



# Investigating the Impact of Online Classes on Degree Completion

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# Presentation Overview

1. Literature Review
2. Purpose of the Study
3. Methodology
  - a. Research Design
  - b. Data Sources
  - c. Data Analysis Methods
4. Results
5. Discussion/Questions



SECTION 1

# Literature Review

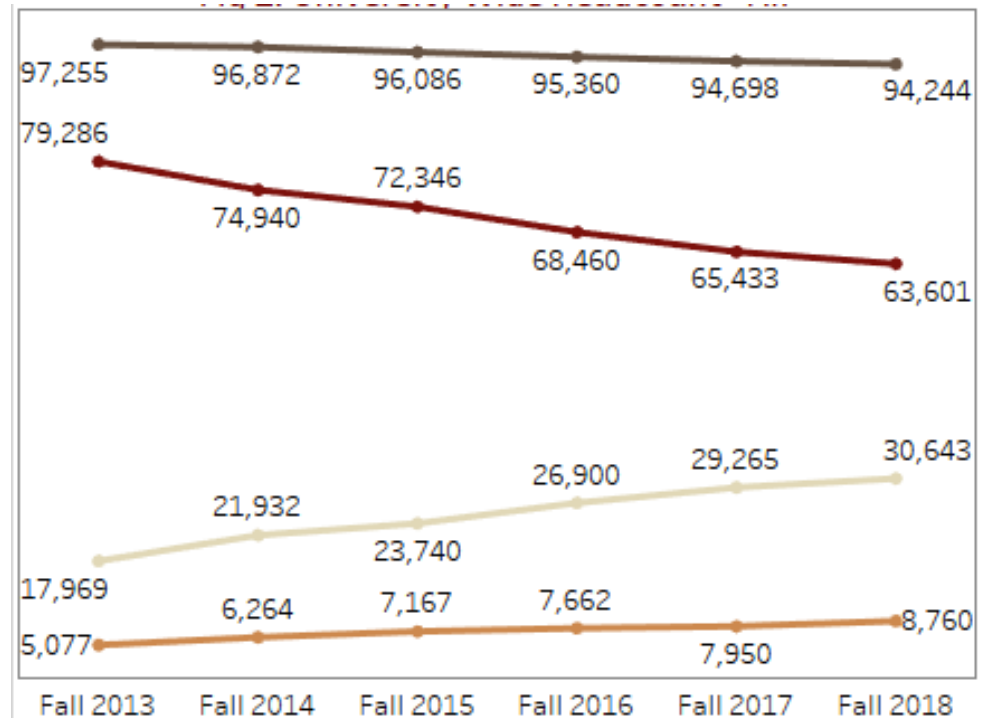
# Literature Review

## Students Taking One or More Online Classes

- Fall 2015: 6 million students, or 29.7% of all higher ed students
- Growth rates of up to 20-28% per year
- Despite declining overall enrollments

Source: Allen & Seaman, Babson Survey Research Group, 2017

### Indiana University Fall Headcount Trends



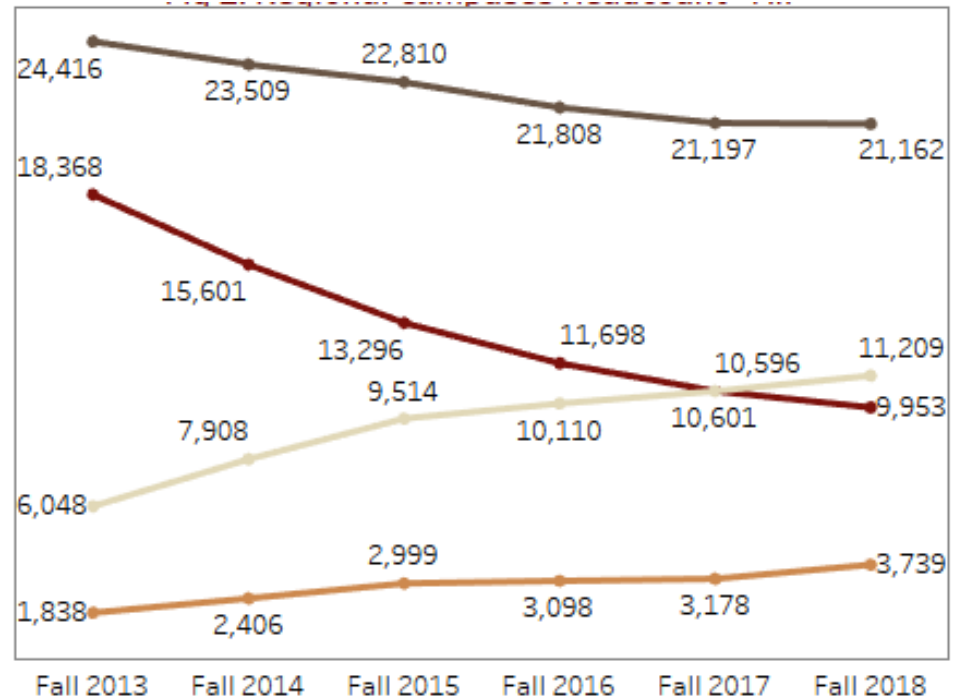
# Literature Review

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### IU Regional Campuses Fall Headcount Trends



# Literature Review

## Online Course Impacts on Course Completion

Study	Course Completion Outcomes
Jaggars & Xu (2010)	Students more likely to fail or withdraw from online course
Xu & Jaggars (2011)	Students more likely to fail or withdraw from online course
Johnson, Cuellar Mejia & Cook (2015)	Pass rates in online courses lower than traditional face to face
James, Swan & Daston (2016)	Online courses do not impact course completion rates
Shea & Bidjerano (2017)	Online course GPAs lower relative to on campus course GPAs
Hart, Friedmann & Hill (2018)	Outcomes in online courses poorer than face to face



# Literature Review

## Online Course Impacts on Degree Completion

Study	Degree Completion Outcomes
Jaggars & Xu (2010)	Taking online classes in early semesters lowers retention and degree attainment
Xu & Jaggars (2011)	Taking online classes in early semesters decreases retention, and a high % of online classes slightly decreases completion
Pontes & Pontes (2012)	First-generation low income students taking online classes show increased progress toward degree
Shea & Bidjerano (2014)	Early participation in online predicts higher rates of degree attainment, even for those at risk
Shea & Bidjerano (2016)	Significantly more students engaged in online classes attained a degree than those who did not; women students graduate more quickly when taking online classes
Shea & Bidjerano (2017)	Students taking online and on campus classes 1.5 times more likely to complete degree; female, white, full-time, older students more likely to take online and on campus
Shea & Bidjerano (in press)	Higher proportions of online classes decreases degree completion (tipping point = 40%)



## SECTION 2

# Purpose of the Study



# Purpose of the Study

## Research Question 1:

Does taking one or more online classes during a student's program of study increase the likelihood that a first-time, full-time undergraduate student will complete their degree within 150% of the stated program length?

## Research Question 2:

Is there a difference in student performance, as measured by course grades, between online and on campus classes?



# Definitions

## Online (broad definition):

Any course that uses technology to deliver instruction to students who are separated from their instructor - supporting regular and substantive interaction between the student and instructor - 76-99% of the time.

May be synchronous or asynchronous, including live video and/or audio conferencing.

## On Campus:

A course that does not meet the above definition, including face-to-face, hybrid (on campus and online), internships, and independent study



## SECTION 3

# Methodology

# Methodology

## Research Design

Quantitative analysis of existing data

## Data Sources

### Official University Census Graduation Rate Data (Excel)

Degree completion indicator (150% of program length), Campus Type, Pell/Stafford indicator, tuition residency, age at time of enrollment, ethnicity, gender, first generation status, SAT/ACT composite score, 1<sup>st</sup> semester GPA

### Official University Census Course Enrollment Data (SQL)

Online credit hours and quality points, on campus credit hours and quality points, calculated online GPA, on campus GPA, “1 or more online” indicator, online percentage

## Data Analysis

Demographic Analysis: Crosstabs, ANOVA

Research Q1: Logistic Regression

Research Q2: Paired samples t-test



## SECTION 4

# Results

# Results – Demographics by Campus Type

	All Campuses	Flagship	Urban	Regional
All Students (N)	12,840	6,935	2,647	3,258
Resident Students (%)	79%	63%	95%	98%
Pell/Stafford Recipient (%)	51%	38%	65%	67%
Female (%)	56%	52%	60%	60%
Underrepresented Minority (%)	15%	13%	18%	19%
First Generation (%)	31%	19%	42%	46%
Average Age	18.9	18.6	18.9	19.6
Average SAT/ACT Composite Score	1100	1199	1013	944
Average 1 <sup>st</sup> Semester GPA	2.84	3.06	2.78	2.44
Students Taking 1 or More Online Class (%)	40%	29%	64%	46%
Students Completing Degree (%)	59%	77%	47%	30%
<b>% Completion: Students Taking At Least 1</b>	<b>69%</b>	<b>85%</b>	<b>65%</b>	<b>52%</b>
<b>% Completion: Students with No Online</b>	<b>52%</b>	<b>74%</b>	<b>16%</b>	<b>12%</b>

- Differences by campus type significant at  $p < .01$  level for all variables
- Bonferroni corrections: Gender, Pell/Stafford, and Underrepresented minority different between flagship campus and urban/regional, not between all 3 groups



# Results – Demographics by 1 or More Online

	All Students	No Online Classes	One or More Online Class
<b>All Students</b>	<b>12,840</b>	<b>7,666</b>	<b>5,174</b>
Resident Students (%)	79%	73%	87%
Pell/Stafford Recipient (%)	51%	49%	55%
Female (%)	56%	53%	61%
Underrepresented Minority (%)	15%	15%	15%
First Generation (%)	31%	27%	35%
Average Age	18.9	18.9	18.9
Average SAT/ACT Composite Score	1100	1125	1063
Average 1 <sup>st</sup> Semester GPA	2.84	2.75	2.98
<b>Students Completing Degree (N)</b>	<b>7,557</b>	<b>3,988</b>	<b>3,569</b>
<b>Students Completing Degree (%)</b>	<b>59%</b>	<b>52%</b>	<b>69%</b>

Differences by online class category significant at  $p < .01$  level for all variables except age and underrepresented minority.



# Results – RQ#1 Logistic Regression

Variable	Flagship		Urban		Regionals	
	Sig.	Odds Ratio	Sig.	Odds Ratio	Sig.	Odds Ratio
Age at time of enrollment	n/a	n/a	.348	.410	.130	.347
SAT/ACT composite score	.530	1.000	.017	1.001	<b>.005</b>	<b>1.001</b>
<b>1<sup>st</sup> semester GPA</b>	<b>.000</b>	<b>3.922</b>	<b>.000</b>	<b>3.463</b>	<b>.000</b>	<b>3.211</b>
<b>Took at least one online class</b>	<b>.000</b>	<b>2.662</b>	<b>.000</b>	<b>8.067</b>	<b>.000</b>	<b>6.177</b>
<b>Pell/Stafford recipient</b>	<b>.000</b>	<b>.695</b>	.051	.804	.120	.847
Gender (Female)	.040	1.152	.023	.780	.853	.980
<b>First generation student</b>	<b>.001</b>	<b>.751</b>	<b>.000</b>	<b>.609</b>	<b>.003</b>	<b>.733</b>
<b>Underrepresented minority</b>	.127	.872	.756	1.043	<b>.000</b>	<b>.555</b>

Models correctly predicted degree completion at 81% (flagship), 76% (urban), 78% (regionals)  
 Nagelkerke R<sup>2</sup> = .279 (flagship), .470 (urban), .435 (regionals)





# Results – RQ#2 Paired Samples *t*-tests

Campus Type	Online		On Campus	
	M	SD	M	SD
All Campuses	2.84	1.19	2.79	0.65
Traditional Flagship	3.04	1.11	2.90	0.51
Urban	2.87	1.14	2.78	0.71
Regionals	2.56	1.29	2.66	0.71

All differences were significant at  $p < .05$   
Effect size was small in all cases



SECTION 5

# Discussion/Questions

# Discussion

## “Online Paradox” (Shea & Bidjerano, 2017)

- Similar findings – online classes as a predictor of degree completion
- Mixed findings – online class performance

## Special Populations – Students taking online classes are more likely to be:

- Financial Aid recipients
- Female
- Have lower SAT scores, but higher first semester GPAs
- *So What?*

## Future Work:

- “Tipping Point” – use proportion of classes taken online
- Online class timing – is summer significant? Early online?
- Students as Digital Consumers
- Transfer Students



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