The Influences of Nursing School Characteristics on NCLEX-RN® Pass Rates: A National Study

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Overview

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Background

➢ National Council Licensure Examination for Registered Nurses (NCLEX-RN®) first-time pass rates (FTPR) have been used as a performance outcome for many years
  - ➢ 80% minimum pass rate
  - ➢ At or above 90% internal pass rate

➢ Interventions addressing poor NCLEX-RN® outcomes have focused on:
  - ➢ raising admission requirements
  - ➢ including standardized exams in classes

The Problem

➢ Institutional characteristics (IC) impact the development of evidence-based regulatory policies
- ➢ e.g. faculty credentialing, faculty to student ratios

➢ Few studies documenting associations with NCLEX-RN® FTPR.
- ➢ Single or small number of programs
- ➢ Very focused in the characteristics examined
  - ➢ e.g. class size, percentage of faculty with doctoral degrees

➢ National study of schools of nursing is needed to:
- ➢ Examine current practices related to IC
- ➢ Identify associations between IC and FTPR

Research Questions

1) What is the relationship between faculty credentials and pass rates?

2) Are didactic and clinical faculty-student ratios associated with pass rates?

3) Is use of standardized tests associated with pass rates?

4) Are the numbers of semester/quarter hours in individual didactic and clinical courses associated with pass rates?

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Approach

- ➢ Invited all nursing program administrators in the US
  - ➢ N=2,093
  - ➢ ADN, BSN and diploma programs
  - ➢ Searched program websites for Program Administrator emails

- ➢ 2014 FTPR obtained from state Board of
   Nursing websites

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Survey Design

➢ Study conducted during the 2015-2016 academic year

➢ Stratified sampling
  ➢ a) FTPR $\geq$ 90%   b) FTPR between 80% and 90%   c) FTPR < 80%

➢ A mixed-mode approach over a 10-week period

3 times

Instrument

➤ ## Self-reported survey tool (30 questions)

➤ ## Content validity

    ➤ ### Expert panel review (n=5)

    ➤ ### Piloted by 10 programs

NCLEX RN Survey

For the undergraduate pre-licensure nursing programs, please complete the following data fields.

Where possible, provide answers based on the information that would have affected those taking the

NCLEX in 2014 (from approximately 2011/2012 admission cycle).

Admissions:

1. Please indicate which of the following are required by your college/school of nursing for determining admission of students into the nursing curriculum (SELECT ALL THAT APPLY).

	Minimum required
i. Cum College GPA	_____ (range 1.5-2, 2-2.5, 2.5-3, 3-3.5, 3.5-4)
ii. Prereq GPA	_____ (range 1.5-2, 2-2.5, 2.5-3, 3-3.5, 3.5-4)
iii. Science prereq GPA	_____ (range 1.5-2, 2-2.5, 2.5-3, 3-3.5, 3.5-4)
iv. NLN Pre admit exam	_____
v. TEAS	_____

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Institutional	Required Admission	Progression / Graduation Criteria	Curriculum	Faculty
Rural/Urban	Cum GPA	Course grades	Integrated curriculum	No. students per didactic faculty
Public/other	Prereq GPA	Min pass course grade	Use of simulation	No. students per clinical faculty
Accreditation	Science GPA	No. times repeat course		% didactic courses faculty (doctoral)
Summer classes offered	Pre-admit exam	No. courses repeated		% didactic courses faculty (specialty cert)
Sem / Quarters	CNA training	Progress standard exams		% didactic course faculty (nurse ed cert)
Cohort size	Interviews	Grad exit exam		% full-time faculty
% students working FT	LOR			
Assistance ESL				

Statistical Methods

➤ Descriptive analyses

    ➤ FTPR $\geq$ 80% and FTPR < 80% using frequencies

➤ Univariable and multivariable analyses

    ➤ Multilevel modeling was performed to examine the association between NCLEX-RN FTPR with IC

        ➤ random intercept model with an unstructured covariance matrix

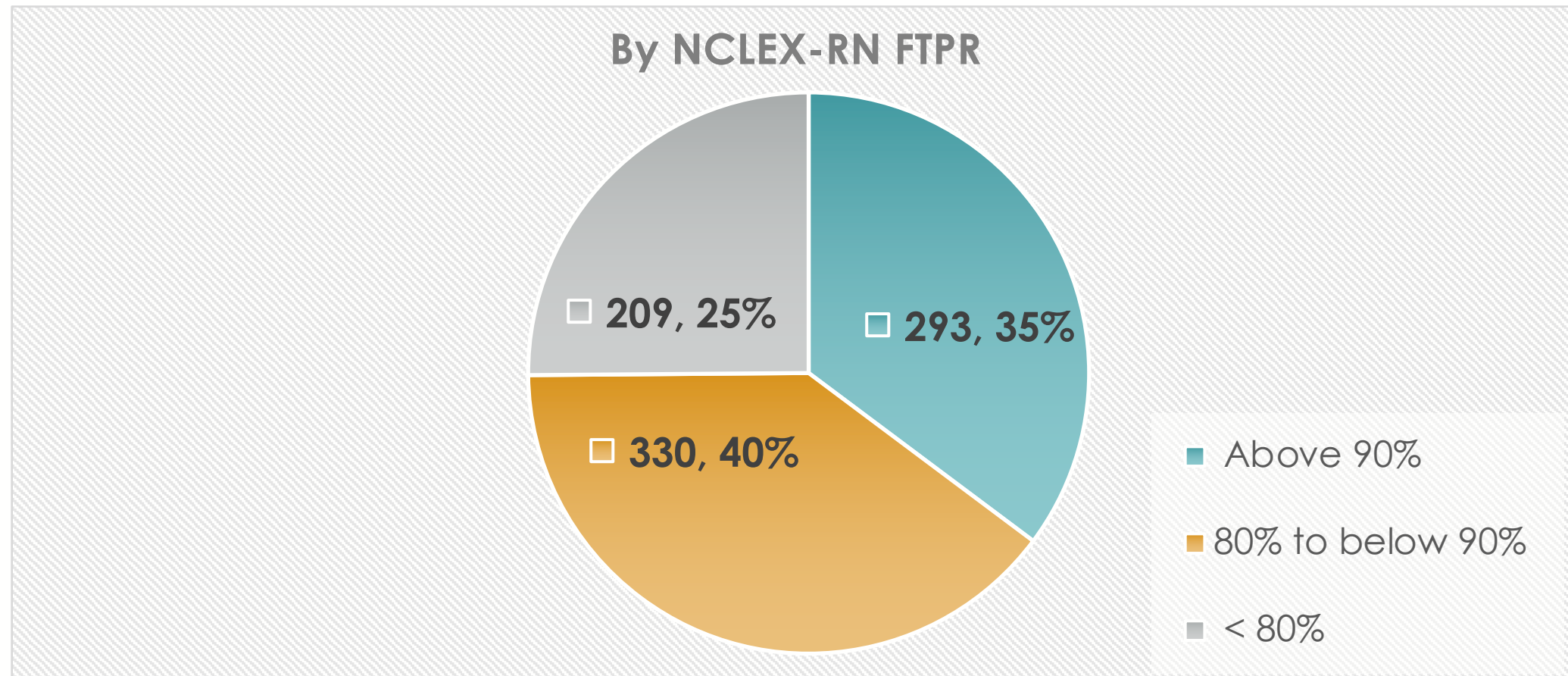   ➤ continuous attributes modeled as continuous Independent variables

➤ Examined missing data patterns

➤ All significant attributes from univariable models included in multivariable model

Results

Response rate: 40% (n=832 of 2,083 programs)

By NCLEX-RN FTPR

Legend:
- Above 90% — 293, 35%
- 80% to below 90% — 330, 40%
- < 80% — 209, 25%

Results

Overall Characteristics of Responding Nursing Programs (n=832)

Characteristic	Percentage
Rural	50%
Public	72%
Accredited	94%
Semesters	92%
Conferred ADN	54%
Conferred BSN	41%

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Results: Univariable Models

| Institutional	Admission	Progression / Graduation	Curriculum	Faculty
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Assistance ESL				

Results: Univariable Models
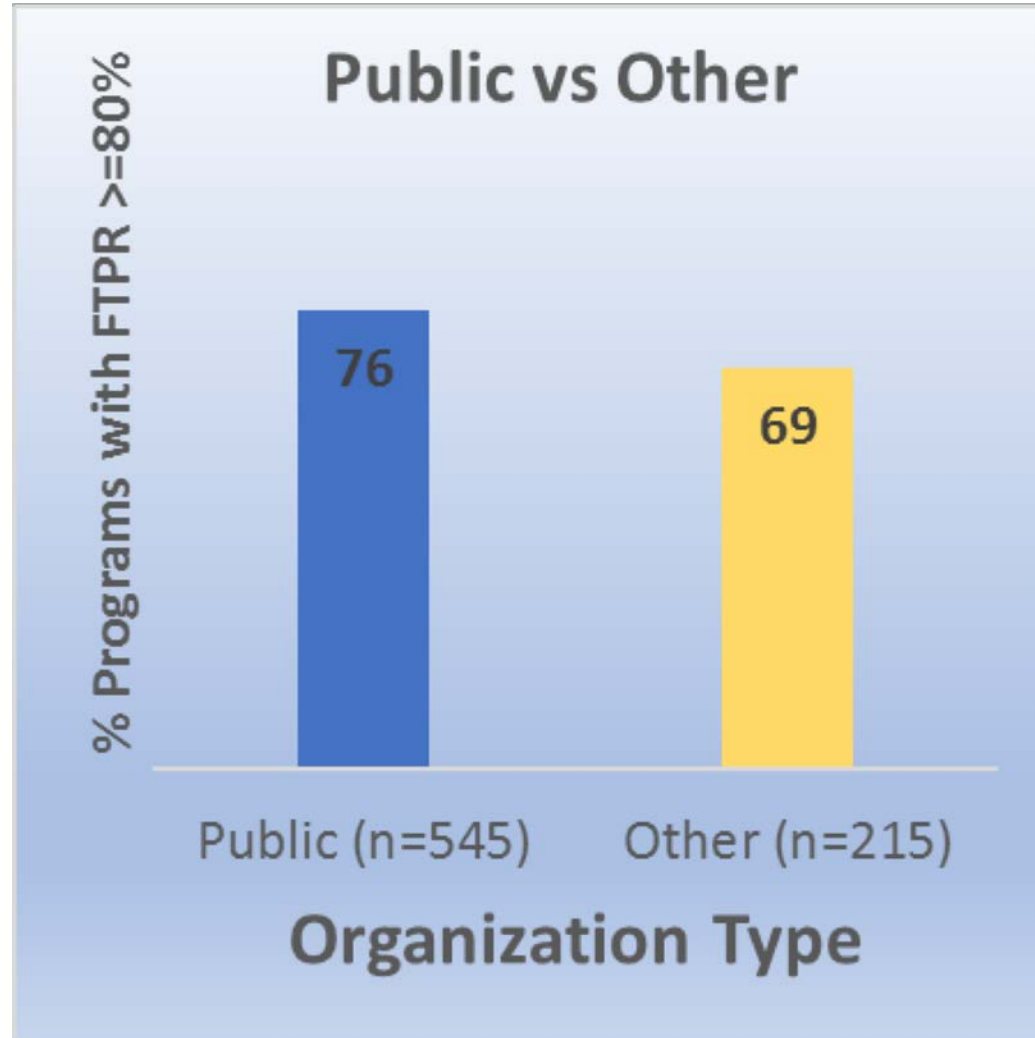
OR=1.47 [1.04, 2.09]
p = 0.03

Other includes private-not for profit (n=179) and private-for profit (n=36) colleges
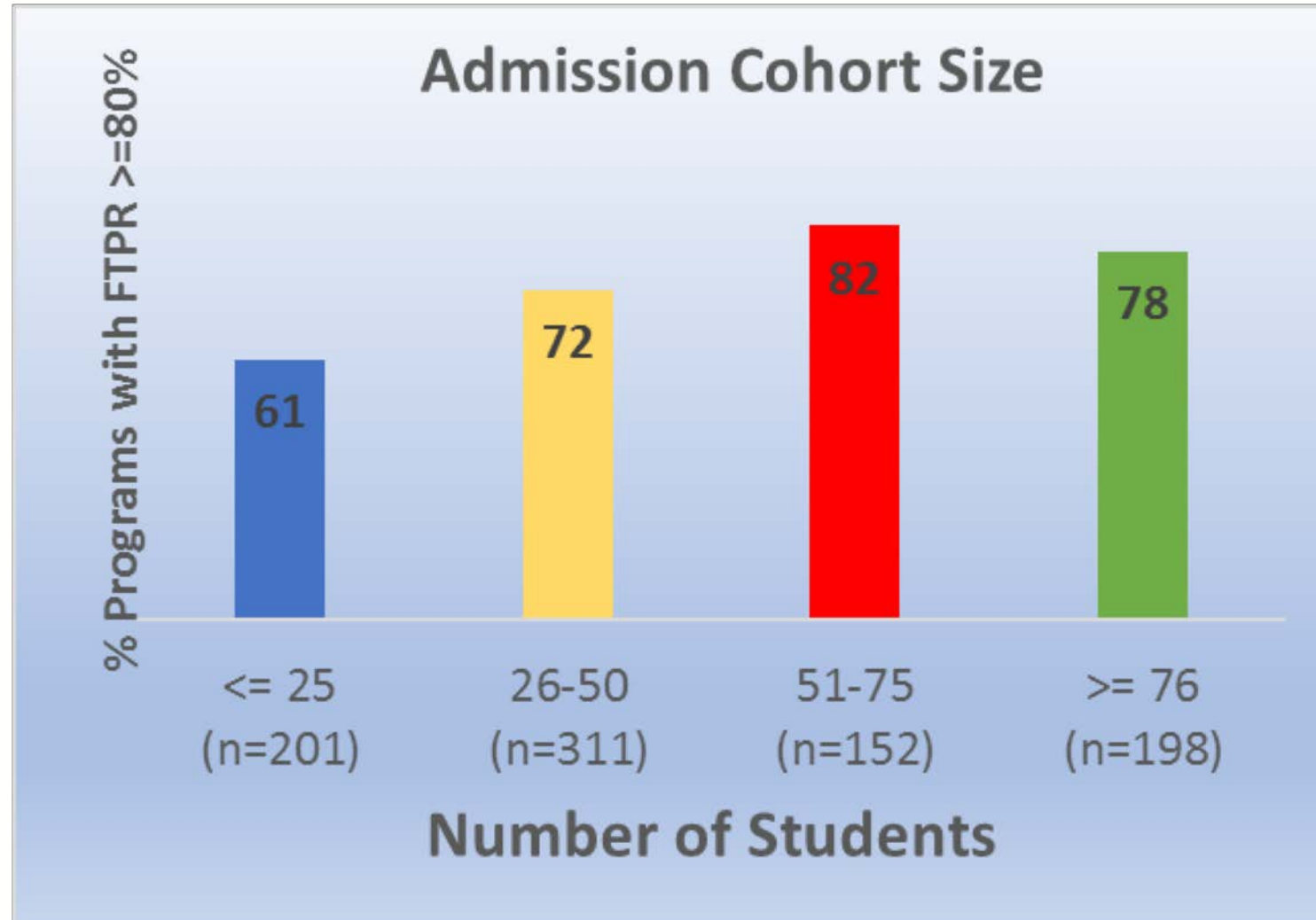
Results: Univariable Models
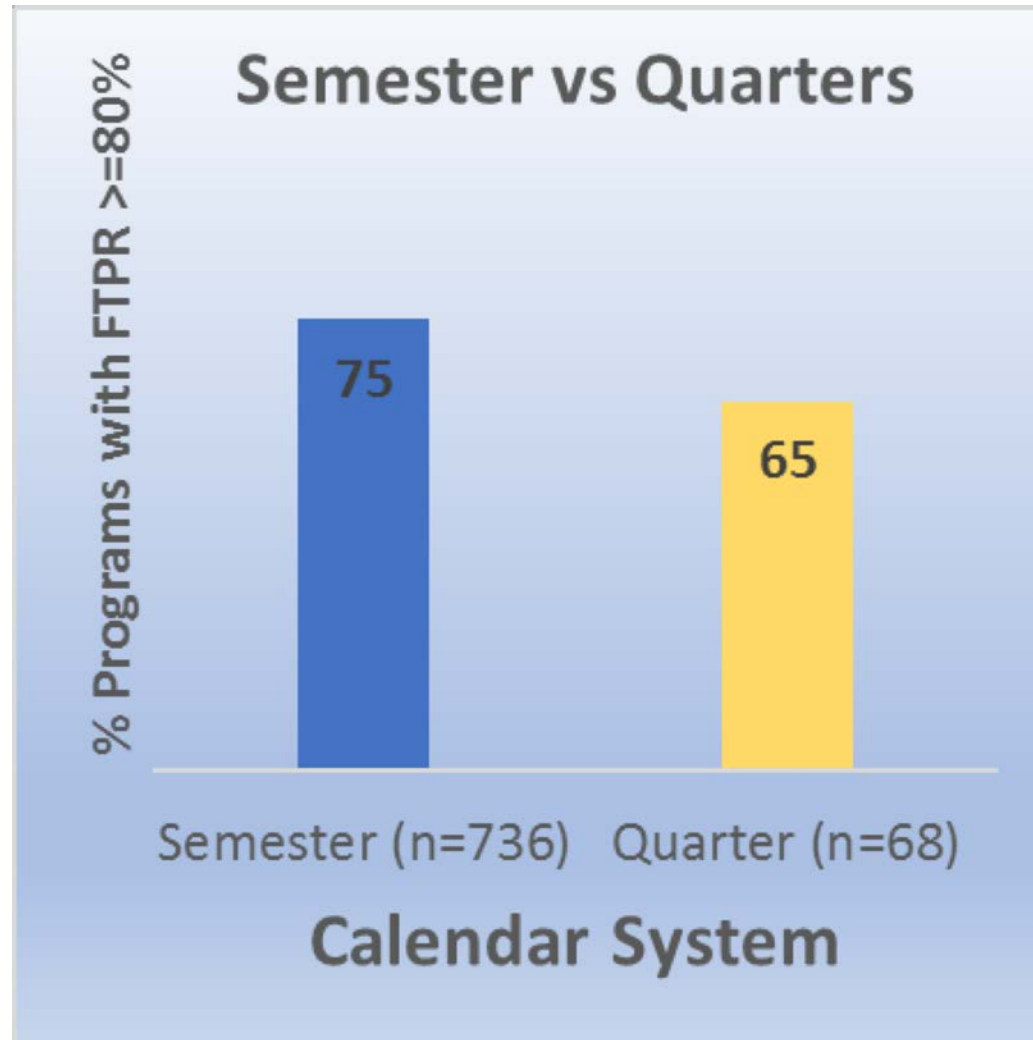
OR = 1.71 [1.01, 2.90], p = 0.05

Caution: Small sample size for programs on quarters.
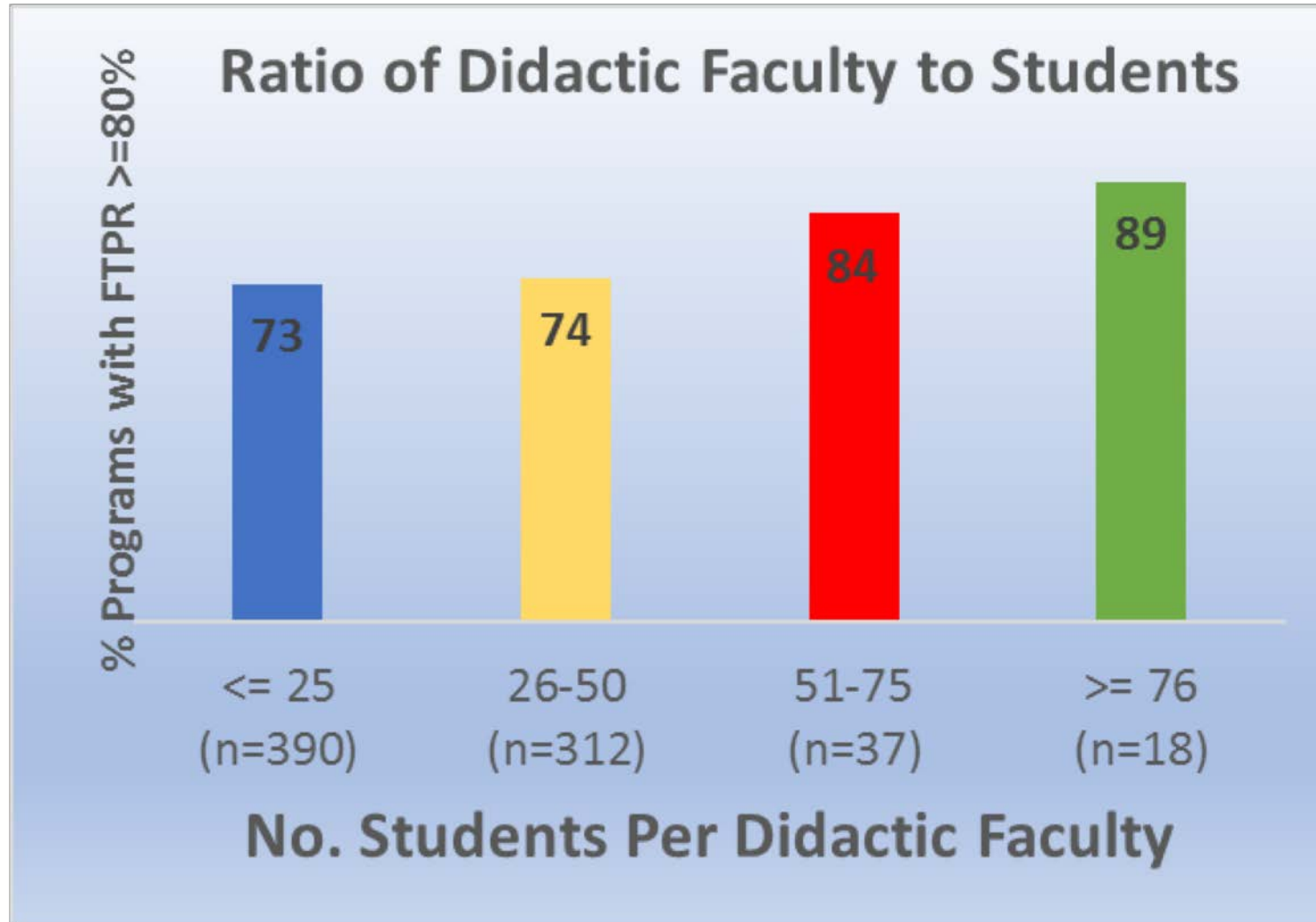
Results: Univariable Models

OR=1.07 [1.02, 1.12], p=0.006

Odds for increase in cohort size of 10 students
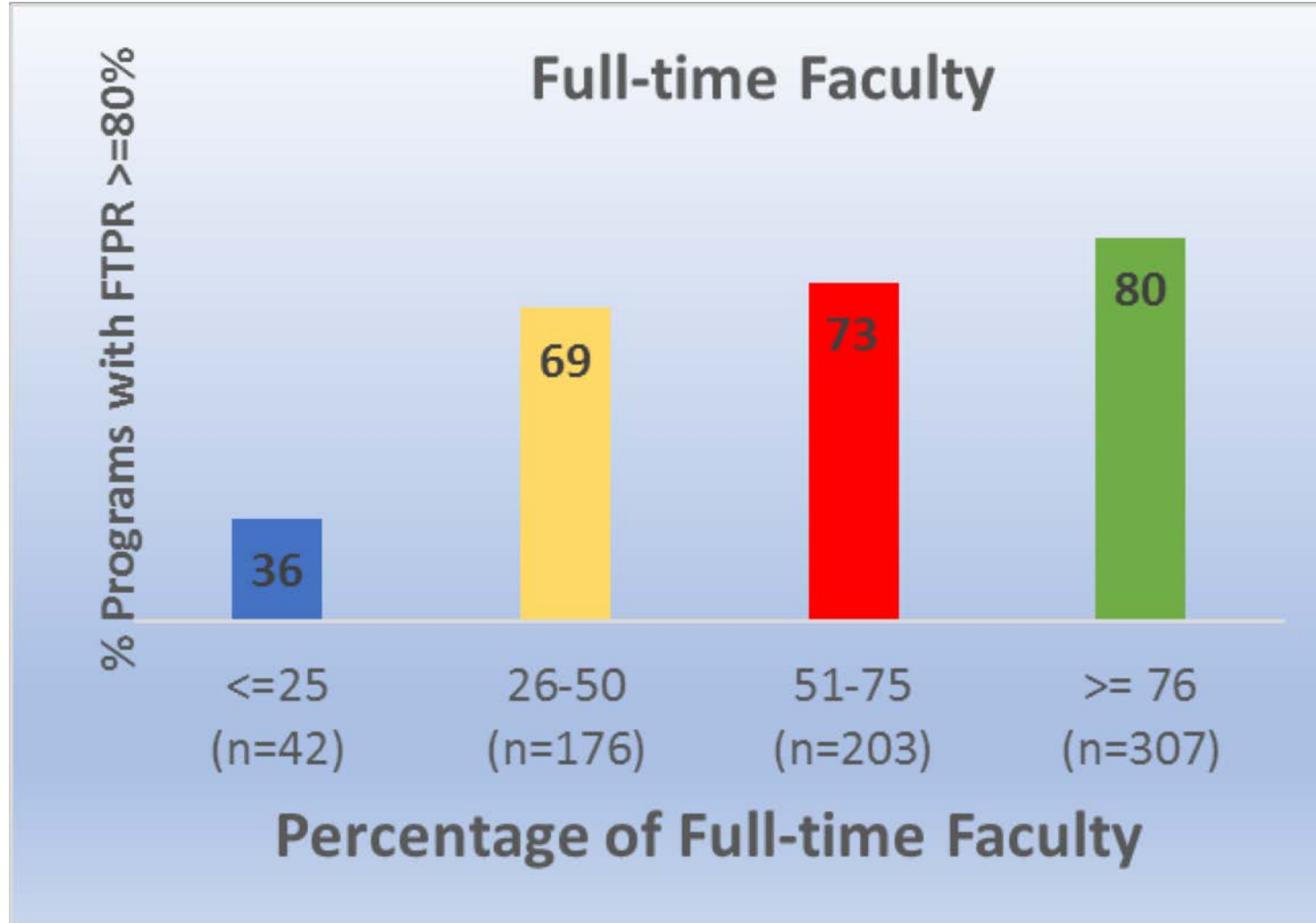
Results: Univariable Models

OR=1.12 [1.01, 1.24]
p=0.04

Odd for increase of 10 students
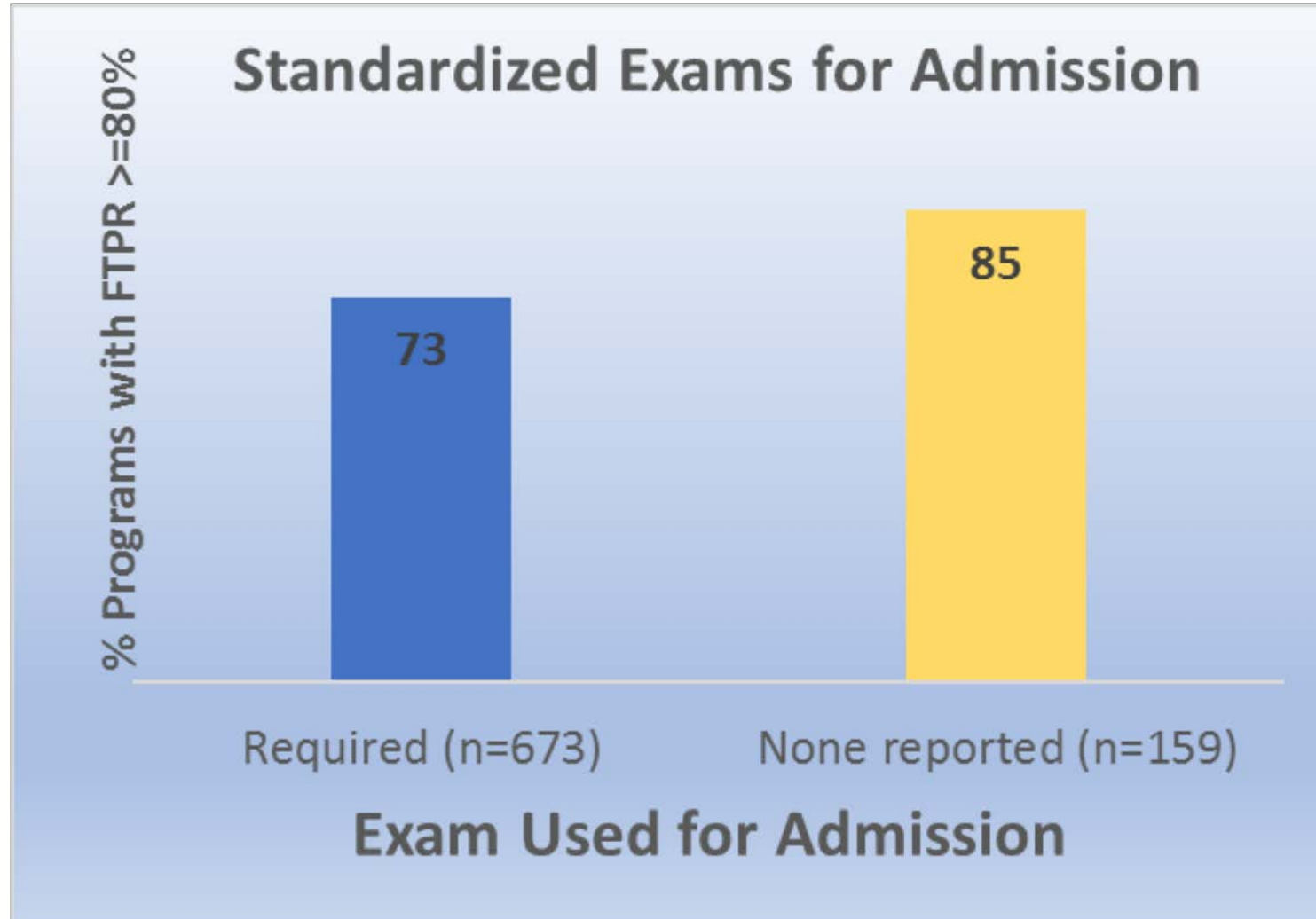
Results: Univariable Models

OR=1.11 [1.03, 1.18], p=0.003

Odd for increase of 10%

Results: Univariable Models

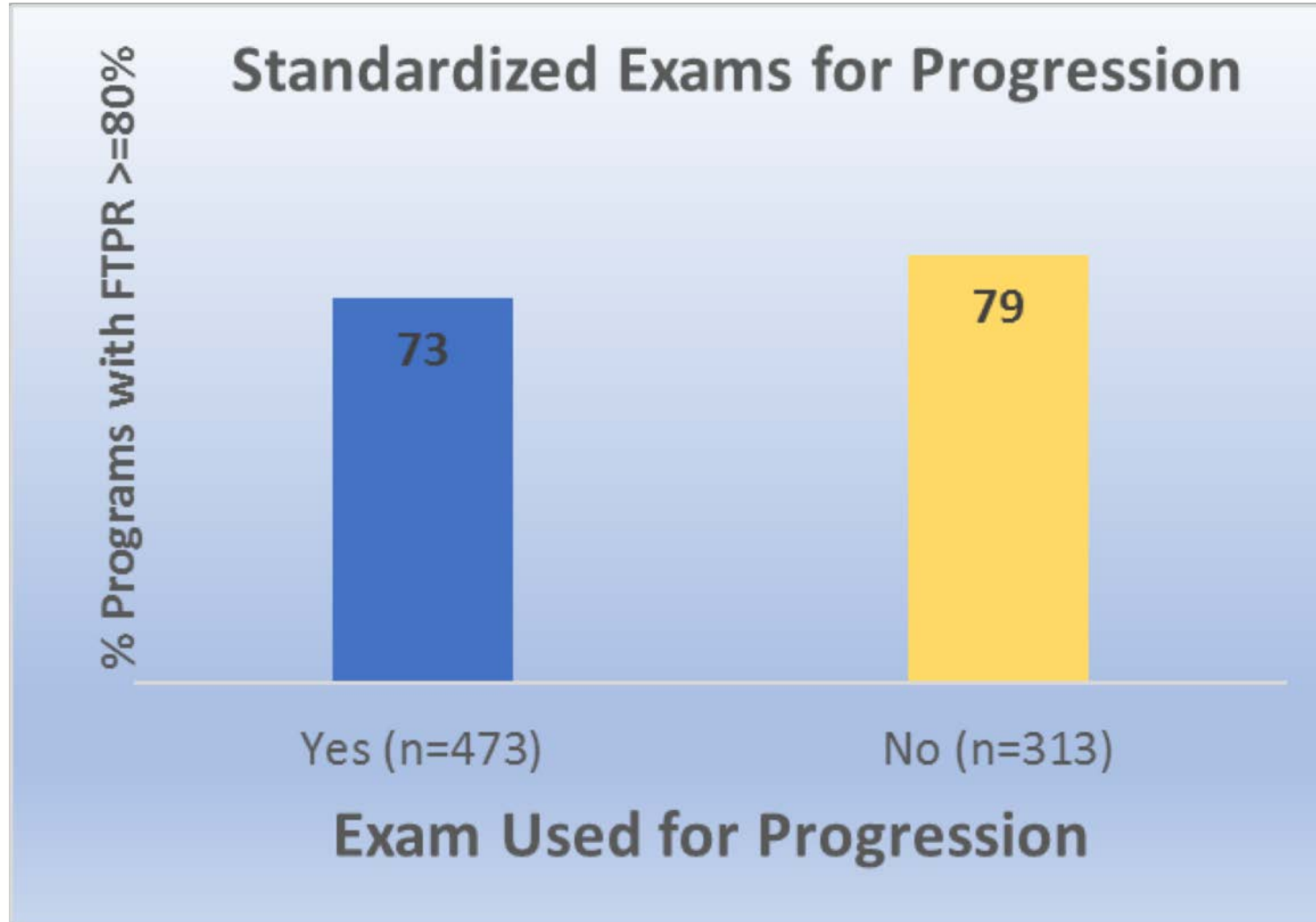
Standardized Exams for Admission

Y-axis: % Programs with FTPR >=80%

73 — Required (n=673)

85 — None reported (n=159)

X-axis: Exam Used for Admission

OR=2.14 [1.34, 3.40]
 p = 0.002

Odds ratio associated with not using exam for admission

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Results: Univariable Models

Standardized Exams for Progression

% Programs with FTPR >=80%

73 — Yes (n=473)

79 — No (n=313)

Exam Used for Progression

OR== 1.43, [1.02, 2.00], *p* = 0.04

Odd ratio associated with not using exam for progression

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Multivariable Results

Institutional Characteristic	Categories	OR (95% CI)	P-value
Percent full-time faculty	Increase of 10% of faculty	1.12 (1.03, 1.21)	0.002
Standardized exam required for admission	No	2.28 (1.30, 3.09)	0.005
	Yes	reference group	
Organization Type	Public	1.65 (1.12, 2.43)	0.01
	Other	reference group	

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Discussion: Institutional Characteristics

➢ Association between public schools and higher FTPR

    ➢ Public schools have larger admission cohort sizes (>50 students) compared to other (49% versus 39%)

    ➢ Pass rates for schools with smaller cohort sizes are more heavily influenced by individual student performance

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Discussion: Admission and Progression

➤ Association between use of standardized exams for pre-admission and lower FTPR

  ➤ High performing schools may not have needed to implement standardized exams

  ➤ Interventions to address poor NCLEX-RN outcomes began as early as 2011 (Koestler, 2015), but may not have been in place long enough to impact 2014 FTPR

Discussion: Faculty Attributes

➢ Consistent with Longbach (2012), non-significant association between higher FTPR and:

  ➢ Percentages of faculty with doctoral degrees
  ➢ Faculty certified in their specialty
  ➢ Faculty certified in nursing education

➢ Association between more full-time faculty and higher FTPR

Limitations

➢Possible recall bias by administrators

➢Aggregated student-level data versus individual student-level data

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Implications: Future Research

➢ Need for a longitudinal study that includes:
  ➢ Both institution-level and student-level data

  ➢ More recent data that may capture the impact of programmatic changes

  ➢ Multiple years of data

  ➢ Additional student attributes

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Implications: Administrators and Leaders

➢ Compare their school's institutional characteristics to a large, national sample

  ➢ 38% of programs reported half or more of their students work greater than 20 hours per week

  ➢ 57% of program reported that they do not provide assistance for non-native speakers of English

➢ Align and standardized data collection efforts for future

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Questions?