



VLDS

# College and workforce outcomes four years after high school for CTE completers in Virginia

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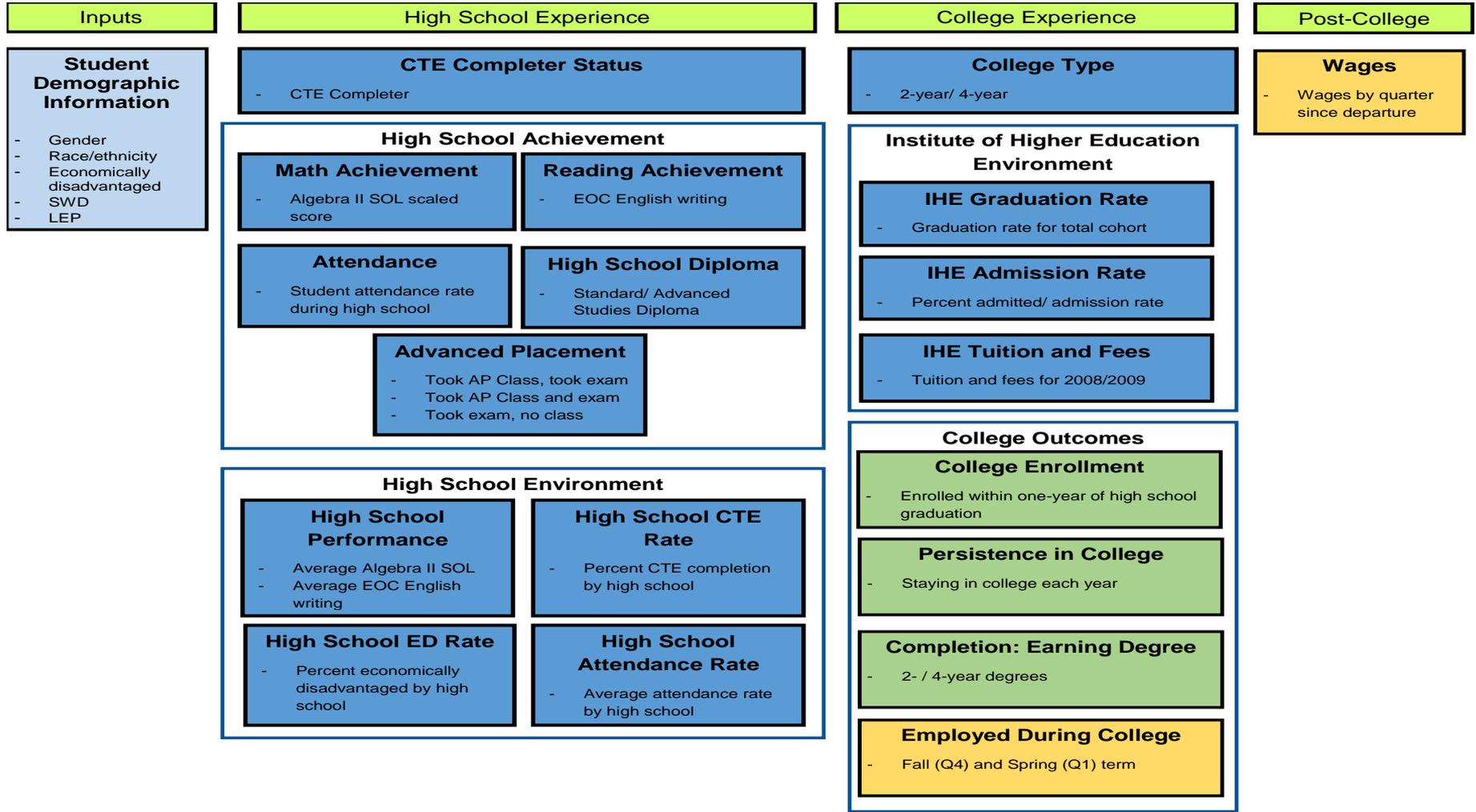
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2014 NCES STATS-DC Data Conference

# Project Focus and Goals

- Understand long-term outcomes for CTE completers
  - Postsecondary outcomes
  - Workforce outcomes
- “Long-term” is a maximum of four years, based on available data
- Goals for the VDOE CTE Office

# Conceptual Framework



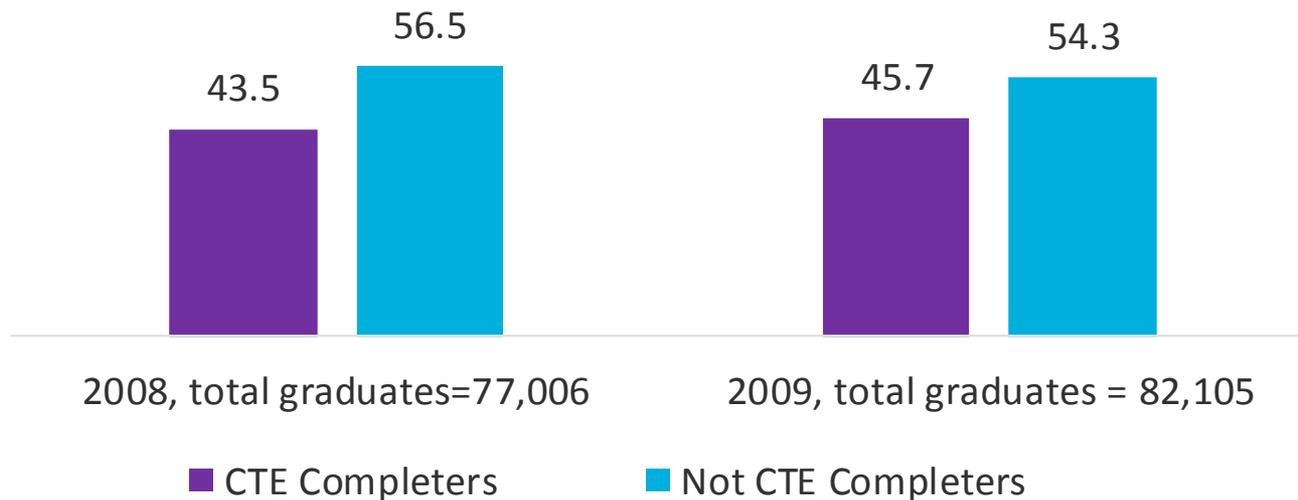
# Who were CTE completers in 2008 and 2009?

On average, CTE completers had lower high school achievement, and were more likely to be: economically disadvantaged, male, and African American students relative to non-completers.

Descriptive indicator	CTE Completers		Not CTE completers	
	2008	2009	2008	2009
<b>Student achievement variables</b>				
Earned Standard diplomas (%)	50	50	37	37
Earned Advanced Studies diplomas (%)	46	46	60	58
Algebra II scaled score (mean)	505	507	509	511
Algebra II (%)	81	85	84	88
Writing scaled score (mean)	509	515	523	529
Attendance rate	94	94	94	94
Advanced Placement courses (%)	23	23	40	40
<b>Demographic variables</b>				
Asian (%)	5	5	6	7
African American (%)	27	28	21	22
Hispanic (%)	5	6	6	6
White (%)	62	60	65	63
Economically disadvantaged (%)	22	25	16	18
Male (%)	52	53	46	46

# In both years, CTE completers represented just under half of the high school graduates

Percent of Virginia graduates who completed CTE programs of study

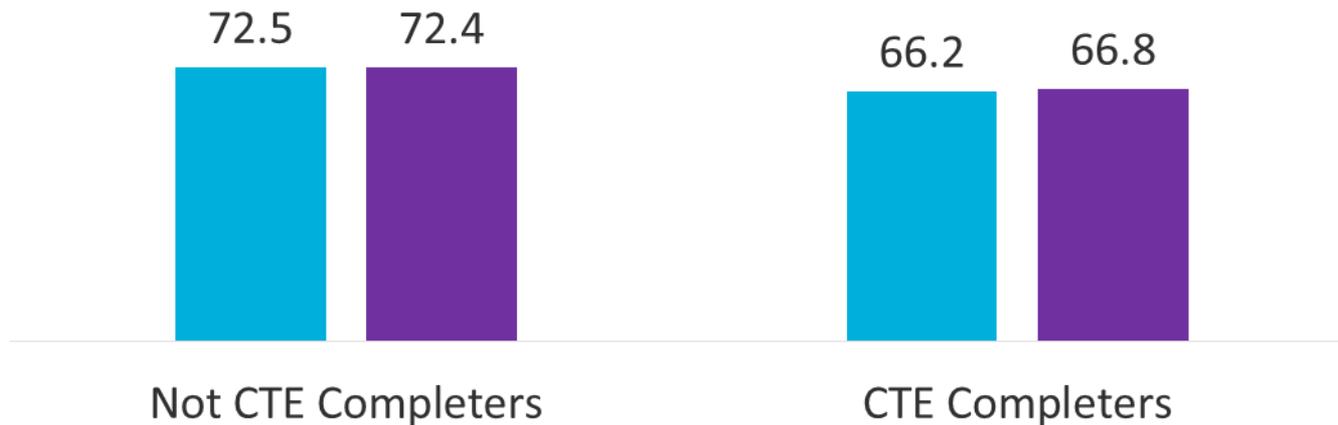


# Postsecondary Outcomes

What were the postsecondary enrollment outcomes for CTE completers?

# Overall, a smaller percentage of CTE completers enrolled in college than non-completers

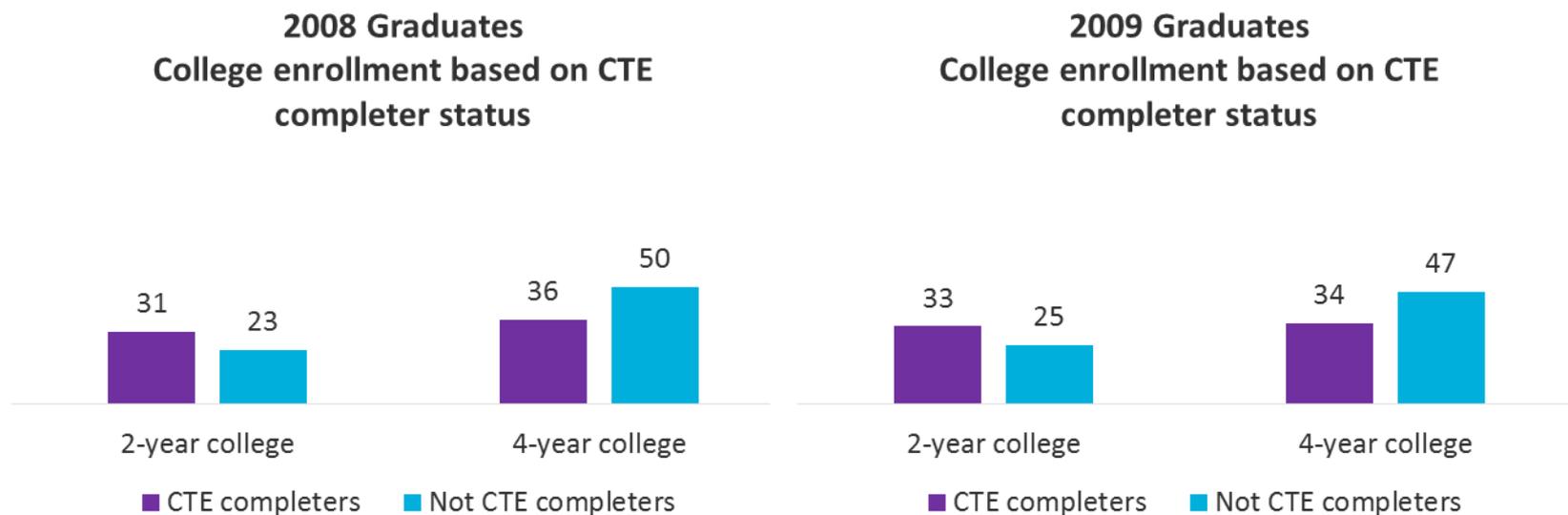
Percent of Virginia graduates who enrolled in college within one-year of high school graduation



- 2008, total graduates=77,006
- 2009, total graduates = 82,105

# Overall, non-completers were more likely to enroll in a four-year IHE than CTE completers

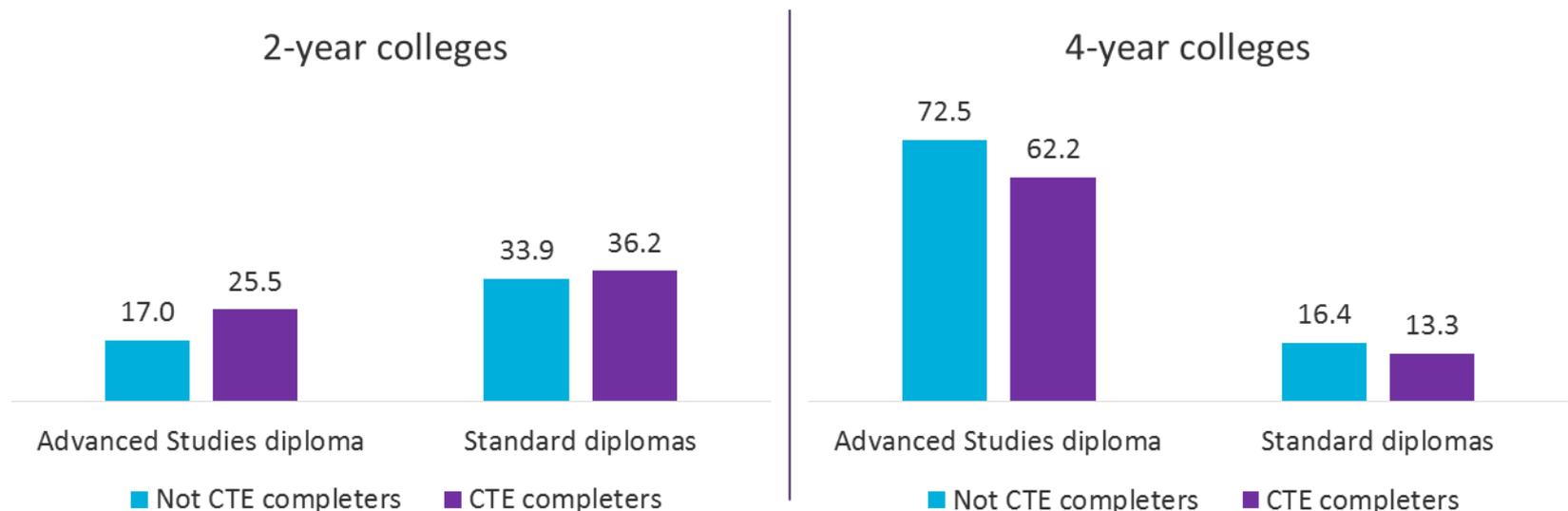
- CTE completers were about 20% less likely than non-completers to enroll in 4-year college after controlling for students' high school achievement, demographic characteristics, and school-level outcomes.
- There were no differences in 2-year college enrollment after controlling for high school achievement, student demographics, and school-level achievement.



# Diploma-type matters more than any other factor in our statistical models

- Students who earned Advanced Studies diplomas were 7.5 to 8.5 times more likely to enroll in 4-year colleges, relative to Standard diploma-earners, regardless of CTE status.\*
- Advanced Studies diploma-earners were 2.4 times more likely to enroll in 2-year colleges than Standard-diploma earners.\*

Percent of high school graduates who enrolled in college by diploma type, CTE status, and college type



2008 high school graduating cohort

\*After controlling for high school achievement, student demographic characteristics, and average school-level achievement. Estimates derived from a multinomial logistic regression with clustered standard errors at the students' last high school.

What were the postsecondary persistence and completion outcomes for CTE completers?

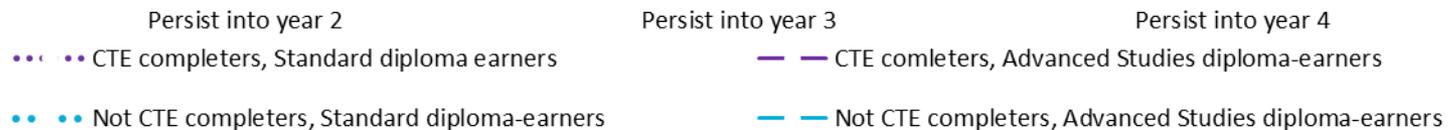
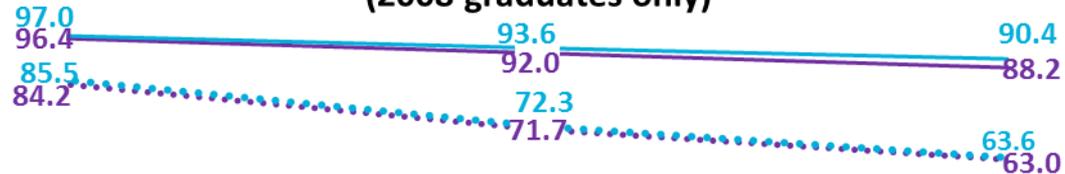
# CTE completion status had no association with persistence in 2- or 4-year IHE.

- For those enrolled in 2-year colleges, Advanced Studies diploma-earners were 2.4 times more likely to persist into their fourth year than Standard diploma-earners\*
- For those enrolled in 4-year colleges, Advanced Studies diploma-earners were more than 3 times more likely to persist into their fourth year\*

**Persistence in 2-year colleges (2008 graduates only)**



**Persistence in 4-year colleges (2008 graduates only)**



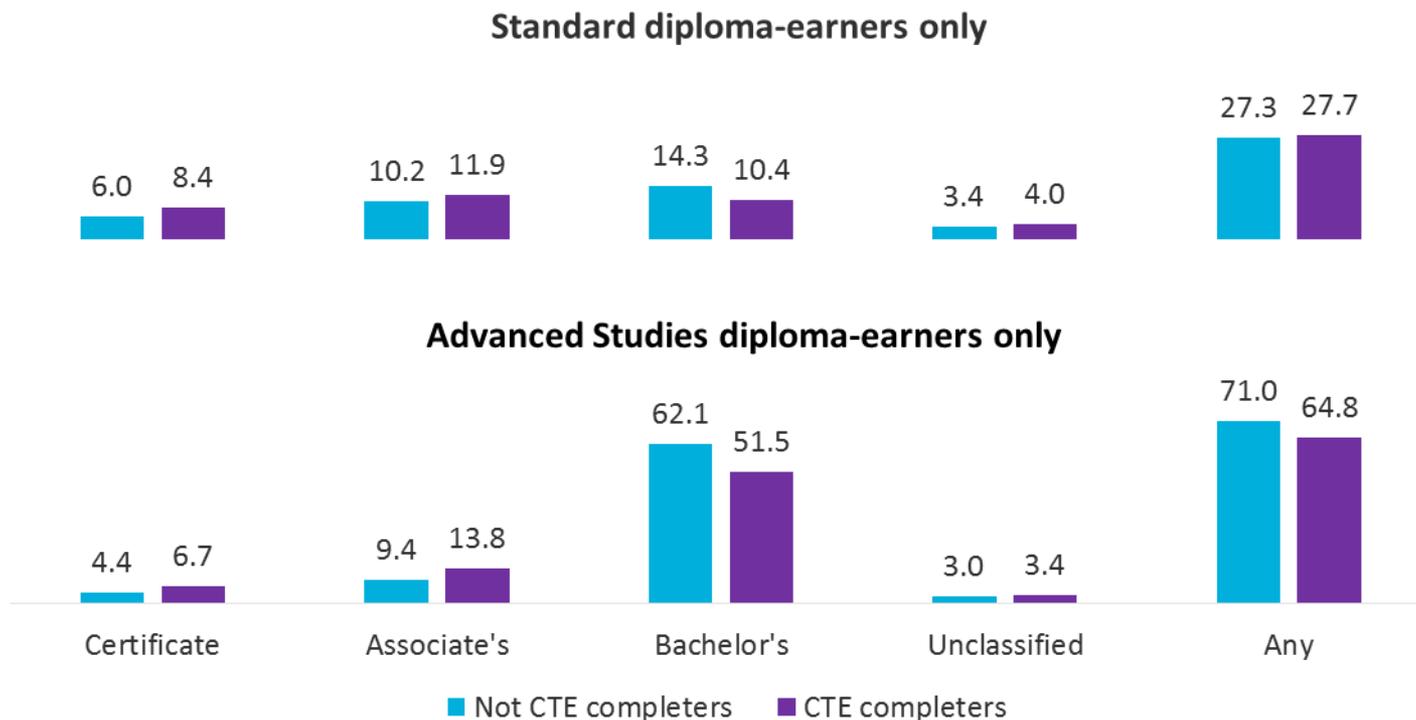
\*After controlling for high school achievement, student demographic characteristics, and average school-level achievement. Estimates derived from a multinomial logistic regression with clustered standard errors at the students' last high school.

For college-enrolled high school graduates, CTE completers were slightly more likely to earn Associates degrees than non-completers.

- There were no differences in college-enrolled completer and non-completers' likelihood of earning Bachelor's degrees.\*

- When considering all high school graduates (including college-enrolled and not), CTE completers were slightly less likely to earn bachelor's degrees than non-completers.\*

### Percent of 2008 high school graduates who earned a credential within four years



\*After controlling for high school achievement, student demographic characteristics, and average school-level achievement. Estimates derived from a multinomial logistic regression school with clustered standard errors adjusted at the students' IHE.

With respect to CTE status, after controlling for high school achievement, student demographic characteristics, and school-characteristics:

**CTE completers had a slightly better chance than non-completers of:**

- Earning an Associate's degree, if they enrolled in college

**CTE completers and non-completers had the same chances of:**

- Enrolling in 2-year colleges
- Persisting in two- and 4-year colleges
- Earning a 4-year degree *if* they enrolled in college within one-year of high school

**CTE completers had a slightly lower chance than non-completers of:**

- Enrolling in 4-year colleges
- Earning 4-year college degrees, as a result of being less likely to enroll in 4-year colleges.

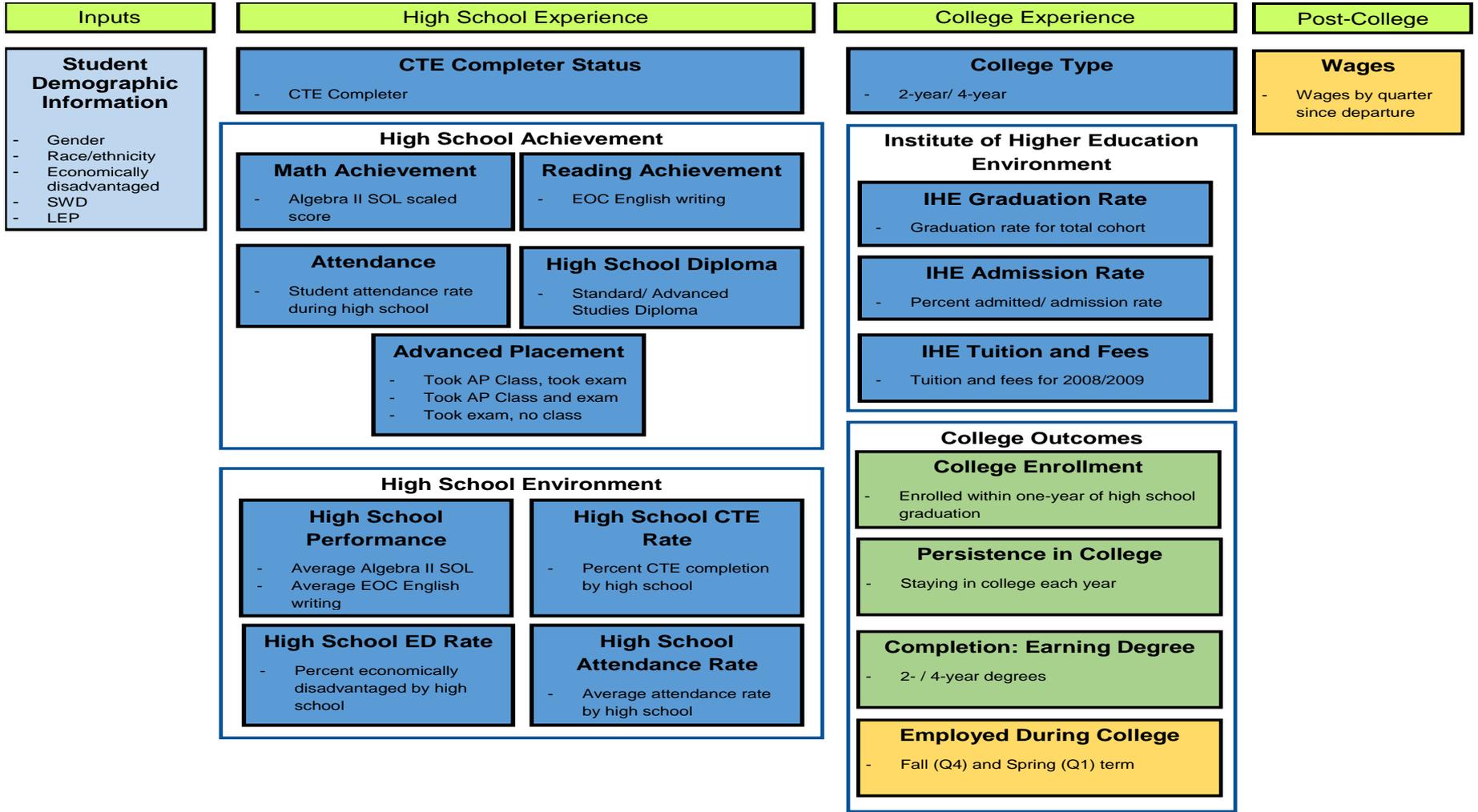
While this study focused on CTE completion status, the data showed that for CTE completers and non-completers...

***Taking the right courses, as represented by earning an Advanced Studies diploma, is the most important factor in predicting high school graduates' college enrollment, persistence and completion.***

- Students who earned an Advanced Studies diploma were:
  - More than 2 times more likely than Standard diploma earners to enroll in a 2-year college
  - More than 7.5 times more likely to enroll in a 4-year college
  - Two- to three-times more likely to persist in college for at least 4 years
  - Four times more likely to earn a bachelor's degree within four years
- Other factors, such as participation in college-level coursework while in high school and demographic characteristics such as economically disadvantaged status and student ethnicity were also associated with college enrollment and success. But not as strongly as diploma type, which represents students course of study in high school.

# Workforce Outcomes

# Conceptual Framework



# Research Questions

- To what extent were high school graduates **employed** while enrolled in a postsecondary institution?
  - Were there differences in concurrent employment between CTE completers and non-completers?
  - What other factors, besides CTE completion status, were associated with concurrent employment in college?
- What were the **average wages** of CTE and non-CTE completers after they left college (with or without a credential) and entered the workforce?

# Employment During College

- Employment defined as:
  - Quarter 1 (January – March) = Spring term
  - Quarter 4 (October – December) = Fall term
- Why this is important:
  - Research shows positive effects on GPAs to working part-time on campus (Stiglitz et al, 2010; Gleason, 1993)... BUT
  - Research also shows negative effects on student enrollment and academic performance of working full-time (Stiglitz et al, 2010; Gleason, 1993)

Data from:  
- SCHEV  
- VEC

# Wages After College

- Wages defined as:
    - Average wages by quarter since departure from SCHEV institution
    - 2008 cohort: 8 quarters since departure
    - 2009 cohort: 6 quarters since departure
- Data from:  
- VEC  
- 3-month since departure
- Why this is important:
    - Research shows wages are higher for students who earned CTE in high school (Bishop & Mane, 2004), certificates (Carnevale, Rose, & Hanson, 2012), and 2-year community college degrees (Marcotte, 2006)

# Summary of Analysis

## CTE Completers

Employed During College

## Non-CTE Completers

Employed During College



Differences By:

- Standard and Advanced Studies Diploma
- Economically Disadvantaged Status

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Wages After College

Wages After College

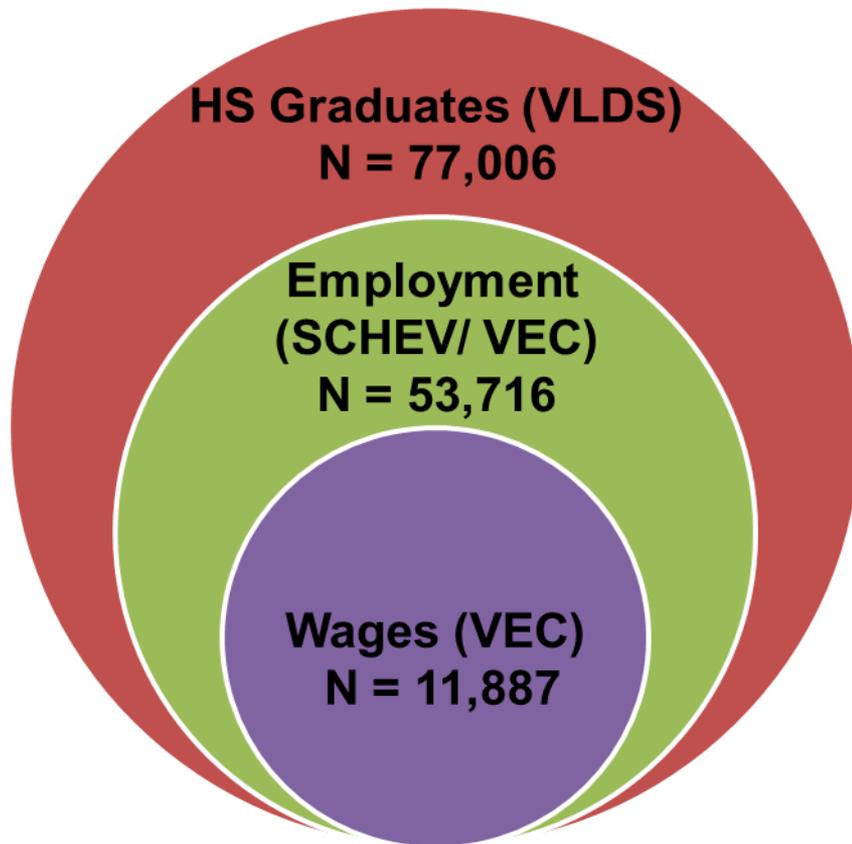


Differences By:

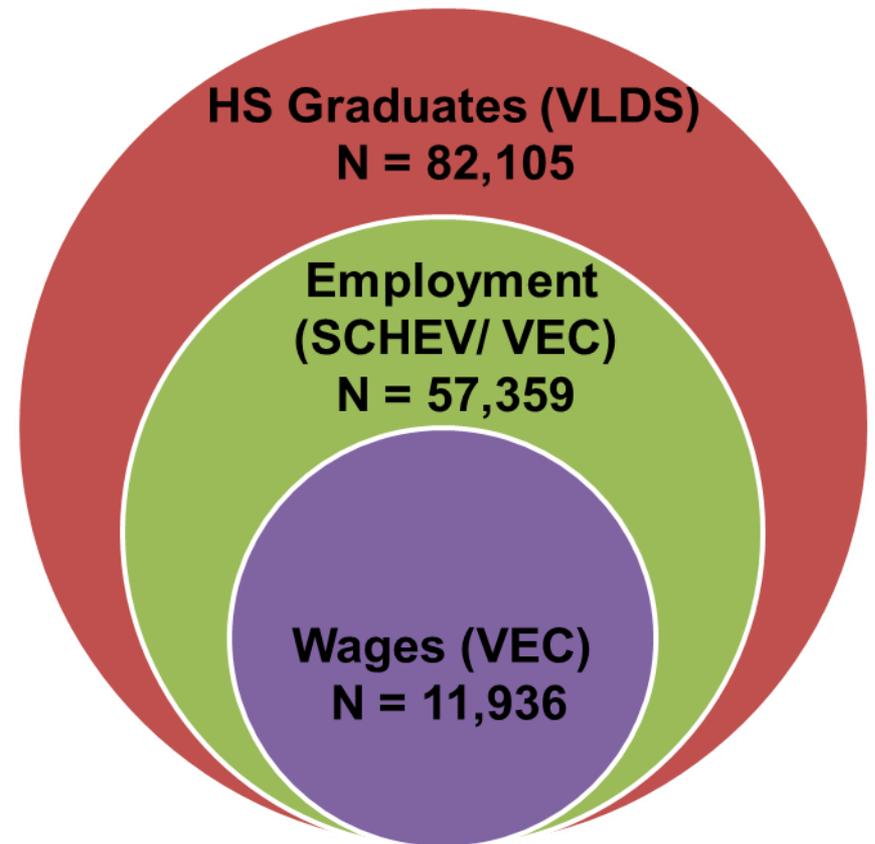
- Standard and Advanced Studies Diploma
- Earned Bachelor Degree

# Summary of Analytic Sample Size

2008 Cohort



2009 Cohort



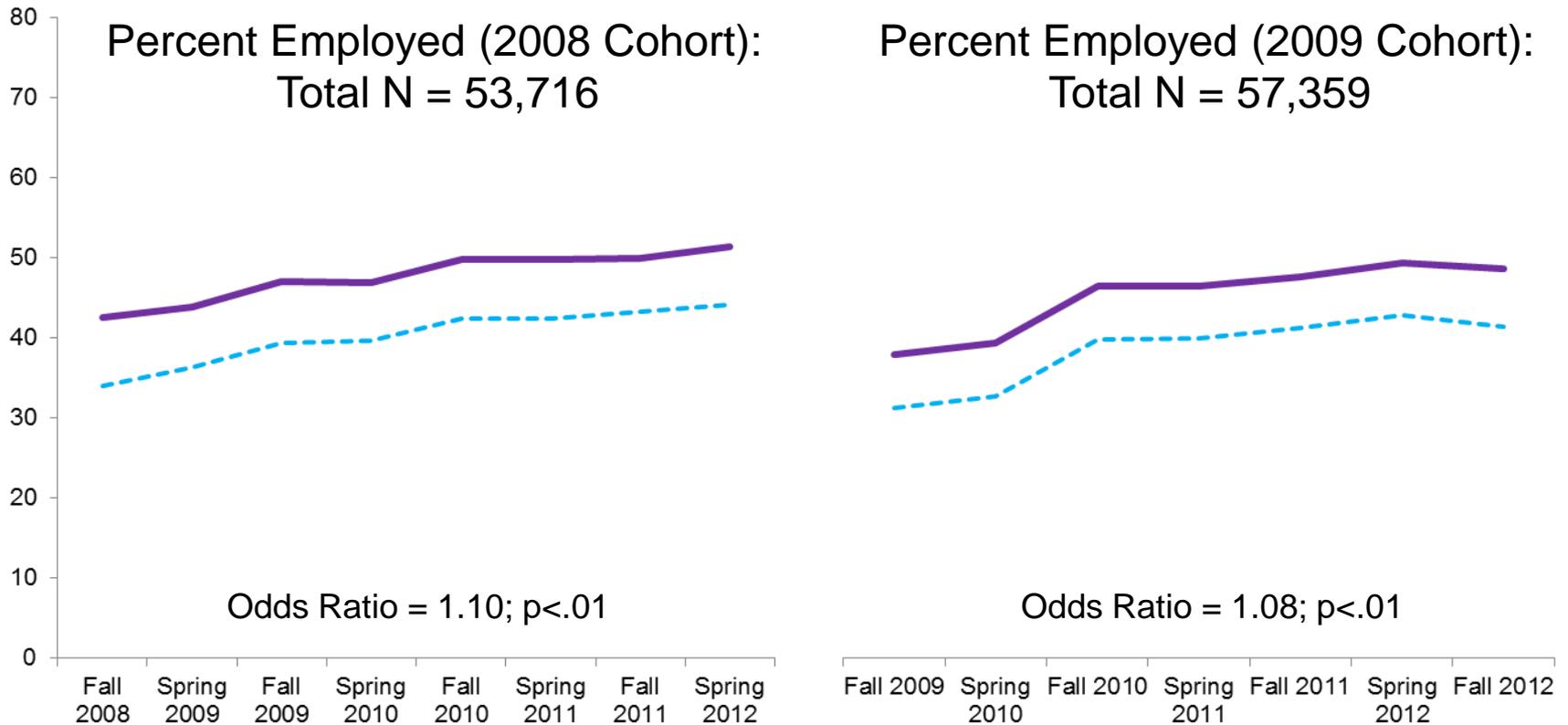
# Data Limitations

- Employment data are limited to:
  - Only VDOE graduates who enrolled in an IHE that reported data to SCHEV
  - Wages for those employed in Virginia by an entity that reports Unemployment Tax to the VEC
- Concurrent enrollment and employment outcome blunt and imprecise
- Wages truncated due to study period

VLDS cannot provide information for students who graduate from high school and go directly into the workforce or military without any Virginia IHE enrollment.

To what extent were high school graduates employed while enrolled in a postsecondary institution?

# CTE completers were slightly more likely to work during college than non-completers



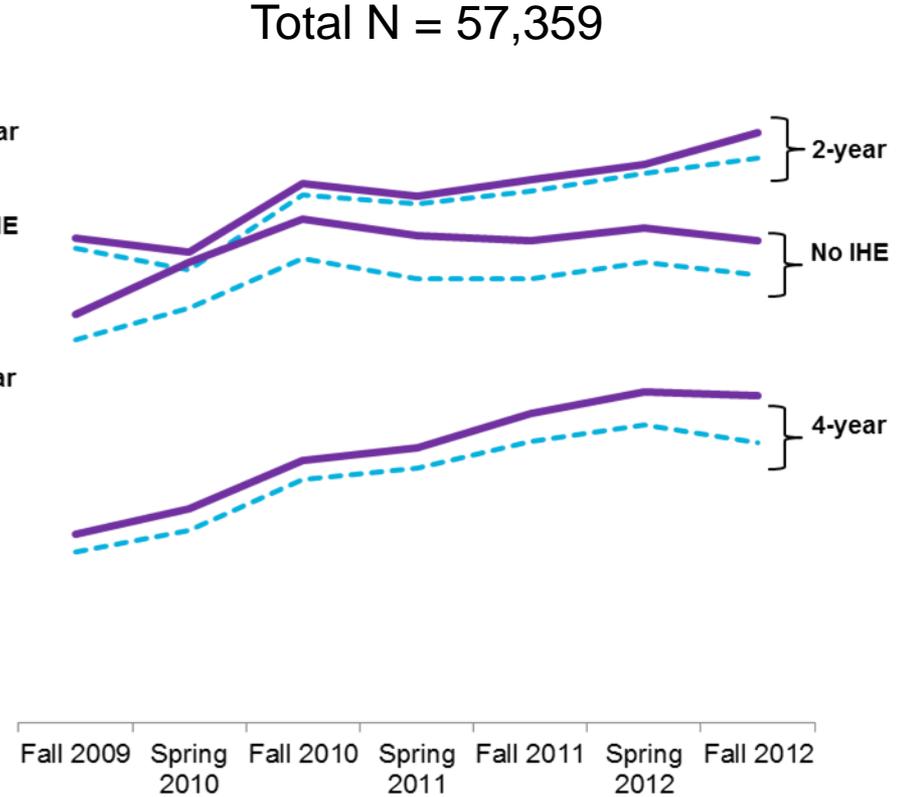
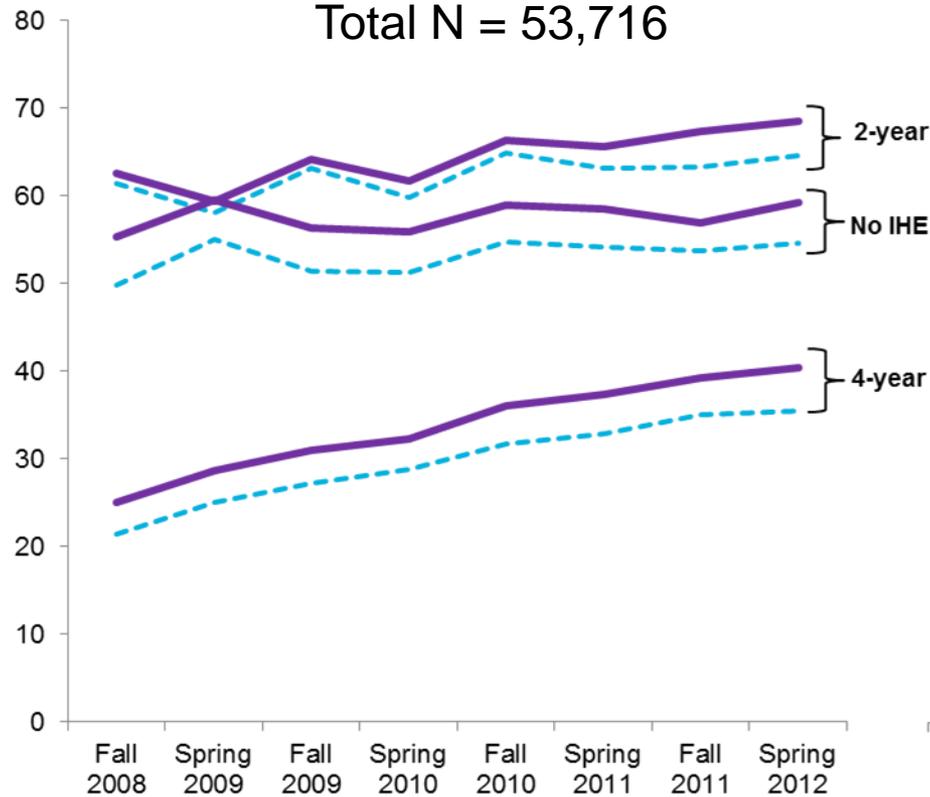
— CTE Completer  
- - - Non-CTE Completer

\*After controlling for high school achievement, student demographic characteristics, and average school-level achievement. Estimates derived from logistic regression with clustered standard errors.

# CTE completers had higher employment rates regardless of IHE type

Percent Employed (2008 Cohort):  
Total N = 53,716

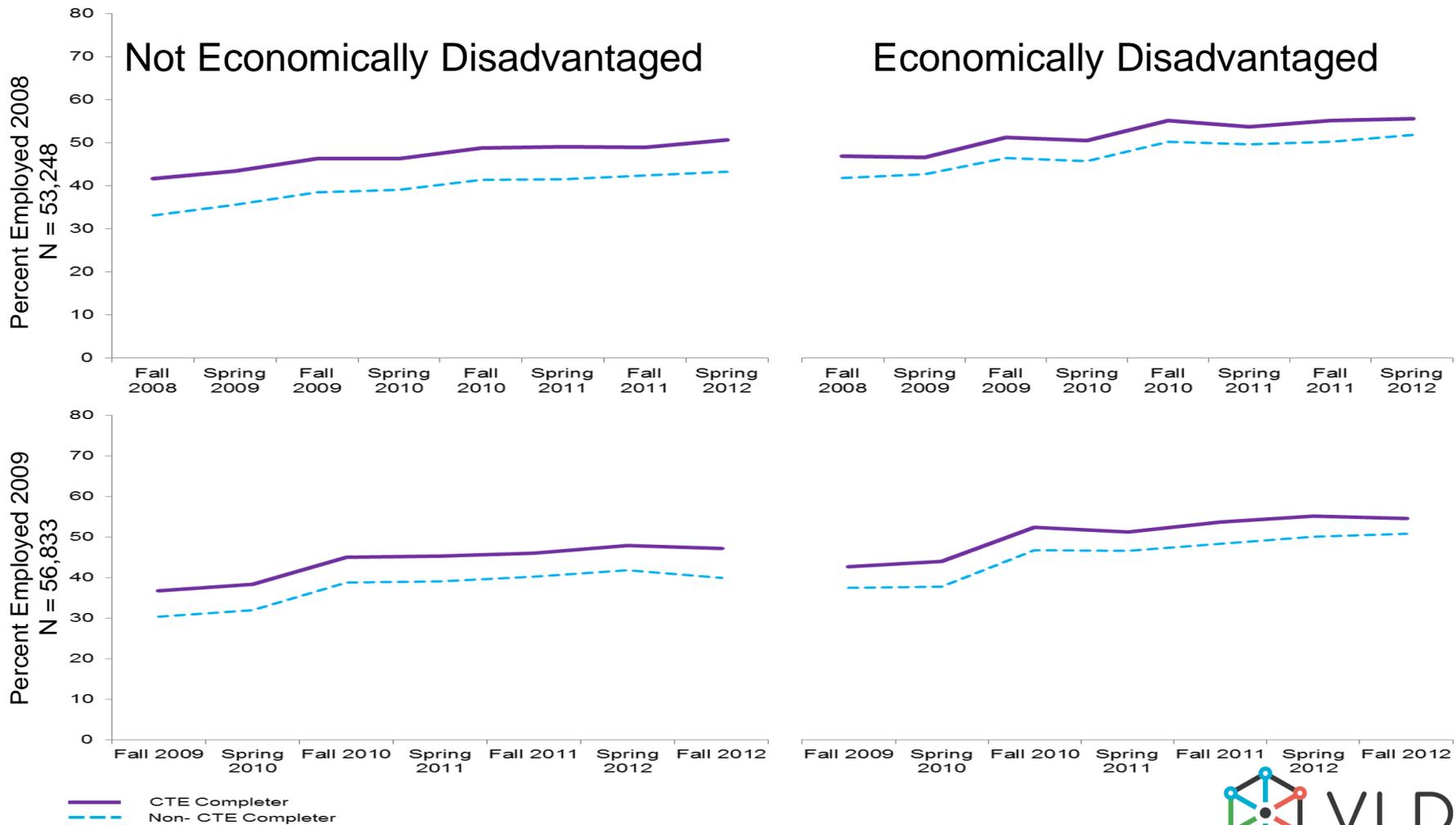
Percent Employed (2009 Cohort):  
Total N = 57,359



— CTE Completer  
- - - Non- CTE Completer

\* Based on cross-tabulation weighted descriptive statistics

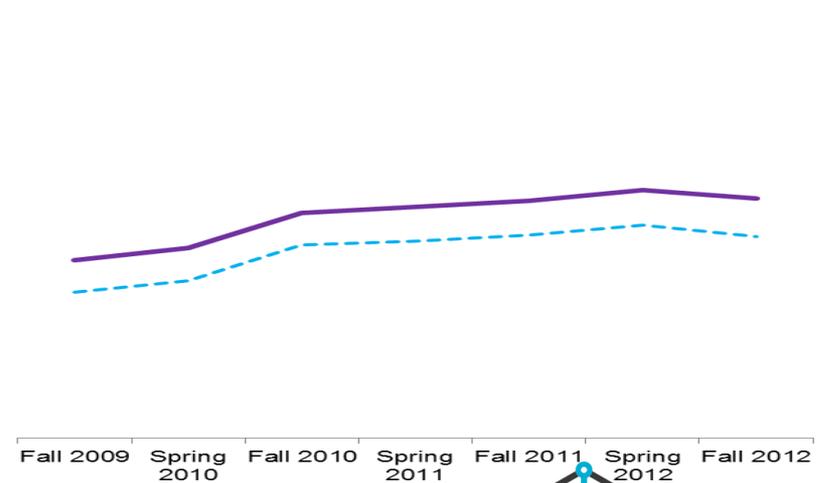
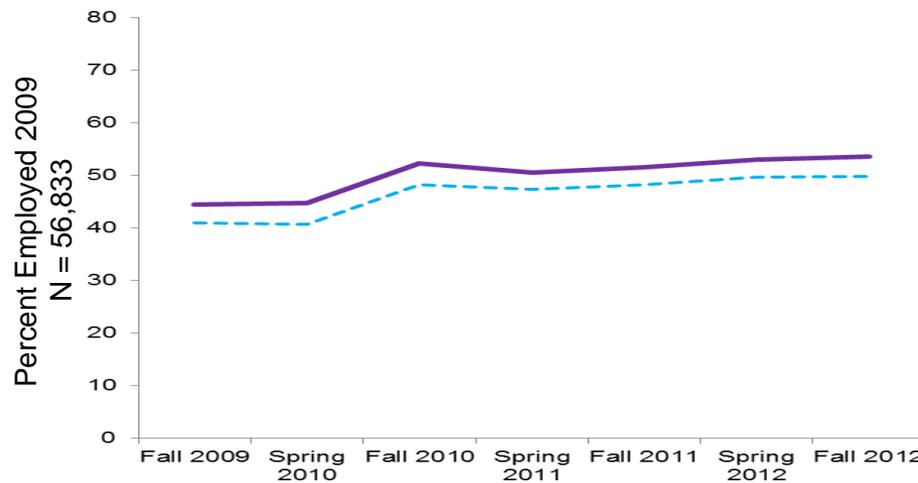
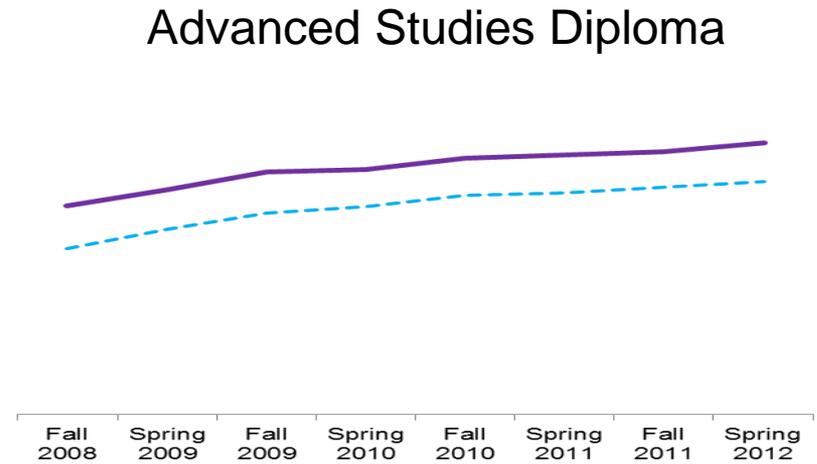
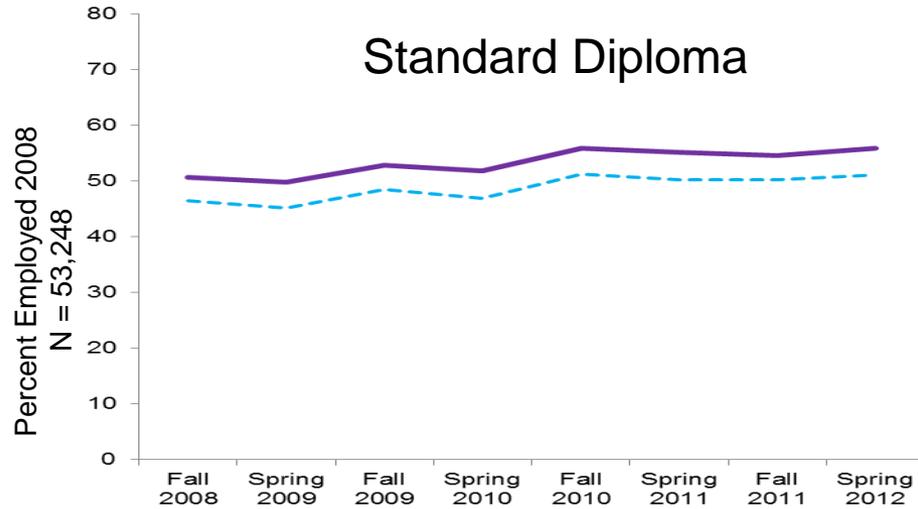
# CTE completers had higher employment rates regardless of disadvantaged status



\* Based on cross-tabulation weighted descriptive statistics



# CTE students had higher employment rates regardless of high school diploma



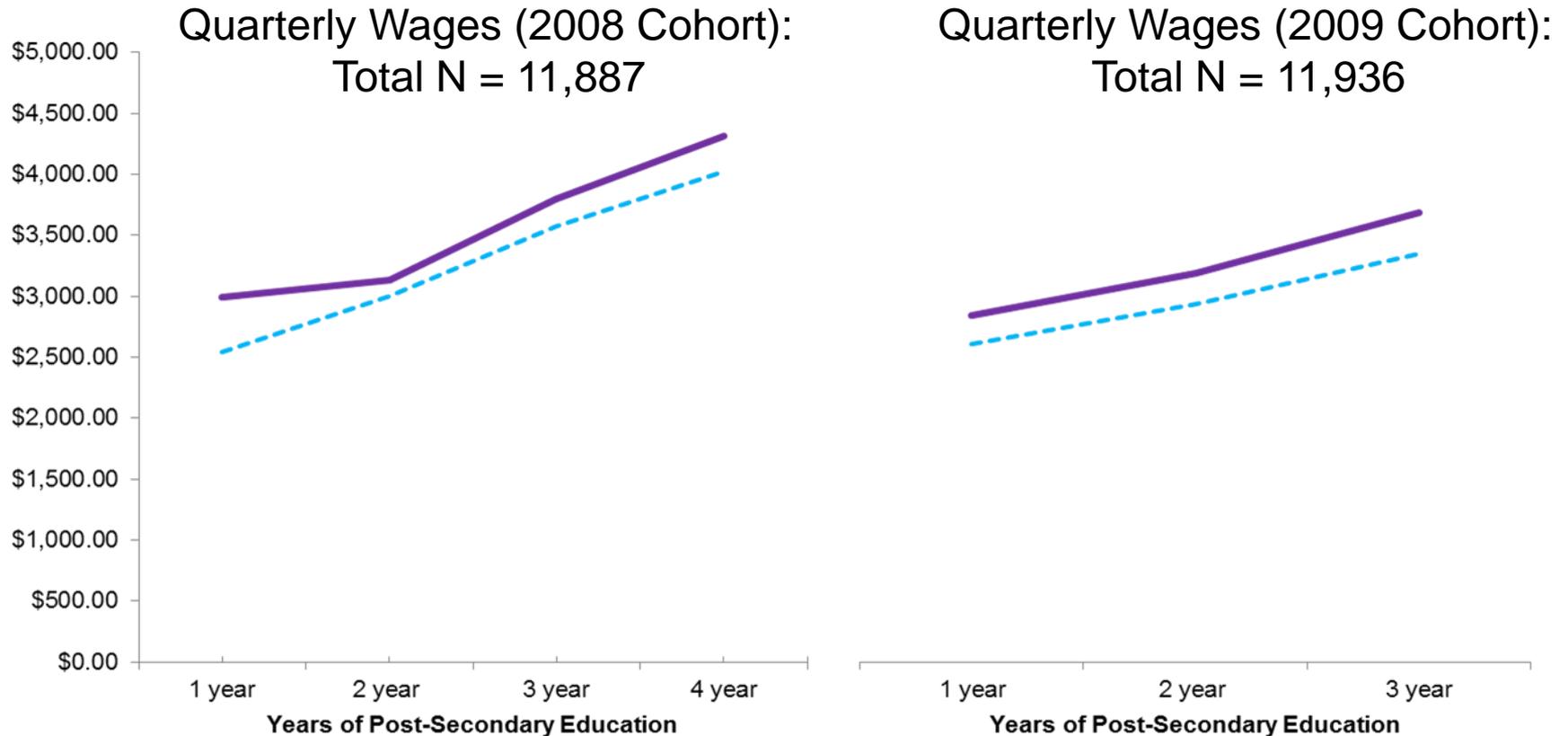
— CTE Completer  
- - - Non-CTE Completer

\* Based on cross-tabulation weighted descriptive statistics



What were the average wages of CTE and non-CTE completers after they left college (with or without a credential) and entered the workforce?

# CTE completers had higher average wages than non-completers



— CTE Completer  
- - - Non-CTE Completer

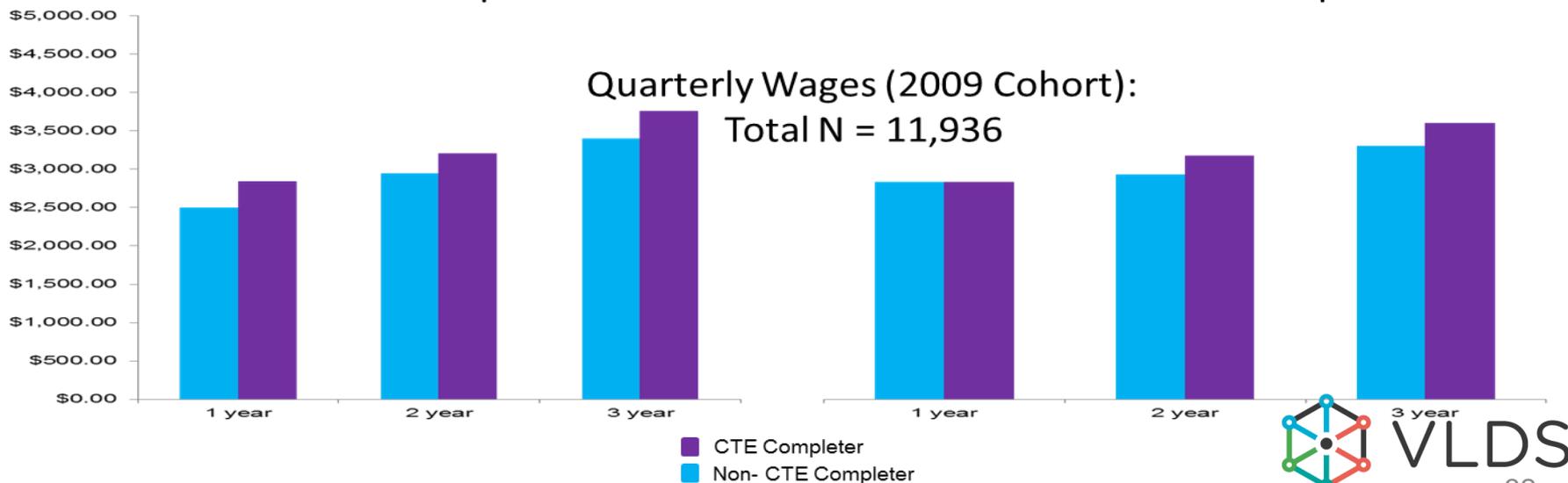
\* Based on cross-tabulation weighted descriptive statistics

# CTE completers had higher average wages regardless of diploma type



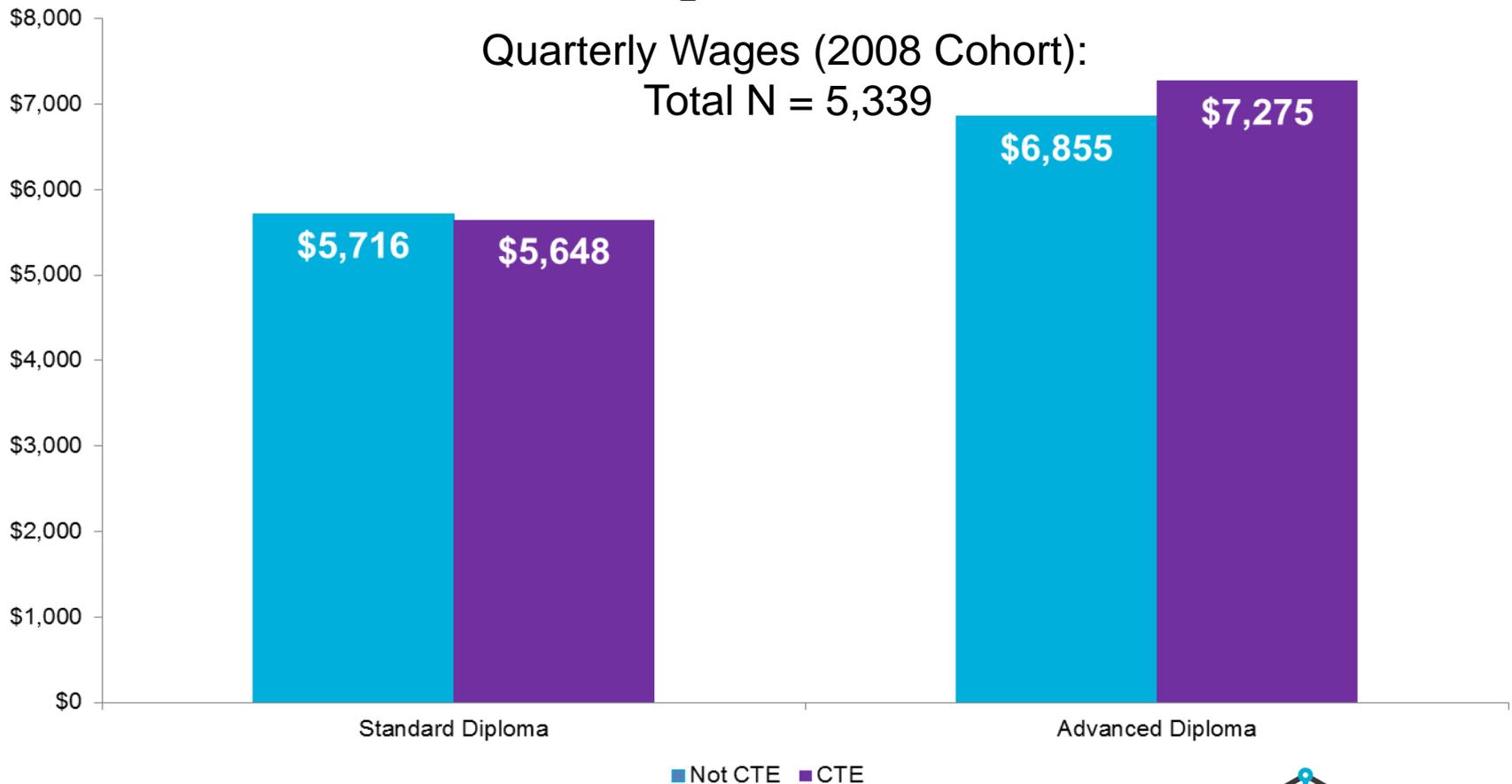
Standard Diploma

Advanced Studies Diploma



\* Based on cross-tabulation weighted descriptive statistics

# For Bachelor's degree earners, wages were higher for CTE completers with Advanced Studies diplomas



Note: N-count is small. More time/students are needed to assess impact of degree status on wages for CTE completers/non-completers.

\* Based on cross-tabulation weighted descriptive statistics

# Summary Findings

***CTE completers were more likely to be employed while college-enrolled, regardless of:***

- 2-year or 4-year institutions;
- Standard or Advanced Studies diplomas; and
- economically disadvantaged or non-economically disadvantaged.

***CTE completers had higher average quarterly wages after leaving college, regardless of:***

- Number of years in a post-secondary institution; and
- Standard or Advanced Studies diplomas.

***CTE completers who earned Advanced Studies diplomas had the highest average wages three-months after graduating with a Bachelor's degree.***

- Almost \$2000 difference in average wages 3 months after graduating with a Bachelor's degree.
- N-count is small. More time/students needed to assess impact of degree status on wages for CTE completers/non-completers.

# Implications and Next Steps

- Implications for data and analysis
  - VDOE VLDS
- Implications for policy and practice
  - VDOE CTE Office



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