Is Classroom Diversity Related to Student Retention and Success? Findings from Two Universities

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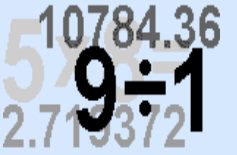

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Purpose of Study

- Estimate the *longitudinal* effect of classroom diversity on change in academic momentum and persistence
  - *Classroom diversity*: Student exposure to change in classmate ethnic/racial and economic (Pell) composition in first three years
  - *Academic momentum*: Cumulative Earned credits + GPA (Index), annual change (delta)
  - *Persistence*: to second, third, and fourth year (spring-to-fall semester)
- Classroom diversity: Direct, empirical measures, not based on student surveys, *net of precollege attributes, experiences*

Limitations of Student Surveys

- "Although student self-reported gains can be revealing…, there are serious concerns about their actual validity. Inquiry that attempts to estimate the impact of diversity experiences on the development of cognitive and intellectual skills using objective standardized measures…is extremely limited." –Pascarella et al., 2014)

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Limitations of Student Surveys

- Lack of construct validity
  - degree of inference from survey operationalization to theoretical construct (e.g., question content)
- Measurement error
  - Short, vague Qs; response scales/categories
- Response processing error
  - Student comprehension, recall, judgment, estimation, response mapping
- *See Tourangeau, Rips, & Rasinski (2000); Porter (2011); Herzog & Bowman (2011)*

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Meta Analysis on Diversity

Table 2.1 Summary of overall findings for diversity courses

	Ethnic studies	Women studies	Other departments/ programs	Unknown/ multiple	Curricular diversity composite	Number of courses	Total
Positive	4	5	6	6	2	2	25
Negative	0	0	0	0	0	0	0
No change	2	1	0	2	1	7	13
Mixed	10	4	14	11	4	19	62
Total	16	10	20	19	7	28	100

- **Twenty-five percent** of studies show positive relationship with measured outcomes (Denson & Bowman, chap. 2 "Higher Ed: Handbook of Theory & Research", 2017)
- Most studies correlating diversity inputs with diversity outputs

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Examples of Recent Studies

- Roksa, J. et al. (2017). Engaging with diversity: how positive and negative diversity interactions influence students' cognitive outcomes. *The Journal of Higher Education* 88: 297-322. **WNS survey (IV 'interaction' w/ 'diverse' students), CAAP (DVs 'cognitive activity', 'critical thinking' pre/post) Result: No sig w/ CT, 'diverse'= all non-white, no controls for academic preparation**
- Bowman, N.A. & Park, J.J. (2015). Not all diversity interactions are created equal….. Research in Higher Education 56: 601-621. **NLSF survey (IV=avg 'racial interaction', diverse= all non-white; DV=all affective indicators [e.g. getting along w/ other races, emotional well-being], self-reported HSGPA (control)**
- Roksa, J. et al. (2017). Racial inequality in critical thinking skills: the role of academic and diversity experiences. Research in Higher Education 58:119-140. **WNS survey (IVs=academic exp [eg time studying, teaching quality], pos/neg 'diversity' exp), CAAP (DV='critical thinking' pre/post), only 176 African Am sample**
- Bowman, N.A. (2013). How much diversity is enough? The curvilinear relationship… Research in Higher Education 54:874-894. **WNS survey (IV=as above; DVs=leadership skills, Psych well-being, intellectual engagement), "students of color"=non-white. Result: only "frequent" "diversity interaction" is sig**
- **Typical survey items on Likert scale ('very often' to 'never')**
  - "Had meaningful and honest discussion about social justice issues"
  - "Felt silenced by discrimination from sharing experiences"
  - "Felt insulted or threatened by others……"

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Survey Example

How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

	Very much	Quite a bit	Some	Very little
Writing clearly and effectively	○	○	○	○
Speaking clearly and effectively	○	○	○	○
Thinking critically and analytically	○	○	○	○
Analyzing numerical and statistical information	○	○	○	○
Acquiring job- or work-related knowledge and skills	○	○	○	○
Working effectively with others	○	○	○	○
Developing or clarifying a personal code of values and ethics	○	○	○	○
Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)	○	○	○	○
Solving complex real-world problems	○	○	○	○
Being an informed and active citizen	○	○	○	○

Direct Measures of Classroom Diversity

- Data source: Student matriculation system (census files), student entry survey
- *Step 1:* Attach student ethnicity/Pell status and faculty type to course enrollment file by class section (reg section only)
- *Step 2:* Calculate ethnicity/Pell % by class section
- *Step 3:* Calculate Ø ethnicity/Pell % for class section by student ID of starting cohort
- Perform steps 1-3 at end of first year (fall+spring) end of second year, and end of third year
- *Step 4:* Calculate % change in classroom diversity from year to year (longitudinal metric)
- *Step 5:* Calculate longitudinal change (delta) in academic momentum from year to year

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Data Sample, Covariates

- New full-time freshmen, fall 2011-2013, excluding
  - Students without entry survey data (~ 10%)
  - Statistical outliers (using Cook's, Mahalanobis', Z-residual)
- Effective sample: 6,527 freshmen (varies with model)
- Computed variables
  - Precollege preparation index (GPA-test score composite)
  - Academic momentum: 100-pt index (GPA 50%, credits earned 50%)
  - Imputation of missing EFC: 17 predictors, r = .45
- Covariate controls, student-level
  - *Socio-demographics* (age, gender, ethnicity/race, residency, parent education, Pell status)
  - *Academic preparation* (HS prep index, AP, college credits)
  - *Motivation* (education goal, college preference)
  - *Campus/social integration* (on-campus living, working; LLC; hours of work)
  - *Financial aid profile* (EFC-$, Unmet need-$, scholarship aid, loan aid)
  - *First-semester academic experience* (Undeclared, no math, no English)

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Methodological Framework

- Conceptual approach
  - Input-environment-output (I-E-O) model (Astin, 1993; Pascarella & Terenzini, 2005)
  - Classroom metrics are focal environment factors *net of* precollege, 'bridge' (e.g., financial aid), and college experience covariates
- Analytical approach
  - Linear regression for academic momentum
  - Logistic regression for enrollment persistence
  - Combined and separate (ethnicity/race, academic preparation) estimation models
- Effect size estimation
  - Raw/standard deviation coefficient for academic momentum
  - Percentage change in probability for persistence (Petersen, 1985)

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Descriptive Stats

Classroom Ethnic/Racial/Pell Composition during Second Year					
Percent classroom composition	*Hispanic*	*Black*	*Asian*	*Minority*	*Pell*
N = 5166					
Mean	16.50	5.56	11.81	25.77	26.99
Std. Deviation	3.30	2.10	4.17	4.55	3.60
Variance	10.92	4.41	17.37	20.67	12.96
Minimum	0.00	0.00	0.00	2.50	1.59
Maximum	43.33	43.89	35.36	50.00	47.91

Critical mass argument: More than 10 percent of learning community should be diverse. (Coleman & Palmer, 2006)

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Descriptive Stats

Classroom Ethnic/Racial/Pell Composition during Third Year					
Percent classroom composition	*Hispanic*	*Black*	*Asian*	*Minority*	*Pell*
N = 4755					
Mean	16.89	4.44	10.48	24.21	28.10
Std. Deviation	4.36	2.27	5.22	5.53	4.79
Variance	18.98	5.14	27.27	30.56	22.98
Minimum	0.00	0.00	0.00	0.00	0.00
Maximum	64.24	46.52	67.78	62.42	60.19

Critical mass argument: More than 10 percent of learning community should be diverse. (Coleman & Palmer, 2006)

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Descriptive Stats

Classroom Ethnic/Racial/Pell Composition and Academic Momentum Descriptives

First-to-second year % pt change	*Hispanic*	*Black*	*Asian*	*Minority*	*Pell*	*Year 2 Acad Mom*	*Yr1-Y2 AM Δ*
N = 5166							
Mean	-0.16	-0.60	0.71	-2.74	-0.65	59.38	-13.35
Std. Deviation	3.40	2.28	3.26	5.52	4.21	10.26	5.29
Variance	11.59	5.19	10.62	30.51	17.73	105.28	27.96
Minimum	-17.28	-10.49	-18.32	-31.10	-29.66	25.68	-29.99
Maximum	22.66	33.38	21.66	24.95	15.53	93.88	8.49

Average class size: 24 to 52 students depending on class type (i.e. lectures, discussion groups, labs)

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on End-of-Second-Year Academic Momentum

	White Students				*All Students*			
First-to-second year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.159	0.039	-4.096	***	-0.133	0.031	-4.302	***
Black	-0.139	0.057	-2.441	*	-0.102	0.045	-2.26	*
Asian	-0.041	0.038	-1.091		-0.073	0.031	-2.354	*
Pell	0.05	0.03	1.627		0.109	0.025	4.294	***
Model R-sq		0.529				0.524		
Model max VIF		1.83				1.91		
Model N		3346				5166		

* $p < .05$, ** $p < .01$, *** $p < .001$

3.23*-.159 = -.51 ~ -1.7%tile

4.21*.109 = .46 ~ 1.5%tile

3.4*-.133 = -.45 ~ -1.5%tile

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on End-of-Second-Year Academic Momentum

	Asian Students				*Hispanic Students*			
First-to-second year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.272	0.138	-1.974	*	-0.014	0.07	-0.2	
Black	0.057	0.2	0.285		-0.141	0.127	-1.113	
Asian	-0.134	0.104	-1.297		-0.113	0.088	-1.279	
Pell	0.585	0.111	5.252	***	0.147	0.071	2.055	*
Model R-sq		0.625				0.487		
Model max VIF		3.73				2.42		
Model N		402				795		

* $p < .05$, ** $p < .01$, *** $p < .001$

3.81*.585 = 2.23 ~ 6.6%tile

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on End-of-Second-Year Academic Momentum

	Top 75%tile Acad Preparation				*Bottom 25%tile Acad Preparation*			
First-to-second year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.164	0.055	-2.97	**	-0.06	0.063	-0.949	
Black	-0.041	0.099	-0.415		0.041	0.087	0.469	
Asian	-0.048	0.049	-0.983		-0.037	0.072	-0.517	
Pell	0.077	0.047	1.632		0.066	0.053	1.247	
Model R-sq		0.418				0.183		
Model max VIF		1.44				2.26		
Model N		1214				1289		

* $p < .05$, ** $p < .01$, *** $p < .001$

Borderline significance

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on First-to-Second-Year Academic Momentum Change

	Without Year 1 Momemtum				*With Year 1 Momemtum*			
First-to-second year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.02	0.019	-1.044		-0.058	0.019	-3.123	**
Black	0.023	0.029	0.789		0.026	0.027	0.935	
Asian	-0.236	0.02	-12.105	***	-0.217	0.019	-11.69	***
Pell	0.092	0.016	5.832	***	0.081	0.015	5.363	***
First-Yr Acad Momemtum					-0.221	0.007	-31.026	***
Model R-sq		0.272				0.372		
Model max VIF		1.924				2.092		
Model N		5117				5115		

* $p < .05$, ** $p < .01$, *** $p < .001$

3.26 *-.217 = 0.71 ~ 4.5%tile

3.4 *-.058 = 0.197 ~ 1.23%tile

4.21*.081 = 0.34 ~ 2.1%tile

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on End-of-Third-Year Academic Momentum

	With Year 2 Momentum				*Without Year 2 Momentum*			
Second-to-third year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.067	0.034	-1.995	*	-0.045	0.039	-1.142	
Black	-0.011	0.055	-0.201		-0.148	0.062	-2.388	*
Asian	-0.222	0.033	-6.721	***	-0.156	0.038	-4.096	***
Pell	-0.016	0.028	-0.589		-0.016	0.032	-0.496	
Second Yr Acad Momentum	0.863	0.018	48.321	***				
Model R-sq		0.465				0.204		
Model max VIF		2.3				1.9		
Model N		4439				4439		

* $p < .05$, ** $p < .01$, *** $p < .001$; Note: n/s with total minority %

4.12 *-.222 = - 0.91 ~ 2.8%tile

3.97 *-.067 = - 0.266 ~ 0.8%tile

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Findings: Academic Momentum

Classroom Ethnic/Racial/Pell Composition Effect on Second-to-Third-Year Academic Momentum Change

	White Students				*Non-White Students*			
Second-to-third year % change	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.107	0.046	-2.36	*	0.010	0.053	0.190	
Black	-0.103	0.073	-1.414		0.037	0.084	0.436	
Asian	-0.177	0.042	-4.202	***	-0.211	0.054	-3.887	***
Pell	0.044	0.034	1.319		-0.084	0.050	-1.673	
Second Yr Acad Momentum	-0.147	0.022	-6.541	***	-0.117	0.03	-3.896	***
Model R-sq		0.109				0.096		
Model max VIF		2.37				2.39		
Model N		2906				1539		
* $p < .05$, ** $p < .01$, *** $p < .001$								

4.49 *-.211 = -0.95 ~ 3.4%tile

Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Second-to-Third-Year Persistence

	All Students				*All Students Without Acad Momentum*			
First-to-second year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.03	0.031	0.941		-0.18	0.02	79.439	***
Black	0.008	0.04	0.039		-0.131	0.027	23.099	***
Asian	0.042	0.033	1.642		-0.009	0.022	0.177	
Pell	-0.057	0.026	4.811	*	0.013	0.016	0.634	
Second-Yr Acad Momemtum	0.299	0.017	293.188	***				
Model R-sq (Nagelkerke)		0.642				0.404		
Model N		5128				5284		
* $p < .05$, ** $p < .01$, *** $p < .001$								

+2.6% persistence for 1pt Δ or +27% for 1SD Δ

- 0.8% for 1%pt Δ or -1.8% per 1SDΔ

- 1.1% for 1%pt Δ or -3.7% per 1SDΔ

Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Second-to-Third-Year Persistence

	Non-White Students				*White Students*			
First-to-second year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.116	0.05	5.283	*	0.088	0.044	3.971	*
Black	0.061	0.073	0.704		0.023	0.05	0.214	
Asian	0.056	0.055	1.053		0.024	0.039	0.369	
Pell	-0.065	0.046	1.979		-0.058	0.034	2.922	
Second-Yr Acad Momemtum	0.291	0.03	96.248	***	0.329	0.024	191.412	***
Model R-sq (Nagelkerke)		0.632				0.676		
% outliers excluded		5.89				4.53		
Model N		1789				3347		

* $p < .05$, ** $p < .01$, *** $p < .001$

Borderline significance

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Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Second-to-Third-Year Persistence

	Hispanic Students				*Asian Students*			
First-to-second year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.056	0.032	3.046		-0.158	0.072	4.79	*
Black	-0.012	0.056	0.043		0.173	0.105	2.705	
Asian	0.003	0.04	0.004		0.1	0.06	2.748	
Pell	-0.014	0.032	0.2		-0.055	0.057	0.943	
Second-Yr Acad Momemtum	0.084	0.013	41.473	***	0.114	0.022	27.445	***
Model R-sq (Nagelkerke)		0.225				0.339		
Model N		830				418		

* $p < .05$, ** $p < .01$, *** $p < .001$

Borderline significance

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Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Second-to-Third-Year Persistence

	Top 75%tile Acad Preparation				*Bottom 25%tile Acad Preparation*			
First-to-second year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.15	0.129	1.359		0.058	0.05	1.326	
Black	-0.442	0.23	3.69	^	0.079	0.064	1.533	
Asian	0.09	0.133	0.458		0.035	0.057	0.374	
Pell	0.098	0.109	0.799		-0.015	0.041	0.142	
Second-Yr Acad Momemtum	0.376	0.086	18.902	***	0.377	0.037	101.882	***
Model R-sq (Nagelkerke)		0.748				0.686		
Model N		1308				1269		

^ w/o acad momentum: α = 0.016, logit = -.318

* $p < .05$, ** $p < .01$, *** $p < .001$

Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Third-to-Fourth-Year Persistence

	All Students				*White Students*			
Second-to-third year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.03	0.017	2.965		-0.034	0.025	1.804	
Black	-0.09	0.025	13.162	***	-0.111	0.037	9.008	**
Asian	0.016	0.017	0.851		0.01	0.023	0.21	
Pell	0.001	0.015	0.002		-0.003	0.019	0.026	
Third Yr Acad Momentum	0.042	0.004	116.338	***	0.05	0.005	96.186	***
Model R-sq (Nagelkerke)		0.118				0.145		
Model N		4755				3105		

* $p < .05$, ** $p < .01$, *** $p < .001$

-0.5% persistence for 1%pt Δ or -3.1% for 1SD Δ

-0.5% persistence for 1%pt Δ or -1.2% for 1SD Δ

Findings: Enrollment Persistence

Classroom Ethnic/Racial/Pell Composition Effect on Third-to-Fourth-Year Persistence, Non-White Students

	With Academic Momentum				*Without Academic Momentum*			
Second-to-third year % change	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.016	0.024	0.488		-0.019	0.017	1.246	
Black	-0.074	0.035	4.416	*	-0.047	0.027	2.977	
Asian	0.025	0.027	0.875		0.009	0.02	0.217	
Pell	0.015	0.023	0.394		0.005	0.017	0.102	
Third Yr Acad Momentum	0.034	0.007	26.392	***				
Model R-sq (Nagelkerke)		0.112				0.089		
Model N		1650				1776		
* $p < .05$, ** $p < .01$, *** $p < .001$								

Borderline significance

Findings: Snapshot Measure

Classroom Ethnic/Racial/Pell Composition Effect on First- and Second-Year Academic Momentum

	Year 1 Momemtum				*Year 2 Momemtum*			
% of classroom peers	Coefficient	Std. Error	t-ratio	Sig.	Coefficient	Std. Error	t-ratio	Sig.
Hispanic	-0.134	0.042	-3.201	***	-0.228	0.033	-6.97	***
Black	-0.052	0.058	-0.891		-0.216	0.054	-3.974	***
Asian	-0.049	0.035	-1.43		-0.029	0.028	-1.037	
Pell	0.004	0.035	0.108		0.087	0.031	2.819	**
Model R-sq		0.384				0.525		
Model max VIF		2.29				1.97		
Model N		6136				5176		
* $p < .05$, ** $p < .01$, *** $p < .001$								

Negative effects associated with Hispanic/Black classmates

Findings: Snapshot Measure

Classroom Ethnic/Racial/Pell Composition Effect on Second and Third-Year Persistence

	Persistence to Year 2				*Persistence to Year 3*			
% of classroom peers	Logit Coeff.	Std. Error	Wald	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Hispanic	-0.044	0.027	2.656		0.018	0.034	0.269	
Black	0	0.034	0		0.006	0.043	0.016	
Asian	0.053	0.03	3.118		0.14	0.037	14.345	***
Pell	-0.031	0.024	1.697		-0.054	0.034	2.633	
End-of-Year Acad Momemtum	0.151	0.007	514.451	***	0.31	0.018	289.38	***
Model R-sq (Nagelkerke)		0.546				0.653		
Model N		6086				5141		
* $p < .05$, ** $p < .01$, *** $p < .001$								

Positive effect associated with Asian classmates

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Findings: Snapshot Measure

Classroom Ethnic/Racial/Pell Composition Effect in the Third-Year

	Academic Momentum Year 3				*Persistence to Year 4*			
% of classroom peers year 3	Coefficient	Std. Error	t-ratio	Sig.	Logit Coeff.	Std. Error	Wald	Sig.
Non-White/Asian Students	-0.119	0.03	-3.974	***	0.01	0.007	1.801	
Pell	0.055	0.034	1.594		-0.011	0.009	1.541	
Model R-sq (Nagelkerke)		0.201				0.188		
Model max VIF		1.9						
Model N		4542				2903		
* $p < .05$, ** $p < .01$, *** $p < .001$								

Negative effect associated with non-white/Asian classmates

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Summary of Findings

- Effect on academic momentum (GPA, earned credits)
  - Marginal effects associated with change in ethnic/racial classroom composition (mostly negative) on longitudinal change in academic momentum
  - Positive effect associated with change in Pell students on Asian students
  - Borderline negative effect on well-prepared students (top Q)
  - No effect on low-prepared students (bottom Q)
- Effect on enrollment persistence
  - No effect associated with change in ethnic/racial classroom composition *AFTER* controlling for academic momentum, except marginal negative effect (% of Blacks) on persistence to 4th year
  - GPA and earned credits are key predictors of persistence
- Use of longitudinal change in classroom peer composition net of student-level precollege and college experience covariates

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Summary of Findings

- Findings based on direct, empirical measures of ethnic/racial diversity and direct, empirical measures of academic outcomes Do Not corroborate a vast corpus of studies using student self-reported data
- Why the discrepant results?
  - Accuracy of student self-assessment of learning and campus social and academic interactions is severely limited (see Porter, S. R. (2011). Do college student surveys have any validity? The Review of Higher Education 35 (1): 45-76)
  - 'Diversity research' is almost exclusively anchored in data of student self-perception of social engagement and affective disposition of 'learning' outcomes
- Thus, need for better data to support claims of 'diversity' benefits on academic outcomes

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Study Limitations

- Findings speak to classroom change in compositional ethnic/racial diversity, not interactional or curricular diversity associated with campus climate (though see Herzog, S. (2007). *Diversity and Educational Benefits: Moving Beyond Self-Reported Data.* Education Working Paper Archive, University of Arkansas. http://www.uark.edu/ua/der/EWPA/Research/Achievement/1799.html)
- Findings based on single-institution data typical of a moderately selective research university
- Findings reflect on first three years of college, not degree completion effect

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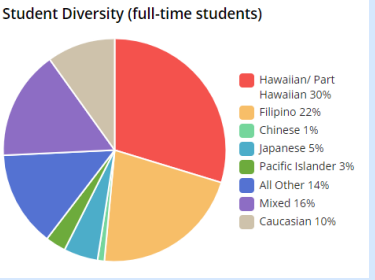
University of Hawaii – West Oahu

THE CHRONICLE OF HIGHER EDUCATION

"Colleges With the Greatest Racial and Ethnic Diversity, Fall 2015"

UHWO was ranked 3rd most diverse 4-year public college.



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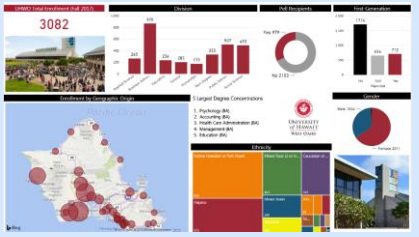
University of Hawaii – West Oahu

"Diversity" not limited to just race/ethnicity:

27 years old average age
18% 35 years and older
48% Part-timers
65% Female
24% First-generation
32% Pell-eligible
10% Veterans
60% Transfers



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Purpose of Study

-Estimate the first-year effect of classroom diversity on academic performance and persistence

- Classroom diversity: Student exposure to cumulative classmate racial/ethnic, economic (pell), age, attendance status (FT/PT), veteran, and first generation composition in first year.
- Academic performance: Cumulative earned grade point average at the end of year one.
- Persistence: first-to-second year retention

- Classroom diversity: direct measures (not surveys).

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Descriptive Stats

Classroom Ethnic/Racial Composition					
	Asian not Filipino	Filipino	Native Hawaiian	Other (Not Caucasian)	Mixed Race
N= 1,074					
Mean	16.85	25.80	25.66	6.33	16.07
Standard Deviation	4.18	5.47	5.71	2.89	3.65
Minimum	3.99	11.29	11.09	0	5.68
Maximum	25.82	41.02	43.13	14.39	24.36

Dependent Variables		
	Cumulative GPA	Fall Retention
Mean	2.63	0.69
Standard Deviation	1	0.46
Minimum	0	0
Maximum	4	1

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Descriptive Stats

Classroom Comparison						
	Female	Part-Time	Age	Pell	FGS	Veteran
N= 1,074						
Mean	63.23	19.24	20.35	32.69	12.68	3.97
Standard Deviation	7.05	7.78	0.88	6.44	9.98	3.56
Minimum	43.07	3.79	17.87	16.22	0	0
Maximum	76.34	45.63	24.33	45.74	29.16	8.48

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Findings: First-Year Academic Performance

Coefficients[a]

Model		Standardized Beta	t	Sig.	VIF
	(Constant)		-3.749	0.000	
New Freshman Covariate Controls	Advanced Standing	0.044	1.458	0.145	1.151
	SAT Math	0.098	3.183	0.002	1.204
	Unmet Financial Need	-0.138	-4.582	0.000	1.135
	Total Financial Aid	0.051	1.645	0.100	1.206
	Native Hawaiian	-0.066	-2.039	0.042	1.325
	HS GPA	0.451	14.423	0.000	1.228
	Undeclared	-0.063	-2.224	0.026	1.018
	Educational Goals Response	0.123	4.156	0.000	1.095
Classroom Diversity Measures	Asian not Filipino	-0.018	-0.357	0.721	3.365
	Filipino	0.157	2.643	0.008	4.429
	Native Hawaiian	0.046	0.784	0.433	4.340
	Other	-0.023	-0.580	0.562	2.049
	Mixed Race	0.117	2.467	0.014	2.840
	Age	0.123	3.696	0.000	1.383

a. Dependent Variable: Cumulative GPA

R-square = 0.379

+ 0.15 grade point for every 5% increase in avg. Filipino exposure

+ 0.12 grade point for every 1 year increase in avg. age

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Findings: First-Year Retention

Variables in the Equation

		B	S.E.	Wald	Sig.
New Freshmen Covariate Controls	Advanced Standing	0.129	0.241	0.287	0.592
	SAT Math	-0.004	0.001	7.032	0.008
	Unmet Financial Need	0.000	0.000	9.761	0.002
	Total Financial Aid	0.000	0.000	12.282	0.000
	Native Hawaiian	-0.103	0.225	0.211	0.646
	HS GPA	-0.095	0.246	0.151	0.698
	First Fall GPA	1.552	0.125	153.850	0.000
	Undeclared	-0.529	0.183	8.367	0.004
	Educational Goals Response	0.939	0.216	18.876	0.000
Classroom Diversity Measures	Asian not Filipino	4.111	3.907	1.107	0.293
	Filipino	4.963	3.232	2.357	0.125
	Native Hawaiian	2.231	3.381	0.435	0.509
	Other	5.445	4.463	1.488	0.223
	Mixed Race	8.780	3.834	5.244	0.022
	Age	0.572	0.125	20.894	0.000
	Constant	-17.708	4.537	15.232	0.000

Nagelkerke R-Square = 0.492

8% increase in retention likelihood for every 1 year increase in avg. age (vis-à-vis Petersen's Delta P)

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Study Limitations

- Study limited to classroom diversity. Does not speak to other forms of diversity (i.e., informal interactional or curricular).
- Findings reflect on first year of college; not longitudinal effect.
- Academic performance limited to cumulative GPA at end of first year; does not take in to account other measures of academic growth (i.e., learning outcomes, test scores).
- Findings reflect on a single institution, small baccalaureate liberal arts college in Hawaii (although this could also be considered a strength).

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Future Research

- Focus on direct, empirical measures of longitudinal change in predictor and outcome
- Triangulate findings with multiple direct measures
- Start with matriculation system data, complement with other reliable sources (Caison, 2006)

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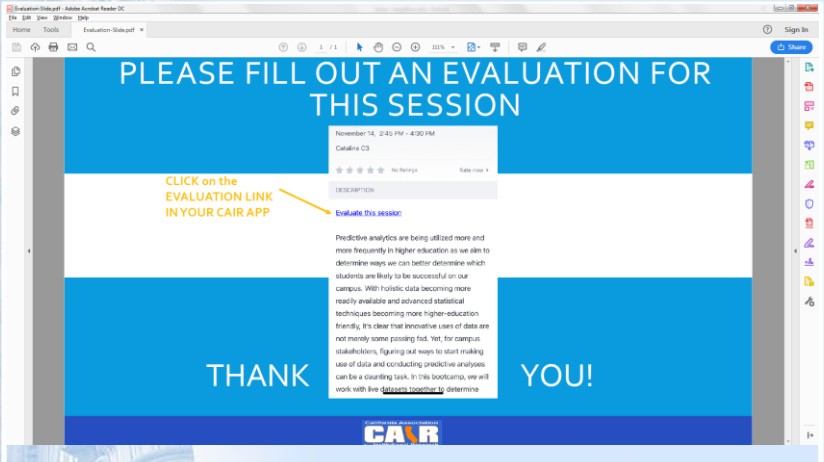
Relevant Previous Research

- Astin, A. W. (1993). *What Matters in College? Four Critical Years Revisited*. San Francisco: Jossey-Bass.
- Caison, A. L. (2006). Analysis of institutionally specific retention research: A comparison between survey and institutional database methods. *Research in Higher Education* 48(4): 435-451.
- Coleman, A. L., & Palmer, S.C. (2006). *Admissions and Diversity After Michigan: The Next Generation of Legal and Policy Issues*. New York: The College Board.
- Herzog, S., & Bowman, N. A. (Eds.) (2011). *Validity and Limitations of College Student Self-Report Data*. New Directions for Institutional Research. San Francisco: Jossey-Bass.
- Pascarella, E. T., Martin, G. L., Hanson, J. M., Trolian, T. L., Gillig, B., & Blaich, C. (2014). Effects of diversity experiences on critical thinking skills over 4 years of college. Journal of College Student Development 55 (1): 86-92.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How College Affects Students: Volume 2, A Third Decade of Research*. San Francisco, CA: Jossey-Bass.
- Petersen, T. (1985). A comment on presenting results from logit and probit models. *American Sociological Review*, 50: 130-131.
- Porter, S. R. (2011). Do college student surveys have any validity? *The Review of Higher Education* 35 (1): 45-76.
- Tourangeau, R., Rips, L., & Rasinski, K. (2000). *The Psychology of Survey Response*. Cambridge, UK: Cambridge Univ. Press.

– http://www.unr.edu/ia/research



Presentation available at
http://www.unr.edu/ia/research

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