Using National Databases for Research on Career and Technical Education

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Participation in Career and Technical Education (CTE)

- Main question:
  - Who is a high school CTE student?

- Major implications:
  - Policy
  - Research
CTE and the Post High School Experience

- Does it prepare students for the world of work?
- Can they pursue a postsecondary education with the skills acquired in high schools?
Who is a High School CTE Student?

- Smith-Hughes Act
  - Academic curriculum
  - Vocational curriculum
- Most of the 20th century
- 1980s and beyond
  - School reform
  - “New vocationalism”
  - Curriculum integration
High School Curriculum/Tracks

CTE CURRICULUM

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

ACADEMIC CURRICULUM

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
</tr>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

General  

CTE  

Academic  

Dual
Research on CTE

- National databases
  - NELS:1988
  - NLSY97, etc.

- Smaller samples
  - School levels
  - Districts
  - Inter-school
The CTE Student

- Self-classification
- Transcript studies
- No agreement between them
- No agreement between studies
- NCES: Fulfillment of an occupational area if 3 or more credits are taken in that area (“occupational concentrator”)
National Databases

- Rich sources of information
- Useful for educational research
- Comprehensive samples
  - Specificity and complexity of CTE
The CTE Experience—A New Look

• New typology developed by the NRCCTE
• Looks at the whole CTE experience, of all students
• It is based on the recognition that about 92% of public school graduates of American high schools from the class of 2005 took at least one CTE course (Levesque, Laird, Hensley, Choy, Cataldi, & Hudson, 2008)
• Its starting point is that the academic graduation requirements have become more uniform for all high school students
The CTE Course Taking Experience

1. Number of CTE Carnegie units or credits
2. Division of the course taking into whether students took less than 3 credits or took three or more units/credits
3. In the case of 3 credits or more, whether those units/credits are in a single occupational area

- Different levels, different motivation, different goals
- What do CTE graduates look like, then?
Example of CTE Course Taking Experience

STANDARD COURSE CREDITS REQUIREMENTS (4E, 3M, 3S, 3SS) (NCES-HSTS 2011)

HIGH LEVEL MATH AND SCIENCE (4E, 3M, 3S, 3SS, 1FL; Geom & Alg I or II or higher, 2 Bio, Che, Phys)

CTE COURSE TAKING (FROM 0 CREDITS TO 3 CR, NOT FULFILLING OR FULFILLING AN OCCUPATIONAL AREA)
CTE and ELS:2002

- Self-reporting data (survey)

- Transcript data (restricted data)
  - Academic courses
  - CTE courses
  - Thirteen occupational areas
## CTE Credit Taking of Public High School Students. ELS:2002

<table>
<thead>
<tr>
<th>CTE CREDITS</th>
<th>%</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>No CTE credits</td>
<td>7.6</td>
<td>204,019</td>
</tr>
<tr>
<td>More than zero and less than 1 CTE credit</td>
<td>7.1</td>
<td>191,107</td>
</tr>
<tr>
<td>1 CTE credit</td>
<td>10.2</td>
<td>276,330</td>
</tr>
<tr>
<td>More than 1 and less than 3 CTE credits</td>
<td>28.2</td>
<td>761,844</td>
</tr>
<tr>
<td>3 CTE credits; No occupational area</td>
<td>7.4</td>
<td>198,854</td>
</tr>
<tr>
<td>More than 3 CTE credits; No occupational area</td>
<td>18.9</td>
<td>508,757</td>
</tr>
<tr>
<td>3 CTE credits; 1 occupational area</td>
<td>0.8</td>
<td>20,660</td>
</tr>
<tr>
<td>More than 3 CTE credits; At least 1 occupational area</td>
<td>15.6</td>
<td>420,951</td>
</tr>
<tr>
<td><strong>Total weighted N=2'698,121</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Kotamraju, Aliaga & Dickinson, 2011*
Graduates from Public High Schools: CTE Coursetaking and Fulfillment of Occupational Areas

N = 2,698,609

%  

Agriculture and Natural Resources: 2.2  
Construction and Architecture: 0.9  
Communications and Design: 1.9  
Business Support and Management: 1.3  
Business Finance: 0.1  
Public Services: 0.2  
Health Sciences: 1.3  
Consumer Services: 2.7  
Culinary ARTS: 3.4  
Computer and Information Science: 0.4  
Manufacturing, Repair, and Transportation: 1.0  
Marketing: 1.0  
Engineering Technologies: 1.0
• Applying New CTE Typology—CTE and Dropouts
Research question

- What is the impact of CTE on high school students dropping out?

<table>
<thead>
<tr>
<th>CTE Course-taking (credits)</th>
<th>Graduated*</th>
<th>Not Graduated</th>
<th>Weighted n</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>93.6%</td>
<td>6.4%</td>
<td>2,698,121</td>
</tr>
<tr>
<td>0</td>
<td>92.0%</td>
<td>8.0%</td>
<td>215,646</td>
</tr>
<tr>
<td>0.01 - 0.99</td>
<td>92.1%</td>
<td>7.9%</td>
<td>201,987</td>
</tr>
<tr>
<td>1</td>
<td>94.4%</td>
<td>5.6%</td>
<td>287,940</td>
</tr>
<tr>
<td>1.01 - 2.99</td>
<td>91.5%</td>
<td>8.5%</td>
<td>806,182</td>
</tr>
<tr>
<td>3.00/No OAF**</td>
<td>95.8%</td>
<td>4.2%</td>
<td>204,943</td>
</tr>
<tr>
<td>3.00+/No OAF</td>
<td>95.0%</td>
<td>5.0%</td>
<td>528,060</td>
</tr>
<tr>
<td>3.00/OAF</td>
<td>94.2%</td>
<td>5.8%</td>
<td>21,904</td>
</tr>
<tr>
<td>3.00+/OAF</td>
<td>95.9%</td>
<td>4.1%</td>
<td>431,459</td>
</tr>
</tbody>
</table>

**OAF: Occupational area fulfilled. Student completed at least 3 credits in a single occupational area.

<table>
<thead>
<tr>
<th>Category</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.439</td>
</tr>
<tr>
<td>Female (Male)</td>
<td>0.583 ***</td>
</tr>
<tr>
<td>Black (White)</td>
<td>1.081</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.177</td>
</tr>
<tr>
<td>Asian</td>
<td>0.880</td>
</tr>
<tr>
<td>Other</td>
<td>1.347</td>
</tr>
<tr>
<td>Socio-Economic Status</td>
<td>0.757 **</td>
</tr>
<tr>
<td>9th Grade GPA</td>
<td>0.239 ***</td>
</tr>
<tr>
<td>3 CTE credits; No occupational area (Less than 3 credits)</td>
<td>0.508 *</td>
</tr>
<tr>
<td>More than 3 CTE credits; No occupational area</td>
<td>0.587 **</td>
</tr>
<tr>
<td>3 or more CTE credits; At least 1 occupational area</td>
<td>0.361 ***</td>
</tr>
</tbody>
</table>

Dropout: Students who have not earned a regular High School diploma two years after cohort's completion in 2004.
Discussion

- Confirms prior research (Plank, 2001)
- Yet, not conclusive
- However: CTE credit taking inversely related to dropping out
- 3 CTE credits or above
- Further research (Survival analysis)
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