Background

• What is the CCBA?

• Problem
  – Growing trend, now allowed in 24 states
  – Concerns about academic quality

• Purpose
  – Determine whether postbaccalaureate employment outcomes are comparable for graduates of CCBA and TBA institutions

• Research Questions
  – One year after graduation, are employment outcomes (employment status and wages) comparable for CCBA and TBA graduates?
Why might we see a difference in CCBA and TBA outcomes?

• Signaling

• Differences in quality
  – Amount and allocation of resources
  – Makeup of the student body
  – Curricular functions and priorities
  – Characteristics of the service area

• CCBA Strengths
  – Close connections with local employers
  – Ability to respond to local needs
  – Expertise in applied and technical fields
DATA AND METHODS
Data

• Washington State
  – One of the earlier states to allow CCBA degrees
  – Second highest concentration of CCBA offerings in the U.S. after Florida

• Data Elements
  – High school attended, college enrollment, degree completion, and employment
Analysis Sample

• Completed bachelor’s degree between 2009-2014
• Majored in business administration and nursing
• Subgroups
  – High school subgroup
  – Prior employment subgroup

**Treatment Group**  **Comparison Group**

280 CCBA graduates  6,330 TBA graduates
Outcome Variables: Derived from Unemployment Insurance Database

Has record

• Confirms employment
• Provides quarterly earnings and hours for each employer

No record

• Unemployed, and
• Employed but no match
  – type of employer
  – location of the employer
  – missing or erroneous data in the elements used for file linking
OLS

\[ Employment_{outcome_i} = \beta_0 + \beta_1 CCBA_i + \beta_2 X_i + \mu_i \] (1)

- Assumes that there are no unmeasurable confounders
- Challenge
  - Treatment variable is endogenous
  - Will produce biased estimates
Instrumental Variables (IV)

• An instrument is a variable (or set of variables) that is related to the treatment variable such that it can be used to predict the actual treatment condition, (Angrist & Pischke, 2009; Card, 2001; Dunning, 2012; Wooldridge, 2013).

• Two-stage least squares
  – Stage 1: Predict treatment status with instrument
  – Stage 2: Use predicted value for treatment status in second stage equation

\[ CCBA_i = Z_i \alpha_1 + X_i \alpha_2 + v_i \]  
\[ Employment_{outcome_i} = \beta_1 CCBA_i + \beta_2 X_i + \varepsilon_i \]
Instrument College Choice with Distance

High school attended 32.4%

County of employment >= 1 year before enrollment 37.2%

County of residence reported on college application 30.4%

Best pre-college county location

Distance to nearest CCBA

Distance to nearest TBA

Distance to nearest Private not-for-profit

Distance to nearest Private for-profit
IV Assumptions

- Nonzero causal effect of instrument on treatment
- Ignorably random assignment
- Exclusion Restriction
- Monotonicity
- Stable Unit Treatment Value Assumption
Fixed Effects

• Controls for all individual-level attributes that are constant over time.
• Assumes that there are no unmeasurable confounders that vary over time and individuals

\[ PostBA\ wage_{it} = \beta_0 + \beta_1(Completion)_{it} + \beta_2(Completion_{it} \times CCBA_{it}) + \beta_3(Enrolled)_{it} + \beta_4(Enrolled_{it} \times CCBA_{it}) + \beta_5(AshDip2/3/4)_{it} + \beta_6-8(AshDip2/3/4_{it} \times CCBA_{it}) + \rho_i + \eta_t + \varepsilon_{it} \] (4)
RESULTS
## CCBA Effect on employment status

<table>
<thead>
<tr>
<th>Estimation Method</th>
<th>Employed</th>
<th>OLS</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>No effect</td>
<td>Positive</td>
<td></td>
</tr>
<tr>
<td>High school subgroup</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect 1</td>
</tr>
<tr>
<td>Prior employment subgroup</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full sample</td>
<td>Positive</td>
<td>No effect</td>
<td></td>
</tr>
<tr>
<td>High school subgroup</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td>Prior employment subgroup</td>
<td>No effect</td>
<td>No effect</td>
<td>No effect</td>
</tr>
</tbody>
</table>

1 $F$-statistic did not exceed the critical value to reject the null hypothesis that the instruments are weak.
## CCBA Effect on wages: Nursing

<table>
<thead>
<tr>
<th>Estimation Method</th>
<th>Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
</tr>
<tr>
<td>Controls for wages</td>
<td></td>
</tr>
<tr>
<td>2 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>4 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>6 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>High school subgroup, 4 year wage controls</td>
<td>No effect</td>
</tr>
<tr>
<td>Prior employment subgroup, 4 year wage controls</td>
<td>No effect</td>
</tr>
<tr>
<td>Enrollment, completion, Ashenfelter Dip</td>
<td>No effect</td>
</tr>
</tbody>
</table>

1. *F*-statistic did not exceed the critical value to reject the null hypothesis that the instruments are weak.
## CCBA Effect on wages: Business Administration

<table>
<thead>
<tr>
<th>Estimation Method</th>
<th>Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
</tr>
<tr>
<td>Controls for wages</td>
<td></td>
</tr>
<tr>
<td>2 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>4 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>6 years prior to degree completion</td>
<td>No effect</td>
</tr>
<tr>
<td>High school subgroup, 4 year wage controls</td>
<td>No effect</td>
</tr>
<tr>
<td>Prior employment subgroup, 4 year wage controls</td>
<td>No effect</td>
</tr>
<tr>
<td>Enrollment, completion, Ashenfelter Dip</td>
<td>No effect</td>
</tr>
</tbody>
</table>

1 \( F \)-statistic did not exceed the critical value to reject the null hypothesis that the instruments are weak.
CONCLUSION
Conclusion

• Contribution – empirical comparison

• Mixed results across specifications and subgroups
  – Null or positive

• No negative effects
  – Equally likely to be employed
  – No difference in wages
Implications for Policy

• **States**
  – CCBA an option to help achieve state-level access and attainment goals

• **Institutions**
  – The findings of this study suggest that institutions should consider CCBA degrees a viable option for expanding programming to meet the needs of the communities in which they are situated

• **Students**
  – How to invest in higher education by choosing the institution that provides the best fit for their available resources and educational goals
Implications for Research

• Employment Outcomes
  – Link education and employment records
  – Develop regional data sharing agreements
  – Institutional follow-up surveys of former students
Limitations

• Unobservable outcomes due to limitations in coverage of unemployment insurance data
• Limited set of individual-level covariates
• Data regarding demand for specific occupations
• Data regarding comparability of instructional programming across institutions
Future Research

• Longer-term outcomes
• Experimental designs with resumes
• Other fields of study and other locations
• Cost-benefit analysis
• Qualitative analysis of quality of instruction across programs
• Analyze whether allowing CCBA degrees significantly increases bachelor’s degree production
QUESTIONS

mcominole@rti.org
Skype: melissa.cominole
919-990-8456