

# Student Predictors of Career and College Persistence among Baltimore City Schools Graduates: Implications for 'Readiness' Differences for Career and College Destinations

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# Acknowledgements

Gratitude goes out to

MLDS Staff

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Bob, Bosedé, and the whole data team!

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# Background

- Prior research (BERC-Baltimore's Promise) on Baltimore City Public Schools graduates' destinations during the 6 months after high school graduation found:
  - ~50% enrolled in college
  - ~25% in Maryland workforce
  - ~25% neither enrolled nor in Maryland workforce
- These shares are consistent for classes of 2008-2016

# Background

Additional questions resulted from those findings:

- How “stable” are graduates’ pathways?
- What high school factors predict persistence in a pathway?

# Background

- Large literature around college persistence (i.e., “college readiness”)
- Much smaller literature about workforce persistence
- College Readiness policy morphed into College and Career Readiness (CCR) policy without much fanfare circa 2011
  - 33 out of 37 states use a single definition of CCR (Mishkind, 2014)
  - High schools are naturally most focused on preparing students for the next educational transition (college)
  - Poor articulation between high school and work in the U.S. (Rosenbaum et al., 1990)

# Research Questions

- RQ1. What postsecondary pathways did graduates take, and what share were consistently engaged in college and/or the workforce?
- RQ2. Are student-level predictors of college persistence the same as for workforce persistence?
- RQ3. How does high school type relate to any differences?

# Data/Population

MLDSC – prepared September 2018

- K-12 (attendance records for 9-12<sup>th</sup> grade, assessments, high school completion indicators)
- Postsecondary (MHEC, NSC: enrollment/departure/degree dates)
- Workforce (quarterly records of employment)
  - Limitation: Workforce data do not include information for federal employees, military employees, individuals who are self-employed, or private contractors.

# Data/Population

- Baltimore City Public Schools graduates
  - Record of diploma completed between July 1, 2010 – June 30, 2013
    - i.e., Classes of 2011, 2012, and 2013
  - Excludes students receiving certificates of completion
  - Rounded N  $\approx$  13,470
  - 43 high schools

# Primary Independent Variables

- Academic ‘readiness’ indicators
  - HSA highest scores in 4 subjects tested (reduced to 2 scales, STEM & non-STEM)
  - Met USM requirements (dichotomous):
    - Math
    - Science
    - Foreign language
  - Took at least 1 AP course
  - Final GPA  $\geq 3.0$
  - CTE pathway completion (dichotomous)

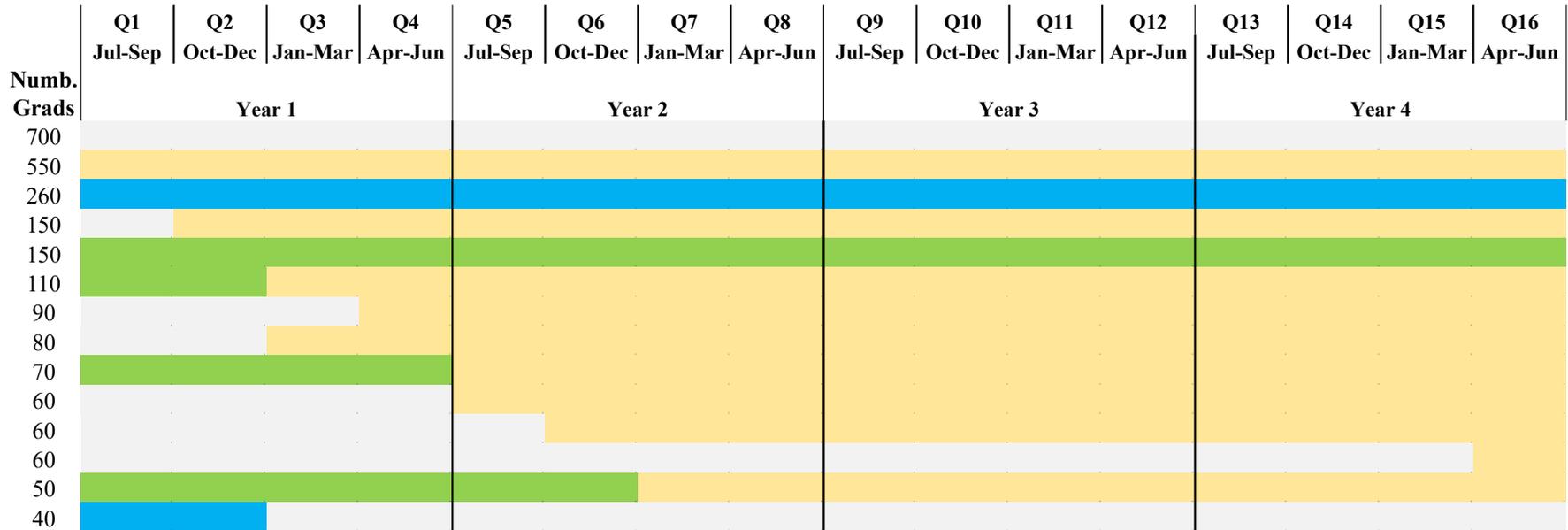
# Primary Independent Variables

- Academic ‘readiness’
- Non-academic ‘readiness’ indicators
  - Average Daily Attendance rate (ADA), weighted over 9<sup>th</sup>-12<sup>th</sup> grade
  - # of times changed schools, 9<sup>th</sup>-12<sup>th</sup>
  - # of quarters worked in 12<sup>th</sup> grade
- Controls
  - Demographic (age-months, sex, race, ethnicity)
  - Service, i.e., ELL, FARMS, SpEd, homeless ← ‘ever’ status, 9<sup>th</sup>-12<sup>th</sup>
  - Graduation year (cohort)
  - High School type

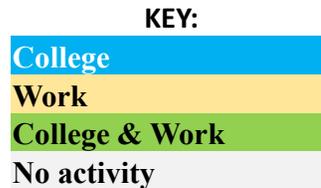
# Methods

- Manipulated college enrollment data into fiscal quarters to match employment data:
  - **1** July-Sep, **2** Oct-Dec, **3** Jan-Mar, **4** Apr-Jun
- Dependent variable
  - Four mutually exclusive pathways summarizing 16 quarters:
    1. Consistently enrolled in college
    2. Consistently in Maryland workforce
    3. Consistently either enrolled or working (either/or and both)
    4. Inconsistent activity (i.e., **at least 2 quarters** without college or work)
- Models: Multinomial logistic regression, robust standard errors
  - Z-scores for all non-dichotomous indicators

## Pattern Complexity



Over 7,300 unique patterns



## Pathways of ~13,470 graduates

<b>Pathways:</b>	<b>Percentage</b>
Consistently enrolled	14
Consistently in workforce	20
Enrolled or/and workforce	15
Inconsistent activity	51

# Graduate Demographic and Service Characteristics

	Percentage
Male	44
African-American	91
White or Asian	8
Hispanic	2
FARMS	89
ELL	2
SpEd	12
Homeless	4
Class of 2011	34
Class of 2012	34
Class of 2013	33

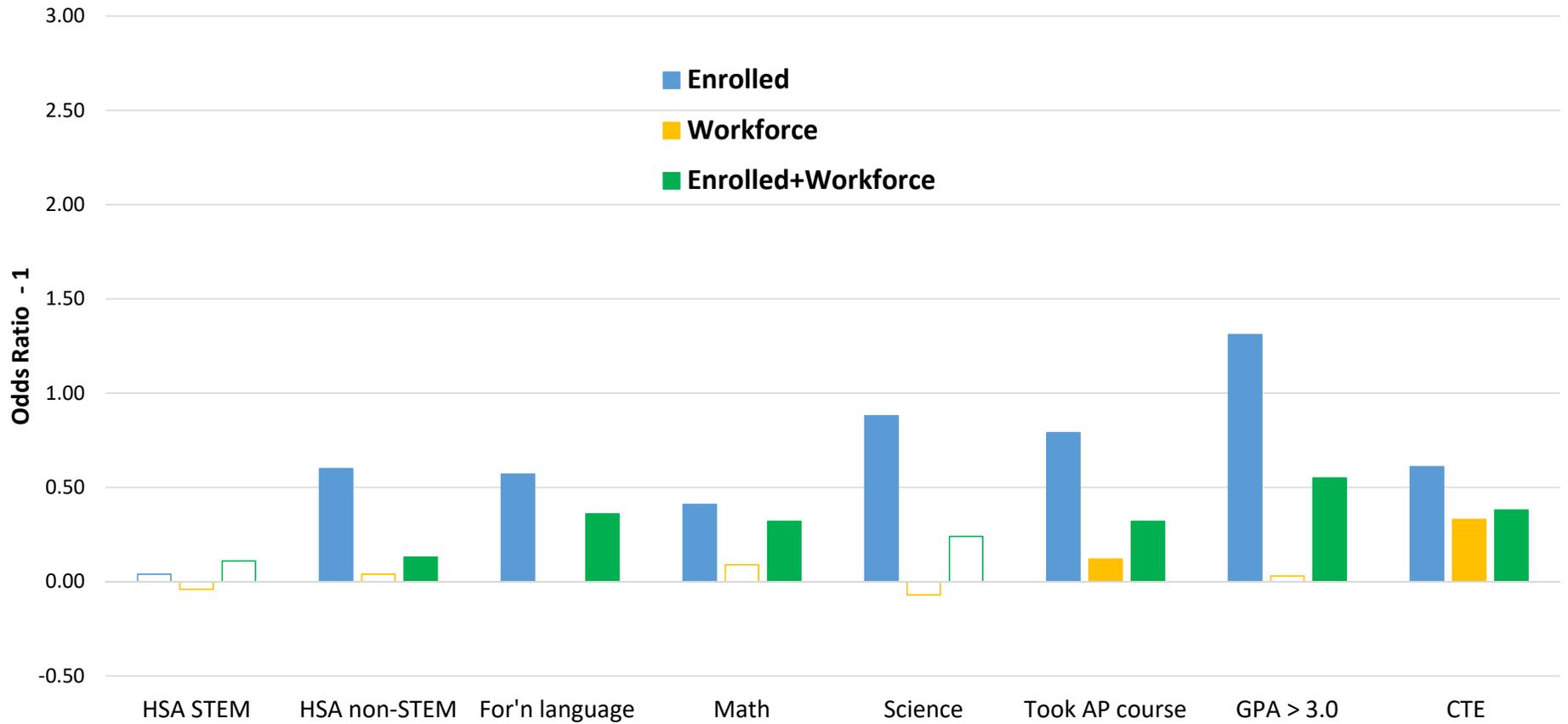
## Graduate Academic Characteristics

	Mean/percentage	Range
AVG: Algebra, biology	411	240-650
AVG: English, government	403	240-562
<i>Met USM requirements:</i>		
Foreign language	25%	
Math	20%	
Science	7%	
Took $\geq$ 1 AP course	22%	
GPA $\geq$ 3.0	18%	
CTE pathway completed	23%	

## Graduate Non-Academic Characteristics

	Mean	Range
ADA, 9-12	89.4	12-100
# high school changes	0.51	0-9
# quarters worked in 12th	0.95	0-4

# Relative to odds of inconsistent activity



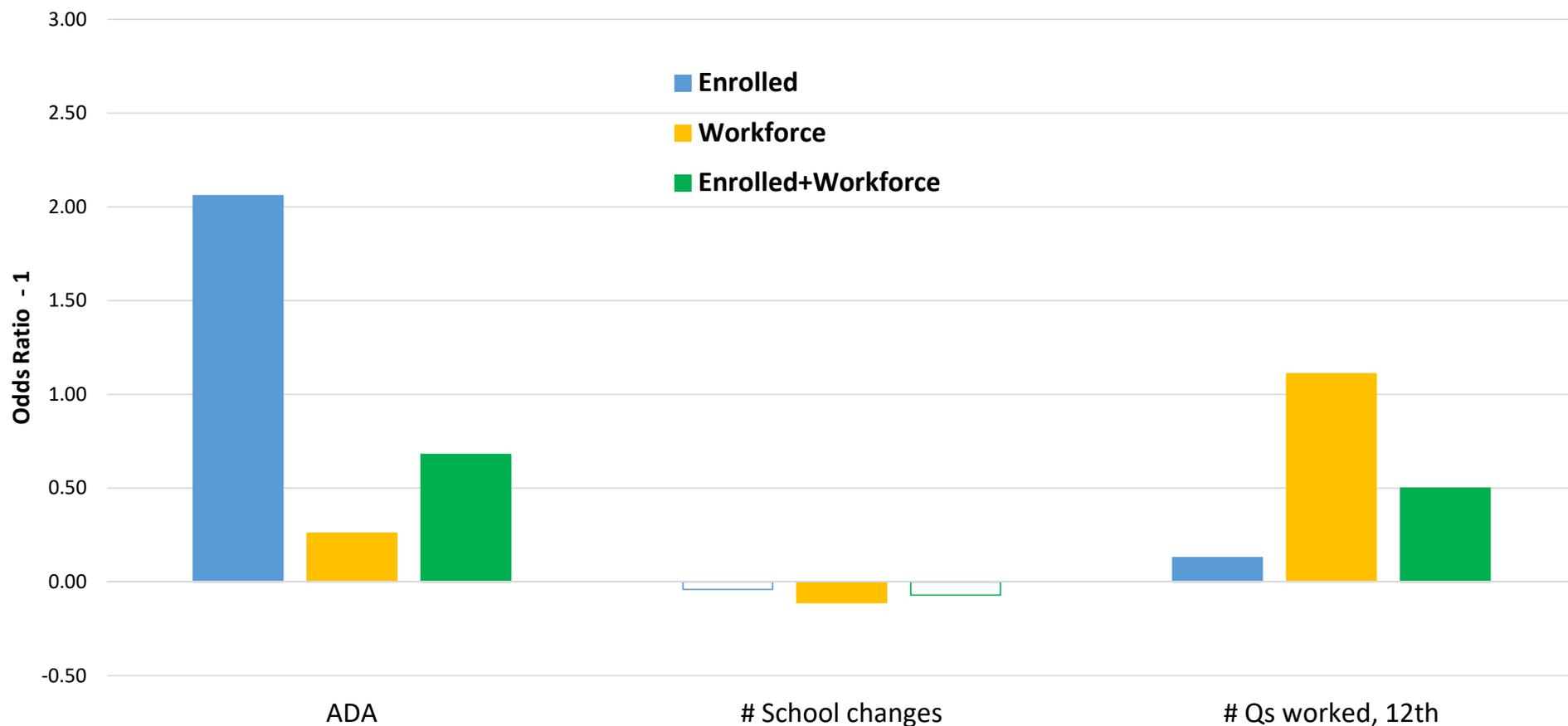
Hollow bars:  $p \geq .05$

Author: Durham, R.E.

Academic Indicators

MLDS Data Prepared Sep 2018

# Relative to odds of inconsistent activity...



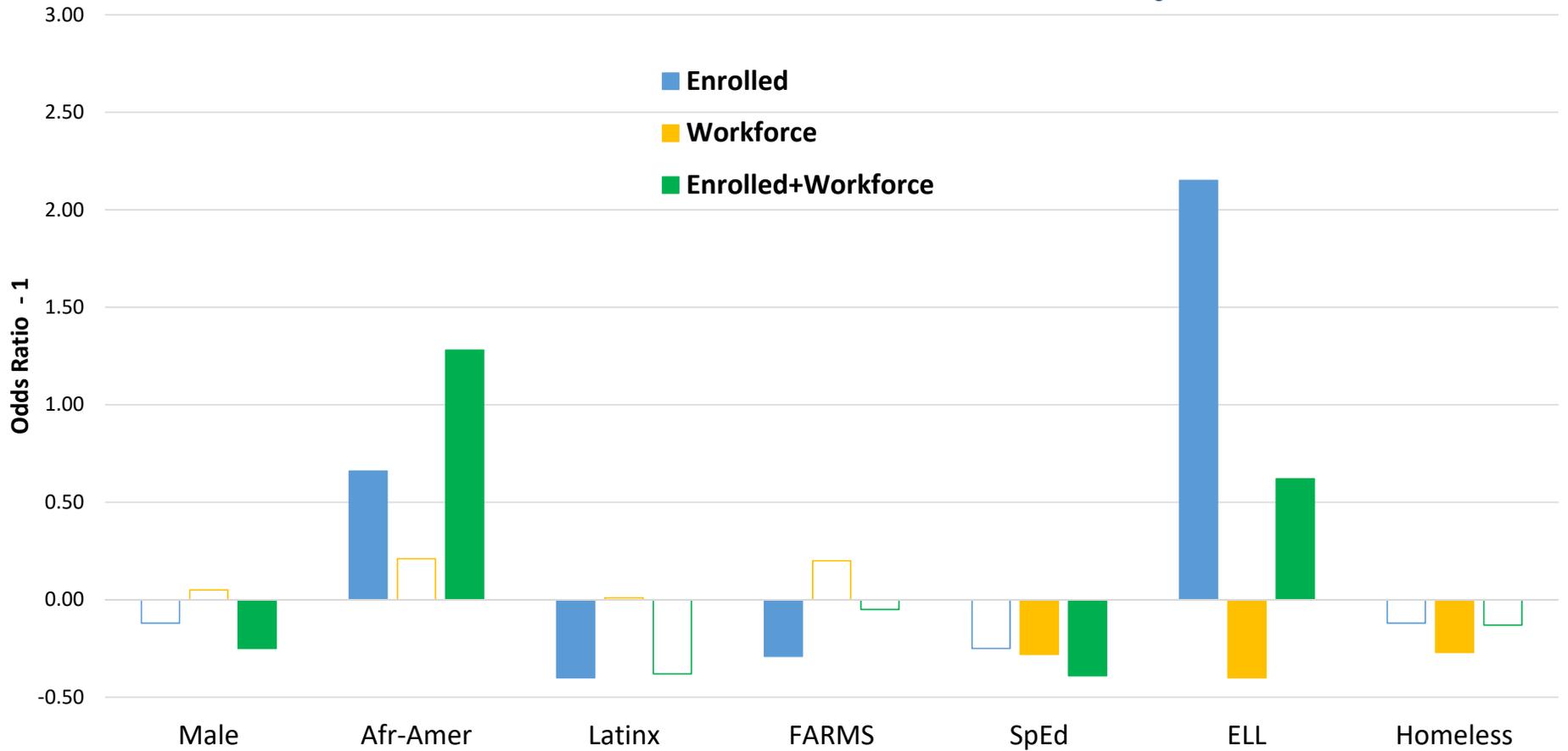
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Non-Academic Indicators

MLDS Data Prepared Sep 2018

# Relative to odds of inconsistent activity...



Hollow bars:  $p \geq .05$

Demographic/Service Characteristics

Author: Durham, R.E.

MLDS Data Prepared Sep 2018

# Summary of Differences in Indicator Saliency

	Persistence in College	Persistence in Workforce	College+Work Persistence
STEM assessments			
non-STEM assessments	+		+
Coursework	+		+
GPA	++		+
CTE	+	+	+
Attendance	+++	+	+
School mobility		-	
HS work experience	+	++	+
+ increased Odds ++ double Odds +++ more than double Odds			

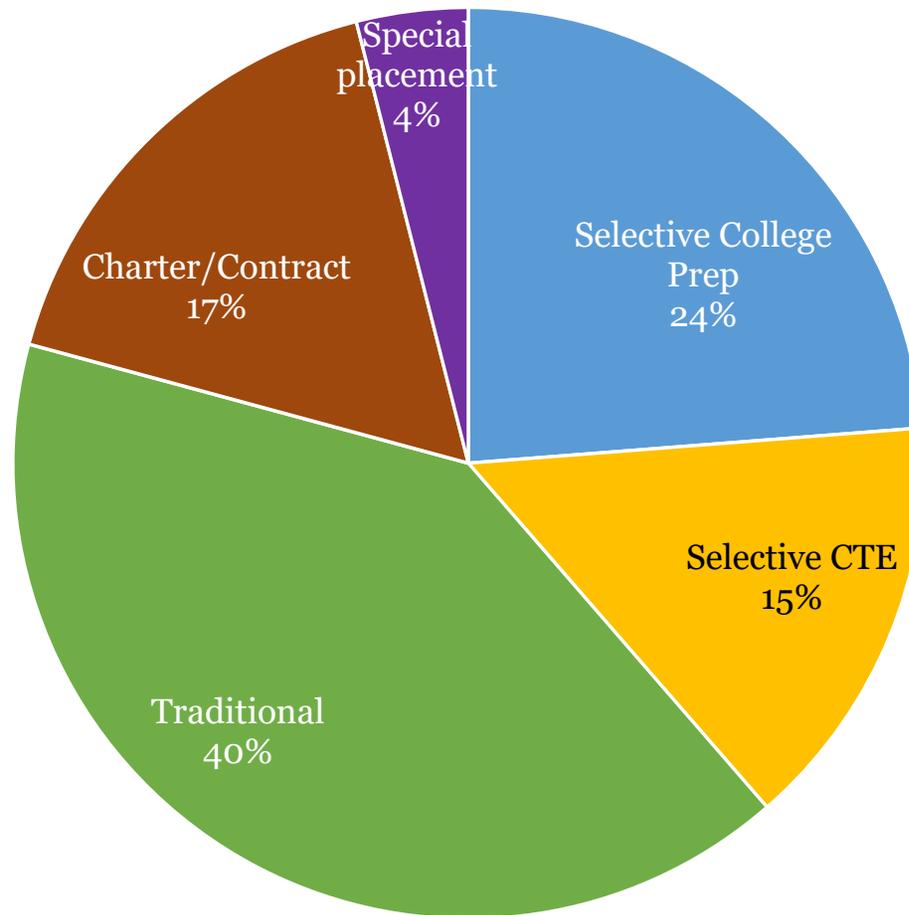
# Summary of Differences in Characteristic Saliience

	<b>Persistence in College</b>	<b>Persistence in Workforce</b>	<b>College+Work Persistence</b>
Male			-
Black	+		++
Latinx	-		
Low-income	-		
Special ed		-	-
ELL	+++	-	+
Homelessness		-	
+ increased Odds ++ double Odds +++ more than double Odds			

# High school types

- Baltimore city has a fairly stratified set of school options
- This matters for differences in opportunities to meet USM requirements and participate in CTE

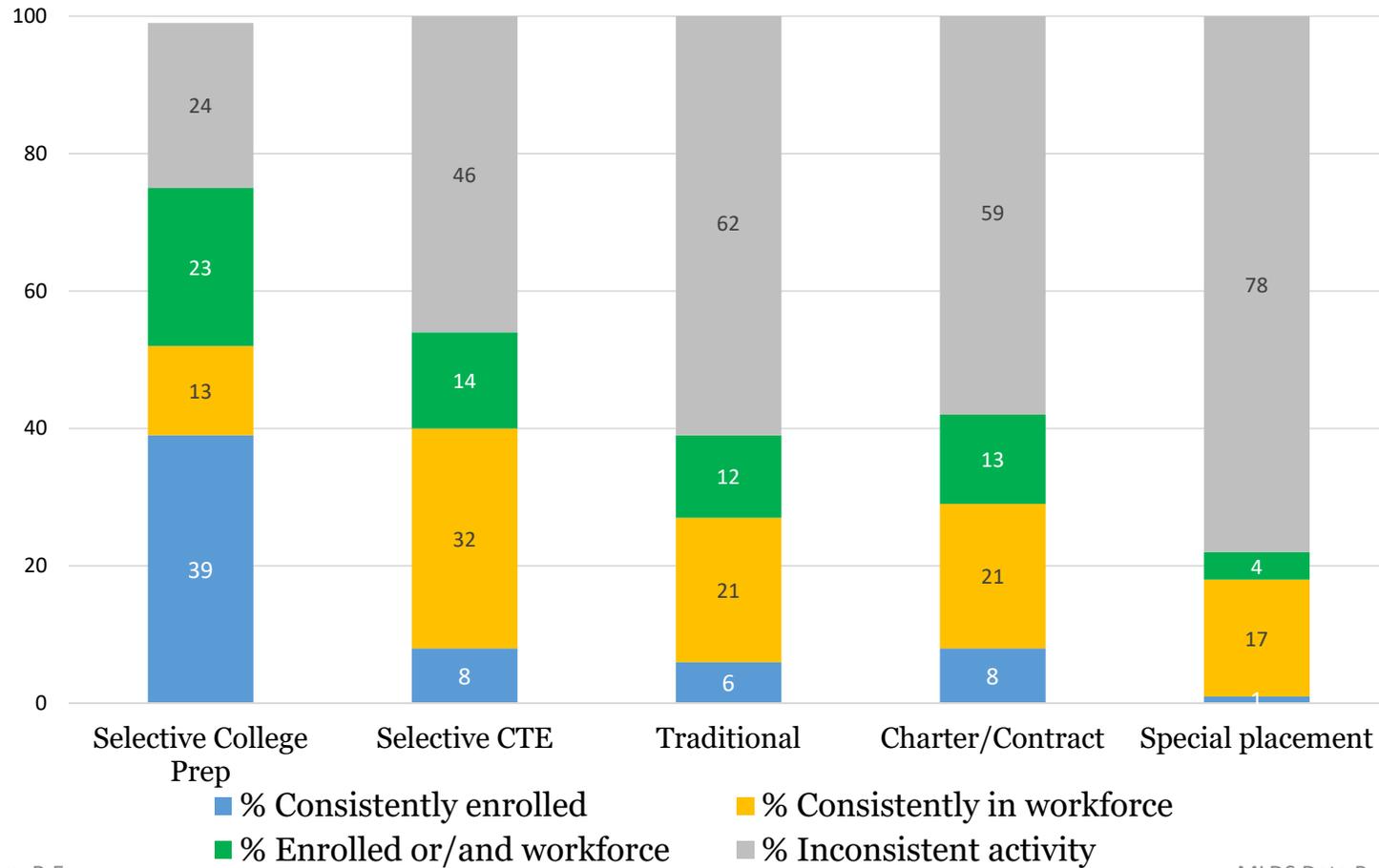
# How are graduates distributed across school types?



# High school types

- Baltimore city has a fairly stratified set of school options
- This matters for differences in opportunities to meet USM requirements and participate in CTE
- The choice system sorts students (I propose) into roughly 3 categories:
  1. academically oriented/advantaged
  2. academically advantaged but interested in a career focus during HS
  3. everyone else

# How do 4-year postsecondary pathways vary across school type?



# Difference in Odds of Persistence in College Relative to Odds of inconsistent activity...

		College Persistence Pathway			
		College-prep HS	CTE HS	Other HS	
Academic Indicators	HSA STEM	-0.08	-0.25	0.16	
	HSA nonSTEM	<b>0.48</b>	<b>1.00</b>	<b>0.52</b>	
	GPA >3.0	<b>1.09</b>	<b>0.92</b>	<b>1.87</b>	
	CTE	0.45	<b>0.38</b>	<b>0.66</b>	
	For'n language	<b>0.22</b>	<b>0.91</b>	<b>0.65</b>	
	USM Math	<b>0.30</b>	0.53	<b>0.45</b>	
	USM Science	<b>1.16</b>	<b>0.79</b>	<b>0.78</b>	
Took AP	<b>0.78</b>	<b>0.68</b>	<b>0.91</b>		
Non-Academic Indicators	ADA	<b>3.57</b>	<b>1.81</b>	<b>1.54</b>	
	# School changes	<b>-0.36</b>	-0.11	0.03	
	# Qs worked, 12th	0.05	0.10	<b>0.22</b>	

Significant indicators in **bold**

# Difference in Odds of Persistence in College Relative to Odds of inconsistent activity...

 = different from overall model significance

## College Persistence Pathway

	College-prep HS	CTE HS	Other HS
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Academic Indicators

HSA STEM	-0.08	-0.25	0.16
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# Difference in Odds of Persistence in Workforce Relative to Odds of inconsistent activity...

## Workforce Persistence Pathway

	College prep HS	CTE HS	Other HS
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Academic Indicators

HSA STEM	-0.18	-0.10	0.00
HSA nonSTEM	<b>-0.26</b>	<b>0.18</b>	0.06
GPA >3.0	0.31	-0.14	0.02
CTE	<b>1.21</b>	0.03	<b>0.38</b>
For'n language	-0.07	-0.06	0.02
USM Math	-0.01	0.32	0.12
USM Science	-0.01	<b>-0.26</b>	0.03
Took AP	0.04	0.12	0.16

Significant indicators in **bold**

Non-Academic Indicators

ADA	0.13	<b>0.39</b>	<b>0.28</b>
# School changes	-0.11	-0.04	<b>-0.09</b>
# Qs worked, 12th	<b>0.97</b>	<b>0.97</b>	<b>1.17</b>

# Difference in Odds of Persistence in Workforce Relative to Odds of inconsistent activity...

 = different from overall model significance

## Workforce Persistence Pathway

College prep HS      CTE HS      Other HS

Academic Indicators

HSA STEM	-0.18	-0.10	0.00
HSA nonSTEM	<b>-0.26</b>	<b>0.18</b>	0.06
GPA >3.0	0.31	-0.14	0.02
CTE	<b>1.21</b>	<b>0.03</b>	<b>0.38</b>
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Significant indicators in **bold**

Non-Academic Indicators

# Summary & Implications

For this Baltimore population as a whole— urban, predominantly minority and low-income -- are high school indicators of ‘college’ and ‘career’ readiness different?

For **college persistence**, positive relationships found for:

- Advanced/more coursework (esp. math and science)
- Proficiency in English/government (more reading and writing)
- CTE pathway completion
- Attendance

For **workforce persistence**, positive relationships found for:

- CTE pathway completion
- Attendance
- Prior work experience

# Summary & Implications

For this Baltimore population as a whole— urban, predominantly minority and low-income -- are indicators of 'college' and 'career' readiness different?

For **college persistence**, negative relationships found for:

- Latinx students
- FARMS

For **workforce persistence**, negative relationships found for:

- Special education status
- ELL status
- Homelessness
- School mobility

# Future Research

- Need more refined academic indicators regarding coursework (performance by subject, rather than exposure only)
- Better operationalization of non-academic indicators (i.e., collaboration skills, communication, curiosity, etc.)
- Specific CTE pathways and outcomes (industry, certifications, etc.)
- Need more sophisticated consideration of high school characteristics and opportunities, and the stratification of students across the city's high schools
  - Is it important to identify CCR indicators that are consistent across student populations?

# Thank you!

## Questions?

Contact info:

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