LUXURY OR REQUISITE: ASSESSING THE VALUE OF STUDY ABROAD AND INTERNSHIP PROGRAMS ON STUDENT OUTCOMES

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Background

- In 2014 313,000 (1.5%) of American college students nationwide participate in study abroad programs (IIE, Open Doors, 2016)

- Student internship programs an opportunities to learn outside of the campus environment

- UC's Programs

  - Study Abroad – UCEAP

  - UC Washington, DC - UCDC

  - UC Center at Sacramento - UCCS

Background

UC Systemwide coordination of programs seeks to partner with Institutional Research to:

- Assess impact of program participation on academic and employment outcomes

- research-methodology based approach to control for differences

- leverage UC systemwide data for large enough population to get robust results

Presentation Outline

- Background and research questions

- Relevant previous research

- Methods and data sources

- Descriptive statistics

- Unadjusted results

- Propensity core matching example

- Adjusted results

- Conclusions

Research Questions

- What are the demographic and academic and characteristics of program participants?

- Does program participation prolong time-to-degree?

- What is the impact of program participation on post-college earnings?

- What is the impact of program participation on college experience and student learning?

Relevant Research

- Students in study abroad have graduation rates 5-8 percentage points higher (Sutton & Rubin, 2010)

- Study abroad students had higher GPA gains during enrollment (Georgia Learning Outcomes Study GLOSSARI, 2010)

- Study abroad helps build skills for a first job (84%) and (49%) develop confidence to acquire new skills required for first job (IES Abroad Recent Graduate Survey, 2010)

Relevant Research

- 62 percent of employers worldwide "seek or attribute value to an international study experience when recruiting" (Malicki/Potts 2013)

- Internship participation had significant impact on earnings immediately after graduation (Chang, et al UCOP IRAP, 2015)

Program Participation

Student Participants in Systemwide Programs
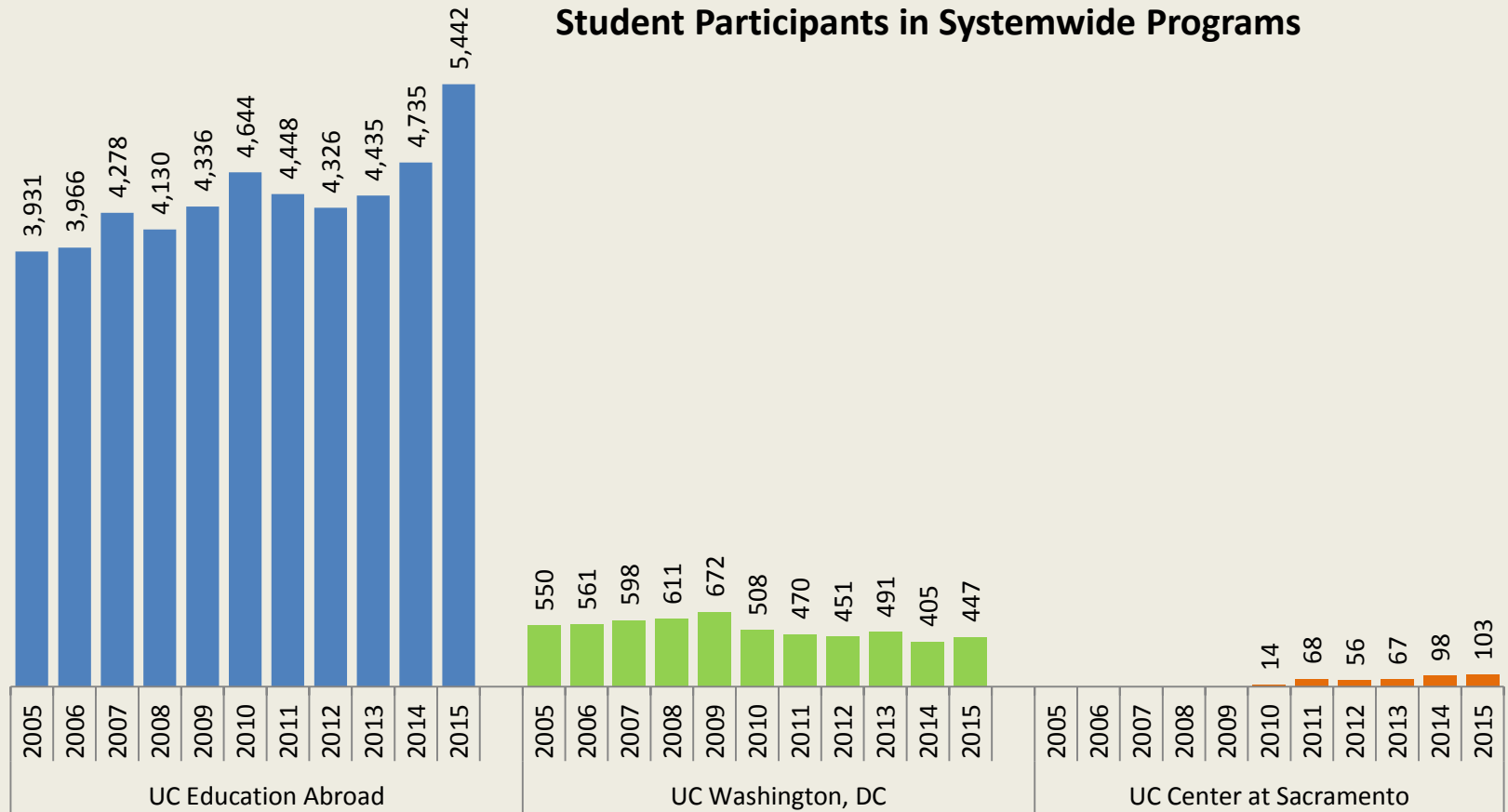
Program Participation

	EAP	UCDC	UCCS
Duration of Participation			
1 term	66%	98%	96%
2 terms	19%	2%	4%
3 terms	13%	0%	0%
4 terms	2%	0%	0%
Timing of Participation			
First Year	1%	2%	0%
Second Year	13%	19%	15%
Third Year	51%	30%	37%
Fourth Year	27%	40%	25%
Fifth Year	8%	9%	19%
6th Year or Later	0%	1%	4%

Methods

- Descriptive analysis and raw comparison of outcomes

- Logistic regression to predict program participation

- Propensity score matching (1:1) to match participants with students who have similar probability of participating

- Significance tests of means of matched pair groups

Data Sources

- UC student data and program participation data

- California EDD quarterly wage data

  ➢ Earnings at two and five years after graduation

- UC Undergraduate Experience Survey (UCUES) survey data

  ➢ Satisfaction with college experience and other learning outcomes

Descriptive Statistics

Population

All students entering UC between 2000 and 2015

Group	Number	Percent
EAP Participants	54,926	7%
UCDC Participants	4,825	1%
UCCS Participants	397	0%
All Other UC Students	766,380	93%
Total	826,528	100%

Baseline Descriptive Statistics
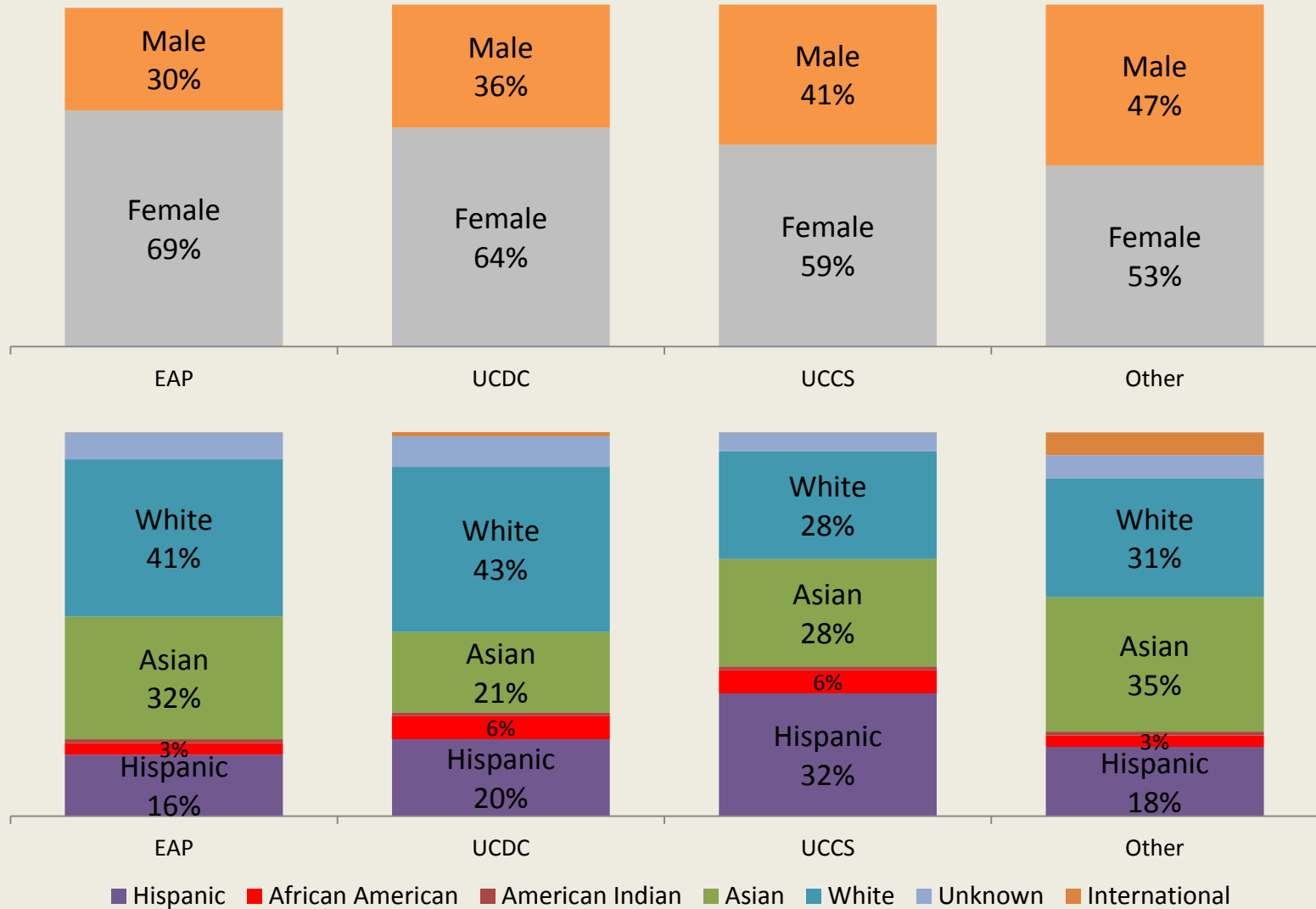
Baseline Descriptive Statistics
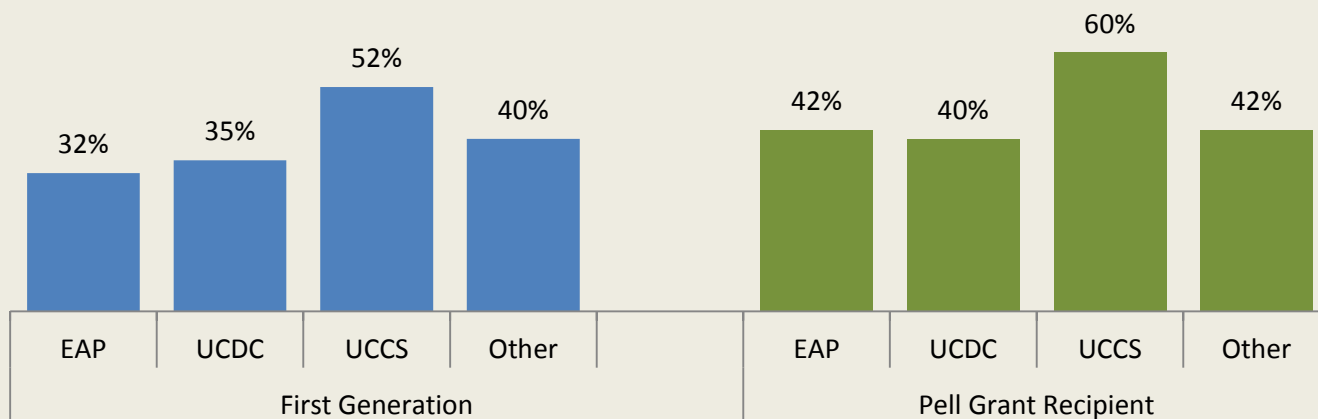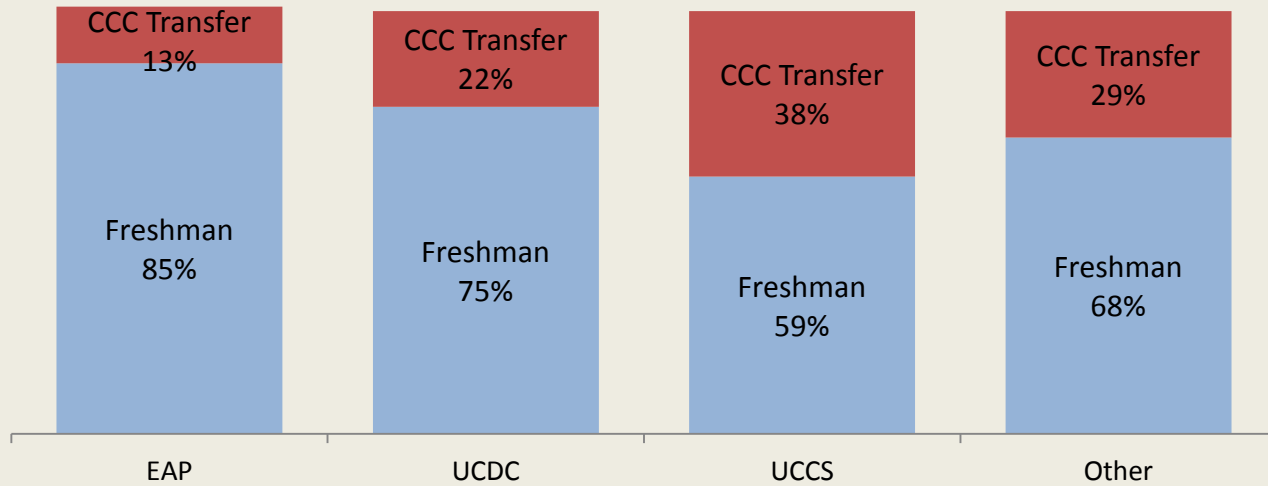
Descriptive Statistics – Field of Study

Field	EAP	UCDC	UCCS	Other
STEM	21%	7%		35%
Humanities	21%	14%	7%	15%
Social Sciences	34%	59%	73%	29%

Legend: Social Sciences, Humanities, Business, Health Sciences, STEM, Undeclared, Other Fields
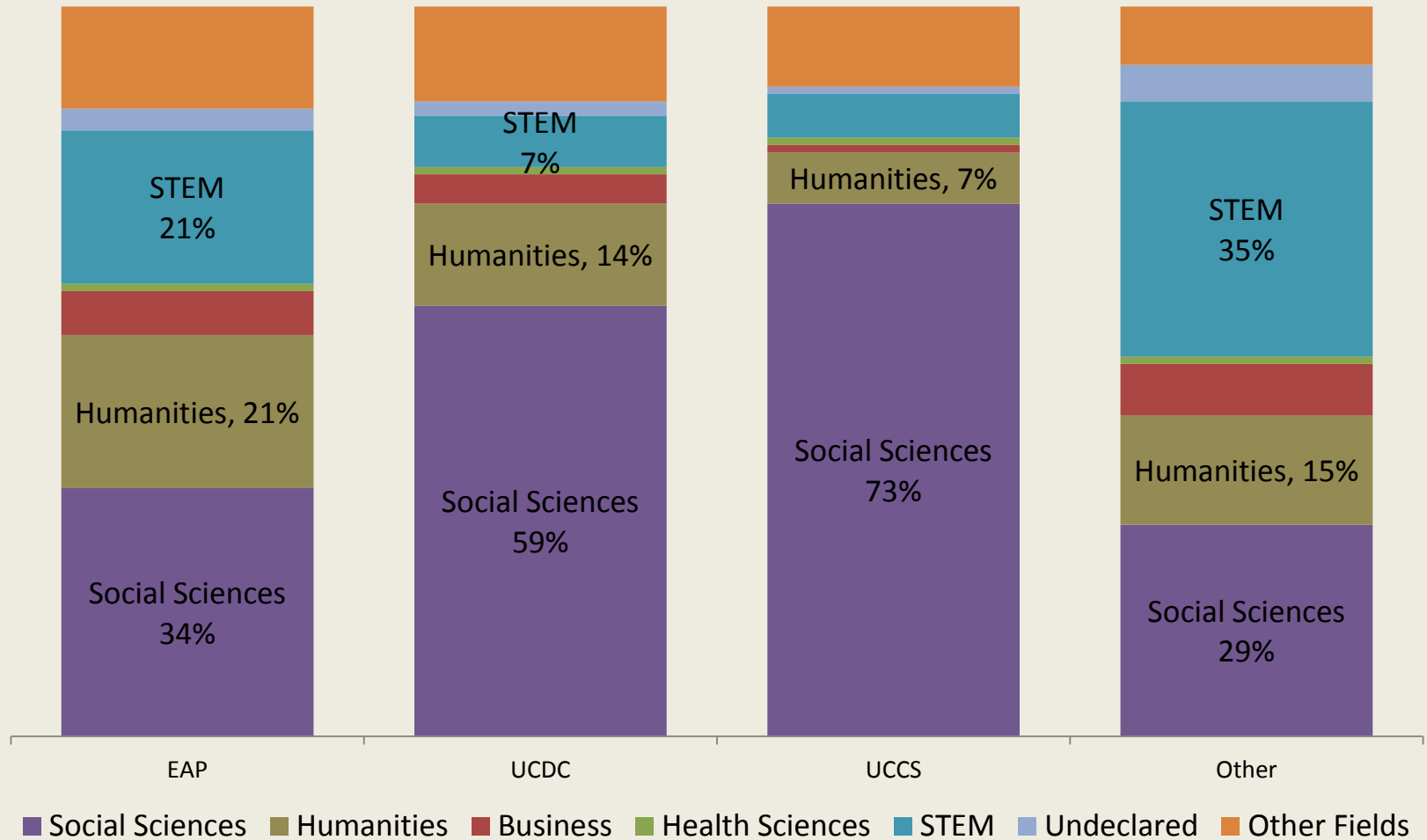
Descriptive Statistics – EAP and UCDC Conclusions

- Program students more likely to be:
  - ➢ Female, White
  - ➢ From college educated families
  - ➢ Non-STEM majors
  - ➢ Entered UC as a freshman
  - ➢ Complete slightly more units by the sophomore year
- Exclude UCCS from matching analysis

Unadjusted Results

Time to Degree - Program students have lower average TTD*

Average Time to Degree: Freshmen Entrants

■ Non-Participant   ■ Program Participant

	Non-Participant	Program Participant
EAP	4.19	4.15
UCDC	4.18	4.07
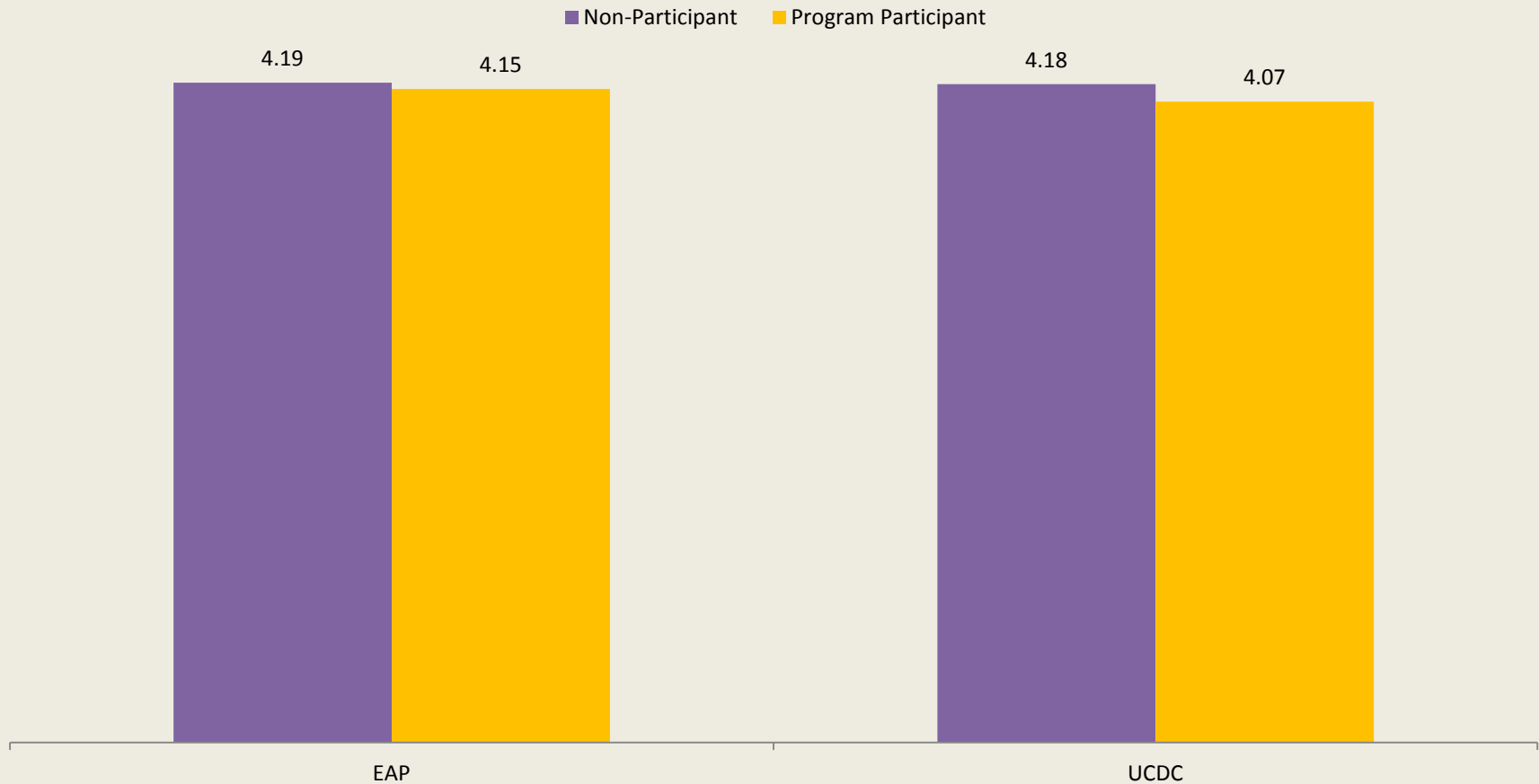
*T-test confirm significantly lower time to degree for program participants of EAP and UCDC, p<.01. Includes only students who have graduated.

College Experiences – Surveys show higher levels of satisfaction among program students

Satisfaction with College Experience

Vertical axis labels:
- Very Satisfied - 6.0
- Satisfied - 5.0
- Somewhat Satisfied - 4.0
- Somewhat dissatisfied - 3.0
- Dissatisfied - 2.0
- Very Dissatisfied - 1.0

Category	EAP	UCDC
Satisfaction: overall social experience	4.3	4.5
(UCDC)	4.3	4.6
Satisfaction: overall academic experience	4.4	4.6
(UCDC)	4.4	4.7
Satisfaction: value of your education for the price you're paying	3.9	4.0
(UCDC)	3.9	4.2
Campus climate: Knowing what I know now, I would still choose to enroll at this campus	4.6	4.7
(UCDC)	4.6	4.8

Includes only students who have responded to the UCUES survey after their Junior year or after program participation.

Earnings five years after graduation - Program students have slightly higher average earnings by discipline

EAP

	Arts & Humanities		Business		Social Sciences		STEM	
	Non-EAP	EAP	Non-EAP	EAP	Non-EAP	EAP	Non-EAP	EAP
	$41,160	$42,184	$62,548	$65,300	$49,418	$50,245	$76,606	$76,130

UCDC

	Arts & Humanities		Business		Social Sciences		STEM	
	No UCDC	UCDC	No UCDC	UCDC	No UCDC	UCDC	No UCDC	UCDC
	$41,232	$45,149	$62,652	$67,089	$49,421	$55,055	$76,566	$84,280
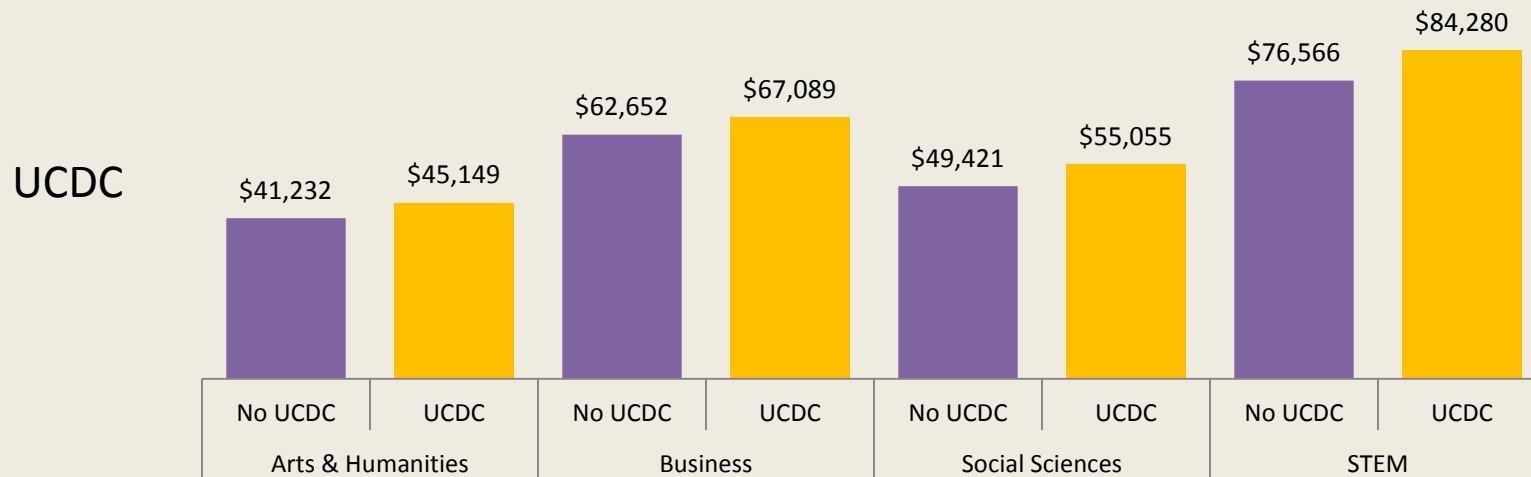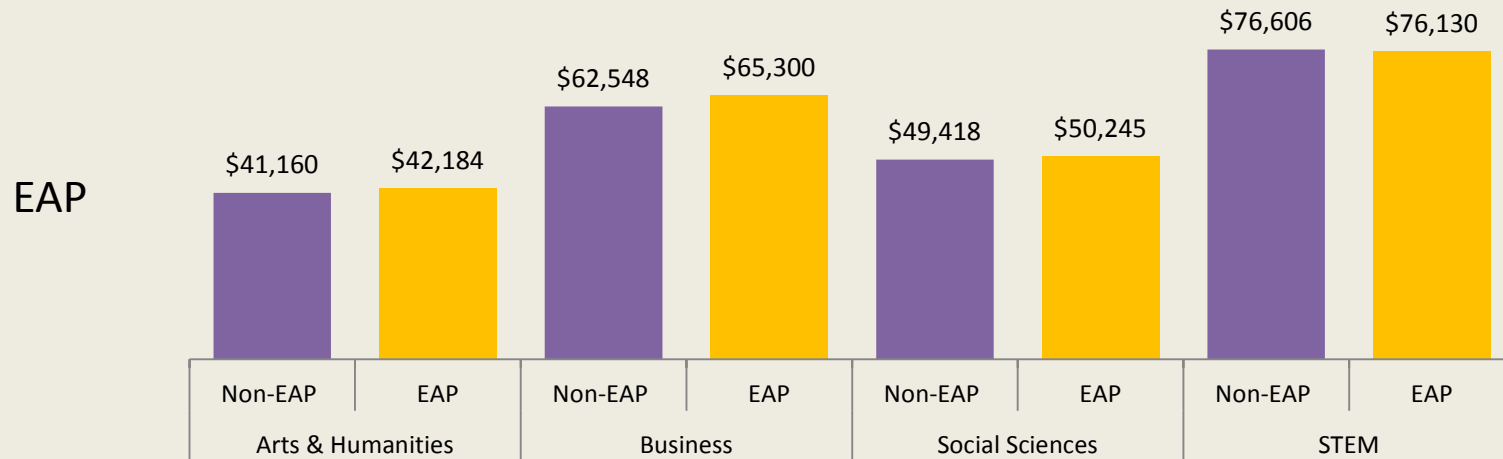
PPM Walkthrough

Propensity Score Matching with Hypothesis Testing

- **Step 1:** Build Logistic regression model to predict program participation

- **Step 2:** Use propensity scores to create matched pairs that equalize groups

- **Step 3:** Conduct statistical tests to determine if there are significant differences in outcomes for program and non-program participants

Step 1: Build Logistic regression model to predict program participation

Ex.: Predict EAP participation using student characteristics

Parameters	Estimate	Standard Error	Wald	P-Value
Intercept	-2.78	0.03	8750.33	<.0001
White	0.31	0.02	350.80	<.0001
Arts & Humanities Major	0.65	0.02	1022.90	<.0001
Social Science Major	0.45	0.01	652.90	<.0001
Female	0.68	0.02	1665.25	<.0001
First Generation	-0.20	0.02	129.82	<.0001
Family Income Higher than $161,000	0.06	0.02	8.18	0.0042
UC Credits (per one unit)	-0.00	0.00	6.13	0.0133
c	**0.675**			

Parameters	Odds Ratio	95% Confidence Limits	
White	1.361	1.318	1.405
Arts & Humanities Major	1.913	1.838	1.99
Social Science Major	1.564	1.511	1.618
Female	1.965	1.903	2.03
First Generation	0.82	0.792	0.848
Famiy Income Higher than $161,000	1.058	1.018	1.1
UC Credits (per one unit)	0.999	0.999	1

Note: Used stepwise regression to create parsimonious model. Non-significant predictors: Asian/Pacific Islander, Latina(o)/Hispanic
Includes only students who graduated and entered as Freshmen entrants

Step 2: Use propensity scores to create matched pairs that equalize groups

Pre-Propensity Score Match Freshmen (EAP)	EAP	Non-EAP	Difference	EAP N	Non-EAP N
White	44%	32%	12%	21019	151162
Arts & Humanities Major	23%	14%	9%	21019	151162
Social Science Major	34%	27%	7%	21019	151162
Female	71%	55%	16%	21019	151162
First Generation	31%	37%	-6%	21019	151162
Famiy Income Higher than $161,000	20%	17%	3%	21019	151162
UC Credits	87.8	88.6	-0.8	21019	151162

Post-Propensity Score Matched Freshmen (EAP)	EAP Match	Non-EAP Match	Difference	EAP Match N	Non-EAP Match N
White	44%	44%	0%	21019	21019
Arts & Humanities Major	23%	22%	1%	21019	21019
Social Science Major	34%	34%	0%	21019	21019
Female	71%	72%	-1%	21019	21019
First Generation	31%	31%	0%	21019	21019
Famiy Income Higher than $161,000	20%	19%	1%	21019	21019
UC Credits	87.8	87.2	0.6	21019	21019

Note: Propensity Score matching also included campus adjustments, but are not shown.

Step 3: Conduct statistical tests to determine if there are significant differences in outcomes for program and non-program participants

Ex.: Determine if there is a significant difference in time to degree for EAP participants, using propensity score matched pairs

Conclusion: Freshmen participating in EAP have slightly longer time to degree than those who do not participate in EAP.

Program Status	Time to Degree	Std. Dev
Non EAP	4.09	0.52
EAP	4.12	0.45
Difference	**0.04***	

	T-Value	P-value
Paired Samples T-test	8.45	<.0001

*Statistically significant difference based on paired sample t-test.

Adjusted Results

Matched Results: Time-to-Degree

Propensity Score Matched Sample	UCDC	Non-UCDC
N	2,872	2,872
White	47%	47%
Asian/Pacific Islander	25%	25%
Arts & Humanities Major	14%	14%
Social Science Major	56%	55%
Female	71%	70%
First Generation	31%	30%
Pell Grant Recipient	34%	33%
Mean UC Credits	88.4	87.9

Conclusion: Freshmen participating in UCDC have slightly shorter time to degree than those who do not participate in UCDC.

Program Status	Time to Degree	Std. Dev
Non UCDC	4.10	0.52
UCDC	4.06	0.46
Difference	**-0.04***	
	T-Value	P-value
Paired Samples T-test	-13.54	<.0001

Note: Propensity Score matching also included campus adjustments, but are not shown. *Statistically significant difference based on paired sample t-test.

Matched Results: Post-College Earnings

Propensity Score Matched Samples	EAP	Non-EAP	UCDC	Non-UCDC
N	8,196	8,196	1,203	1,203
White	45%	44%	47%	45%
Asian/Pacific Islander	33%	32%	26%	26%
Arts & Humanites Major	24%	23%	15%	14%
Social Science Major	34%	34%	55%	55%
Female	71%	72%	68%	69%
First Generation	33%	32%	33%	33%
Income (Pell or >$161,000)	18%	17%	36%	35%
Mean UC Credits	79.4	79.6	75.4	75.1

Conclusion: Alumni who participated in UCDC earn about $5,700 more on average than those who do not participate in UCDC at 5 years after graduation. There is no significant difference in earnings for EAP participants.

Program Status	Earnings (Year 5)	Std. Dev
Non EAP	$ 57,433	48639
EAP	$ 57,997	76536
Difference	$ 563.90	

	T-Value	P-value
Paired Samples t-test	-0.57	0.5675

Program Status	Earnings (Year 5)	Std. Dev
Non UCDC	$ 55,898	$ 37,075
UCDC	$ 61,566	$ 43,518
Difference	**$ 5,668***	

	T-Value	P-value
Paired Samples t-test	-3.51	0.0005

Note: Propensity Score matching also included campus adjustments, but are not shown. *Statistically significant difference based on paired sample t-test.

Matched Results: College Experience

Propensity Score Matched Samples	EAP	Non-EAP	UCDC	Non-UCDC
N	10,497	10,497	1,248	1,248
White	42%	42%	N/A	N/A
Asian/Pacific Islander	34%	34%	27%	27%
Arts & Humanites Major	21%	20%	16%	14%
Social Science Major	33%	33%	58%	59%
Female	75%	74%	68%	69%
First Generation	32%	34%	34%	34%
Income (Pell or >$161,000)	19%	20%	N/A	N/A
Mean UC Credits	81.9	81.3	78.9	78.2

Conclusion: Program participants were slightly more satisfied with their college experience than non-program participants.
*Differences are significant at p<.01 after conducting Wilcoxon Signed Ranks tests.

College Experience Survey Responses (Junior Year or After Program Participation)	Non EAP	EAP	Diff	Non UCDC	UCDC	Diff
Satisfaction: overall social experience	4.4	4.5	0.13*	4.4	4.6	0.20*
Satisfaction: overall academic experience	4.5	4.6	0.14*	4.4	4.7	0.28*
Satisfaction: value of your education for the price you're paying	3.9	4.1	0.14*	3.9	4.2	0.37*
Campus climate: Knowing what I know now, I would still choose to enroll at this campus	4.7	4.8	0.05*	4.7	4.8	0.13*

Note: Propensity Score matching also included campus adjustments, but are not shown. *Statistically significant difference based on Wilcoxon Sign Rank test.

Matched Results EAP: Learning

Propensity Score Matched Samples	EAP	Non-EAP
N	10,497	10,497
White	42%	42%
Asian/Pacific Islander	34%	34%
Arts & Humanites Major	21%	20%
Social Science Major	33%	33%
Female	75%	74%
First Generation	32%	34%
Income (Pell or >$161,000)	19%	20%
Mean UC Credits	81.9	81.3

Conclusion: EAP program participants rated their learning in foreign language, understanding international perspectives and ability to appreciate cultural and global diversity than non-program participants. *Differences are significant at p<.01 after conducting Wilcoxon Signed Ranks tests.

Learning Outcomes - Survey Responses (Junior Year or After Program Participation)	Non EAP (Started UC - Current)	EAP (Started UC - Current)	Diff
Analytical and critical thinking skills	1.0	1.1	0.06*
Foreign language skills	**0.2**	**0.8**	**0.62***
Understanding international perspectives	**1.1**	**1.4**	**0.29***
Leadership skills	0.8	0.8	0.01
Interpersonal (social) skills	0.8	0.9	0.07*
Ability to appreciate, tolerate and understand racial and ethnic diversity	0.7	0.7	0.09*
Ability to appreciate cultural and global diversity	**0.7**	**0.9**	**0.22***

Note: Propensity Score matching also included campus adjustments, but are not shown. *Statistically significant difference based on Wilcoxon Sign Rank test.

Matched Results UCDC: Learning

Propensity Score Matched Samples	UCDC	Non-UCDC
N	1,248	1,248
White	N/A	N/A
Asian/Pacific Islander	27%	27%
Arts & Humanites Major	16%	14%
Social Science Major	58%	59%
Female	68%	69%
First Generation	34%	34%
Income (Pell or >$161,000)	N/A	N/A
Mean UC Credits	78.9	78.2

Conclusion: UCDC program participants rated their learning in critical thinking, understanding international perspectives and leaderships skills than non-program participants.
*Differences are significant at p<.01 after conducting Wilcoxon Signed Ranks tests.

College Experience Survey Responses (Junior Year or After Program Participation)	Non UCDC (Started UC - Current)	UCDC (Started UC - Current)	Diff
Analytical and critical thinking skills	**1.0**	**1.2**	**0.14***
Foreign language skills	0.3	0.4	0.13*
Understanding international perspectives	**1.2**	**1.6**	**0.38***
Leadership skills	**0.7**	**1.0**	**0.20***
Interpersonal (social) skills	0.8	0.9	0.12*
Ability to appreciate, tolerate and understand racial and ethnic diversity	0.7	0.8	0.06
Ability to appreciate cultural and global diversity	0.7	0.8	0.12*

Note: Propensity Score matching also included campus adjustments, but are not shown. *Statistically significant difference based on Wilcoxon Sign Rank test.

Conclusions

Conclusions – Time to Degree

- Slight significant differences in time to degree between program and non-program participants, but no practical significance

  - ➢ EAP slightly longer time to degree
  - ➢ UCDC slightly less time to degree

Conclusions – Post College Earnings

- UC Study Abroad

  - ➤ No significant earnings differential at two or five years after graduation

  - ➤ Pre-matching differential goes away after controlling for major, demographics, and units completed at junior year

- UC Washington, DC

  - ➤ Program participants earn significantly more at five years after graduation

  - ➤ Internship experience likely more directly related to post-college employment

Conclusions - College Experience and Learning

- ## UC Study Abroad

  - ➢ Slightly higher satisfaction with overall social, academic experiences. Higher satisfaction with value of education for cost.

  - ➢ Greater perceived learning in foreign language, understanding international perspectives and appreciating diversity.

- ## UC Washington, DC

  - ➢ Higher satisfaction with overall social, academic experiences. Higher satisfaction with value of education for cost.

  - ➢ Greater perceived learning in critical thinking, understanding international perspectives and leadership.

Future Research Ideas

- Use survey answers (ex. reason for pursuing a degree, academic engagement, graduate school aspirations, etc.) in regression to predict program participation

- Investigate outcomes on specific subgroups of students (i.e. underrepresented groups)

- Conduct analysis of earnings by discipline

- Examine differences in employment rates immediately after graduation

Questions?