumptions about consumer preferences
      - Nonsatiation: More of a good is preferred to less
      - Completeness: Ordering or indifference based on well-being
      - Transitivity: No contradiction in ordering/indifference
      - Consistency: Presented with same info, preferences are stable

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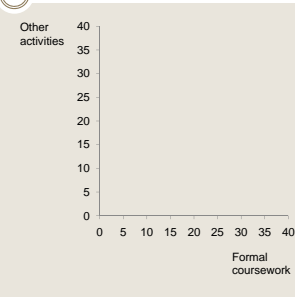
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### Conceptual Model

- Consumer Choice Theory
  - Preferences
    - ✦ Assume two dimensions:
      - Hours of formal coursework
      - Hours spent on other activities (i.e., composite good)




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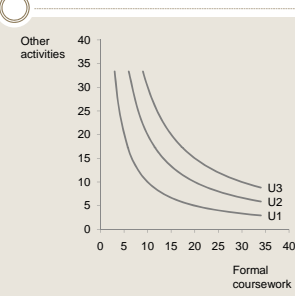
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### Conceptual Model

- Consumer Choice Theory
  - Preferences
    - ✦ Indifference curves
      - Infinite in number
      - NE = increased utility
      - Represent tradeoff
      - Negative slope
        - Slope = Rate of substitution
      - Convex to the origin
        - Diminishing MRS




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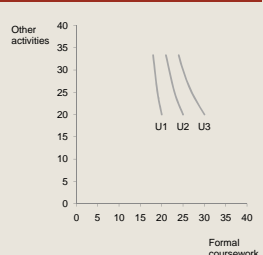
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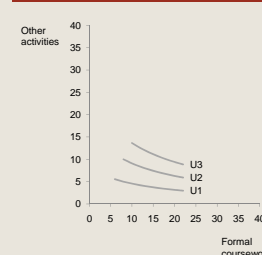
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### Conceptual Model

Values Formal Coursework



Values Other Activities



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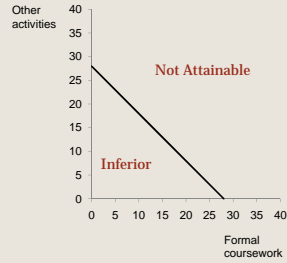
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## Conceptual Model

- Consumer Choice Theory

- Constraints
  - × Possibility Frontier
    - Limit on choices
      - Budget
      - Health/Ability
    - Negative slope
      - Slope = Rate of transformation
      - Represents all possible combos of formal coursework and other activities given constraints



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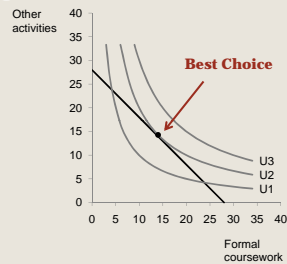
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## Conceptual Model

- Goal

- Maximize utility given constraints
- Where indifference curve and possibility frontier are tangent
- Referred to as rational choice



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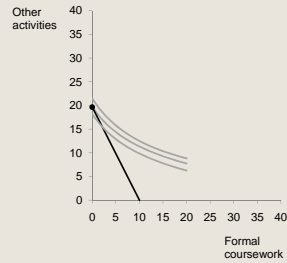
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## Conceptual Model

- Corner Solution

- Maximizing utility under constraint means choosing no hours of formal coursework
- Choosing +hours of formal coursework decreases overall utility



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## Road Map

- Rationale
  - Boomers reaching retirement age
  - Expect more demand for formal learning
- Conceptual Model
  - Observed choices are rational—max. well-being under constraint
  - May lead some to choose no formal learning
- Next: Methods & Results

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## Methods

- Data
  - National Household Education Surveys Program (2005)
    - Early Childhood Program Participation Survey
    - After-School Programs and Activities Survey
    - Adult Education Survey
      - English as a second language
      - Basic skills and high school completion
      - Postsecondary education (credential programs)
      - Apprenticeships
      - Work-related and personal interest courses
      - Informal learning activities

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## Methods

- Data
  - National Household Education Surveys Program (2005)
    - Random digit dial (RDD) telephone survey of households
    - Public use file
- Sample
  - Adults ages 55 – 79
  - Unweighted N = 3,090
  - Weighted N = 55,096,805

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## Methods

- Outcome
  - Hours of formal coursework over a 12-month period
  - Excess zeros will create an estimation problem

Histogram

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## Methods

- Analytic Technique
  - Hurdle Model
    - × Two independent decision points:
      - The “Hurdle”—whether or not to participate in formal learning
        - Analogous to the study of the corner solution
        - i.e., Why is it that some only choose other activities?
        - Assumed by economists to be a function of
          - Personal tastes/preferences (background characteristics as proxies)
          - Constraints (e.g., income, health)
      - Number of hours to participate in formal learning
        - Assumed by economists to be a function of
          - Economic constraints (i.e., price)
          - Quality conditions (regional differences as proxies)

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## Methods

- Analytic Technique (continued)
  - Participation in Formal Learning (the “Hurdle”)
    - × Binary logistic regression
      - 1=participated, 0=did not participate
      - Report results as discrete change in estimated probabilities
  - Hours of Formal Learning
    - × Zero-truncated negative binomial regression
      - Estimated for participants only (i.e., only predicting + count)
      - Report results as “conditional” estimated rates of participation

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## Methods

- Predictors

- Age (discrete, 55-79)
- Sex (1=female, 0=male)
- Race (1=white, 0=minority)
- Country of Origin (1=U.S., 0=other)
- Household Size (1=live alone, 0=2+ in household)
- Physical/Learning Disability (1=yes, 0=no)
- Years of schooling (discrete, 0-22)
- Income per Household Member
- Work (full-time, part-time, not in labor force)

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## Methods

- Predictors (continued)

- Informal Learning Index (discrete, 0-6)
  - ✦ Computer software or Internet
  - ✦ Books, manuals, audio, video, TV
  - ✦ How-to or consumer magazines
  - ✦ Club or group activity (e.g., book club, arts and crafts)
  - ✦ Convention or conference (e.g., garden show, car show)
  - ✦ Other informal learning
- Locale (1=rural, 0=urban/suburban)
- Region of Country (Northeast, South, Midwest, West)
- Out-of-Pocket Price per Hour (i.e., tuition, materials)
- Price=\$0 Dummy (to account for 48% with \$0 out-of-pocket price)

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## Methods

- Limitations

- Price not included in estimation of "Hurdle"
  - ✦ Price is missing when hours=0
  - ✦ Can not effectively estimate price when hours=0
    - Price is a function of course provider and course type
    - Course provider and course type are missing when hours=0
    - Have no reliable means of predicting provider and type

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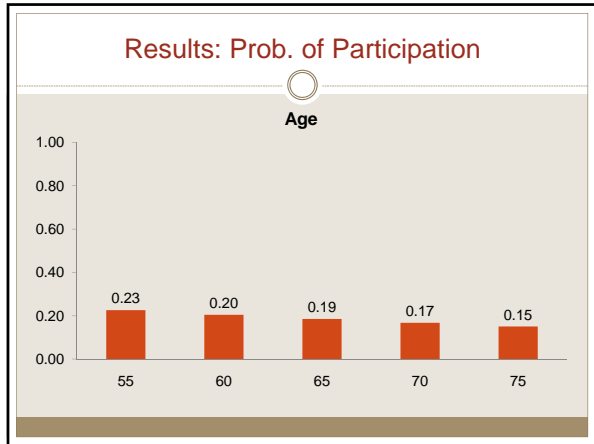
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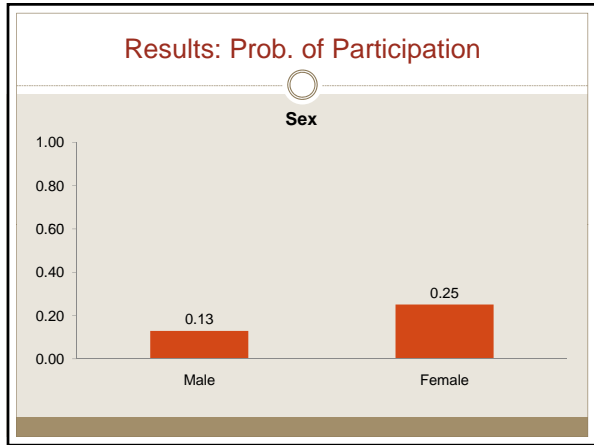
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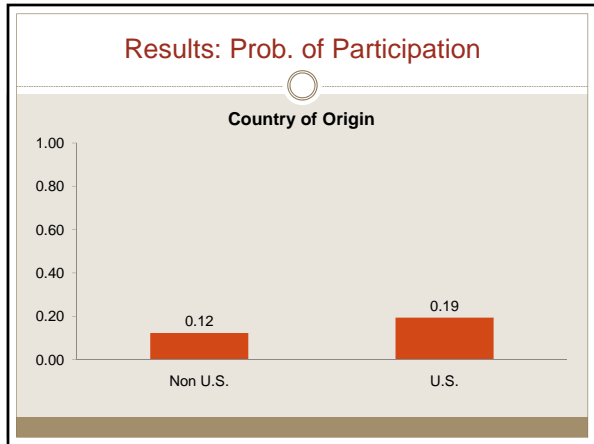
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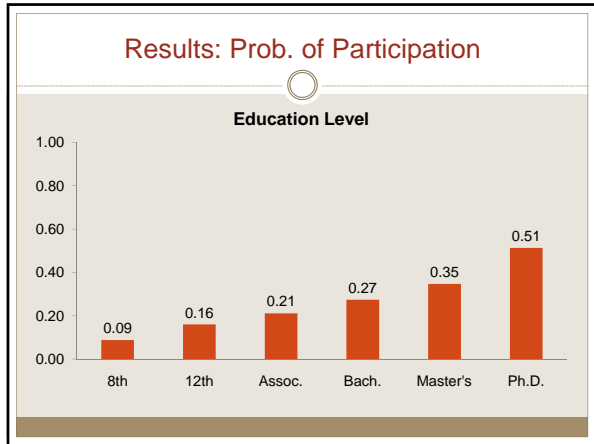
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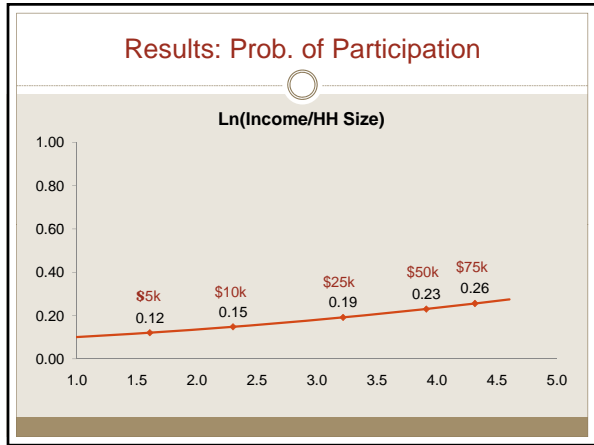
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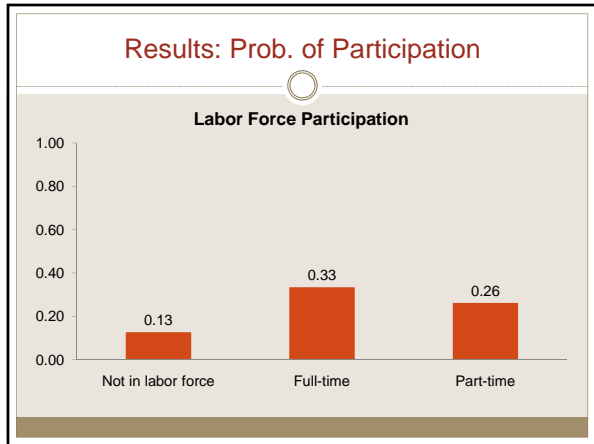
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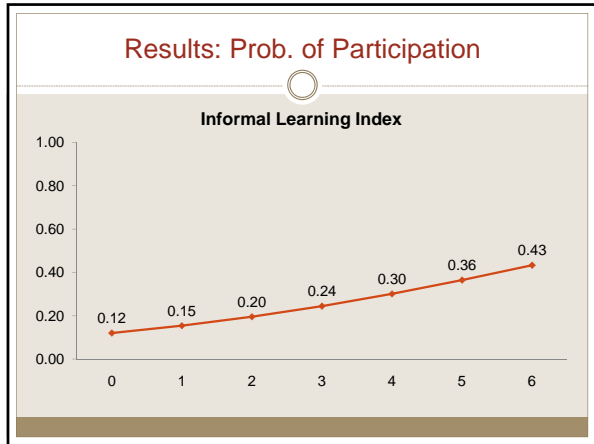
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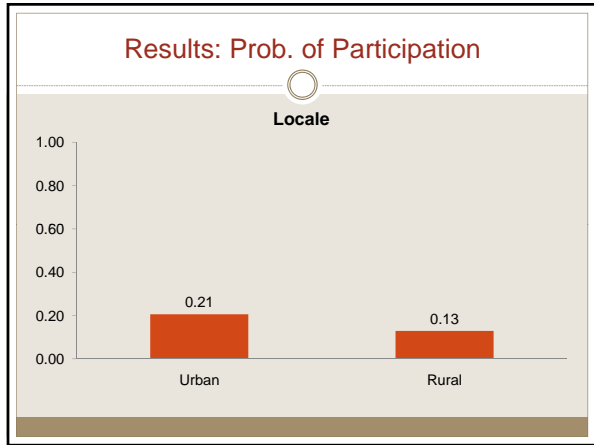
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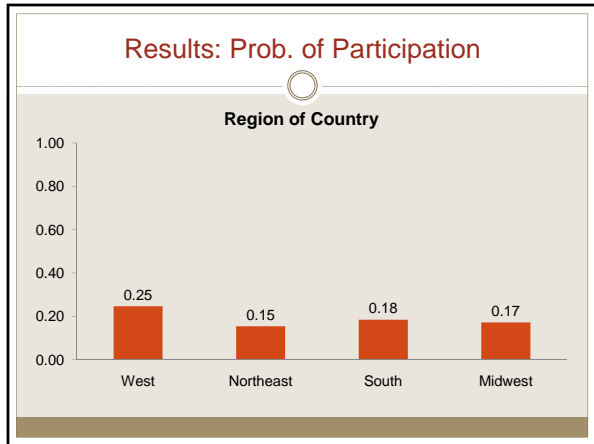
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## Results: Prob. of Participation

- Statistically Non-significant Differences
  - Race: White vs. Minority
  - Household Size: Live alone vs. 2+ in household
  - Disability: Physical/Learning disability vs. No Disability

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## Simulation: Prob. of Participation

- Individual A
- Age: 75
  - Male
  - Origin: Non-U.S.
  - High school grad
  - Income/Size: 25K
  - Not in labor force
  - Informal learning: 1
  - Rural locale
  - Southern state

0.02  
A

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## Simulation: Prob. of Participation

- Individual A
- Age: 75
  - Male
  - Origin: Non-U.S.
  - High school grad
  - Income/Size: 25K
  - Not in labor force
  - Informal learning: 1
  - Rural locale
  - Southern state

0.02  
A

- Individual B
- Age: 60
  - Female
  - Origin: U.S.
  - College grad
  - Income/Size: 50K
  - Part-time work
  - Informal learning: 5
  - Urban locale
  - Western state

0.85  
B

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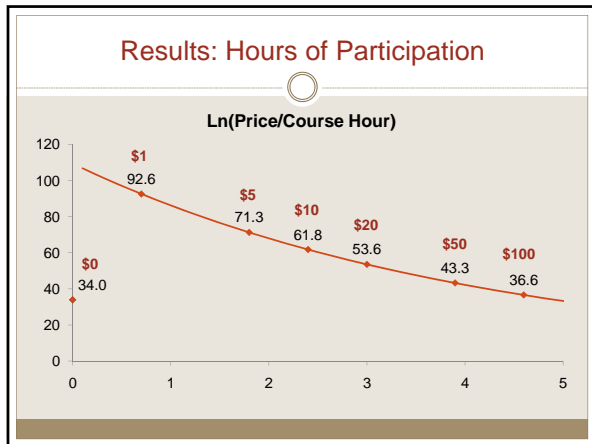
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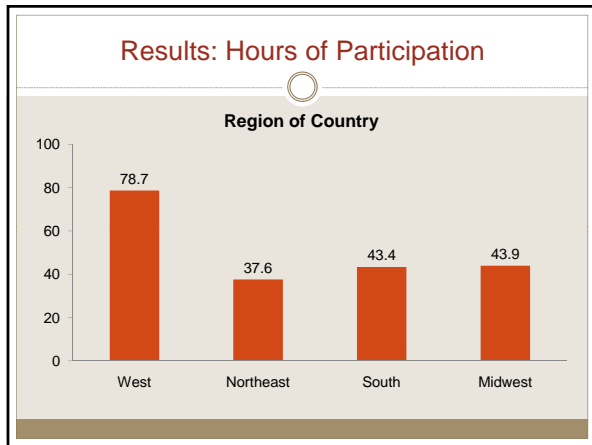
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### Discussion

- The decision to participate is a function of:
  - Age: Generation gap?
  - Locale: Differences in access
  - Education level: Higher attainment + positive impact = more demand
  - Income: Financial aid, employer contributions
  - Employment Status: 36% w/employer support

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## Discussion

- Positive hours of participation is a function of:
  - Price
    - × Quantity demanded inversely related to price (law of demand)
    - × Negative relationship for Price=\$0
      - Approx. 60% employer, 40% provider/other
      - Suggests: May take price=\$0 to move some off of the corner

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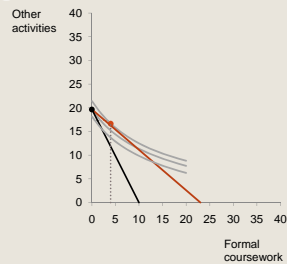
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## Discussion

- Corner Solution
  - Lowering price of formal coursework rotates budget constraint
  - Rational choice = +hours of formal coursework and higher overall utility



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## Link to Paper & Contact Information

- For a copy of the manuscript  
[http://www.indiana.edu/~upira/other\\_init/Cruce\\_and\\_Hillman,\\_AIR\\_2010](http://www.indiana.edu/~upira/other_init/Cruce_and_Hillman,_AIR_2010)
- For more information about this study
  - Ty Cruce [tcruce@indiana.edu](mailto:tcruce@indiana.edu)
  - Nick Hillman [nhillman@indiana.edu](mailto:nhillman@indiana.edu)

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