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# Using SLOA Data to Identify Strategies for Improving Completion for At-Risk Pre-Nursing Students



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# Pre-Nursing Students

- Completion of all required science courses within seven years of admission to the program
  - BIO 103/103L (**Anatomy and Physiology I**)
  - BIO 104/104L (**Anatomy and Physiology II**)
  - BIO 205/205L (Microbiology)
- Minimum of 23 credits completed or in progress **at the time of application to program**
- Minimum cumulative GPA of 2.0;  
2.5 GPA for all program courses completed

# At-risk PNUR and PRAD students

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- Self-identify as pre-Nursing or pre-RAD
- Begin taking general education requirements to satisfy requirements of admission to NUR, RAD or LPN
- Includes BIO 103 and BIO 104  
(Anatomy & Physiology I and II)
- Mandatory placement test for BIO 103 identifies “at-risk” students who are advised to take BIO 099 to prepare for BIO 103

# Anatomy and Physiology I/II

## BIO 103/104

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- Curriculum based on Human Anatomy and Physiology Society (HAPS) guidelines
- Prerequisites:
  - ENG 099 and MAT 099 or appropriate score on placement test
  - H.S. chemistry or CHM 101/101L
  - **Passing score on A&P Placement Exam**



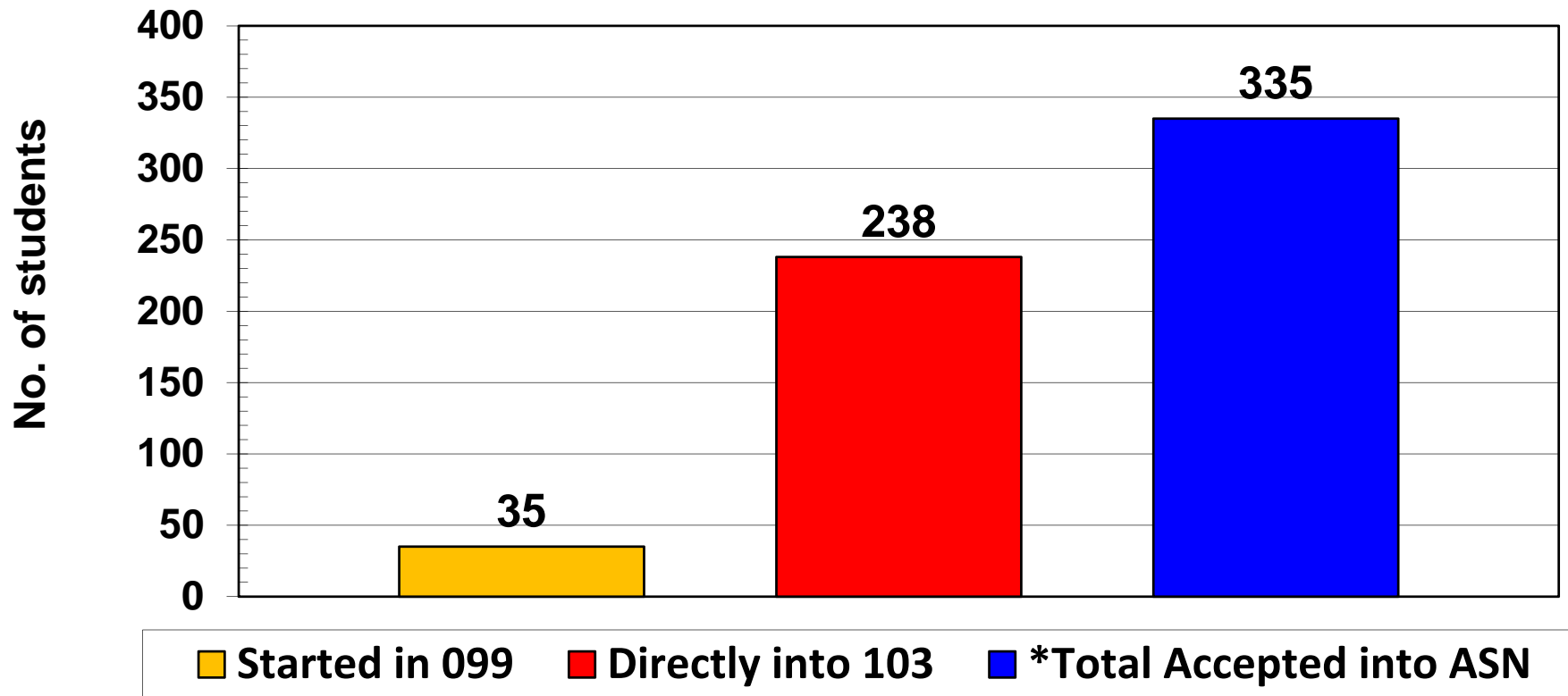
# Placement Exam

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- In-house developed exam
- Measures basic biology, chemistry, reading comprehension
- Students allowed 2 attempts – must get 65% to pass, if they do not succeed must complete either BIO101, CHM 101, BIO109, **BIO099**
- BIO 099 was designed to provide the essentials needed for success in BIO 103 as measured by the placement test (2 credits, 2 h/week before the redesign)
- Students enrolled in BIO 099 are allowed to register for BIO 103 the following semester.
- **BIO 099 final exam IS THE PLACEMENT EXAM**
- BIO 099 students who do not pass the placement exam after two attempts are deregistered from BIO 103

# Acceptance into ASN 2000-2007

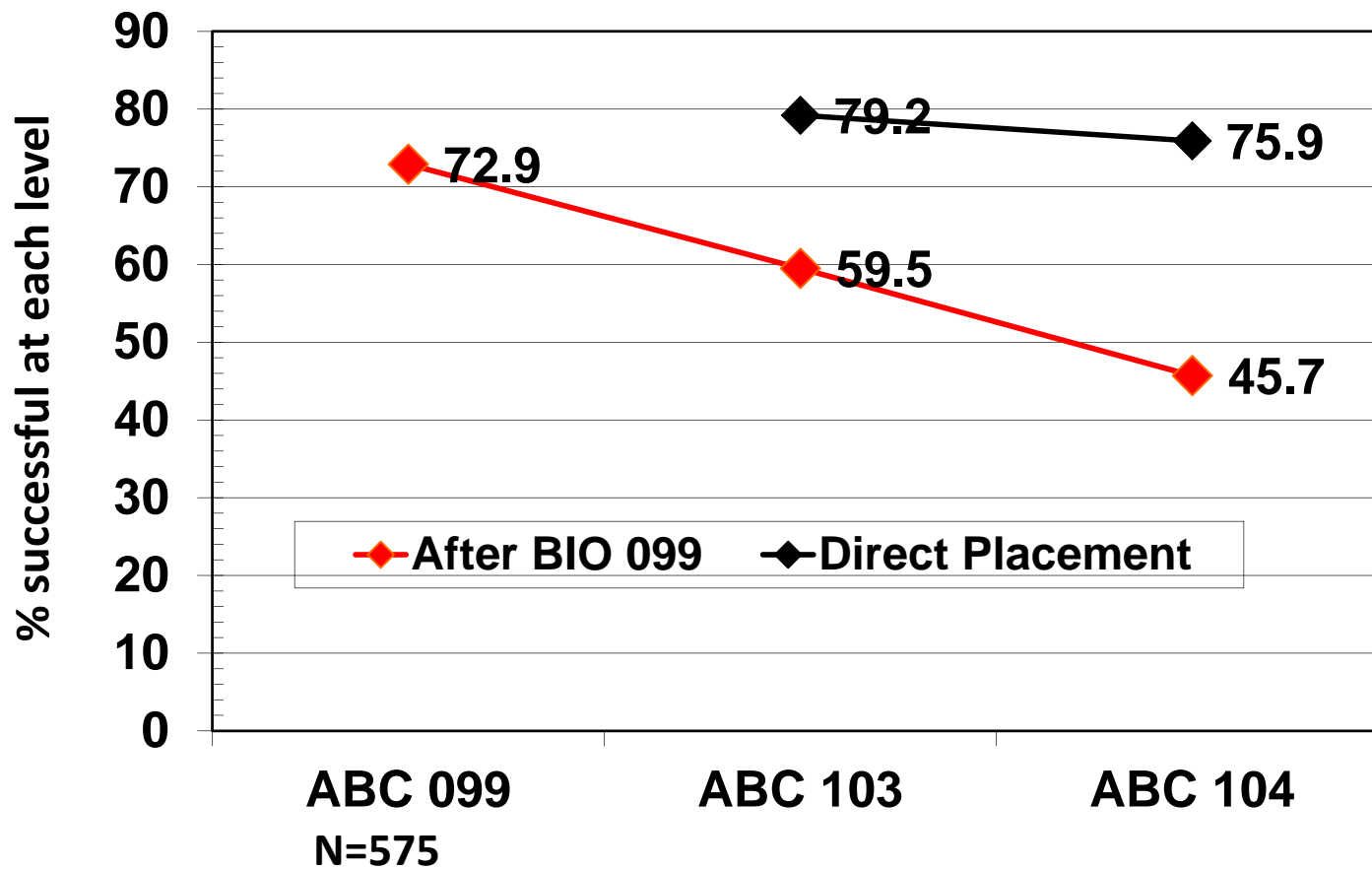
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\* Some students transferred A&P from another institution

# Success in BIO 099, A&P I and A&P II FA 2000 → SP 2007

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# Redesigned Bio 099

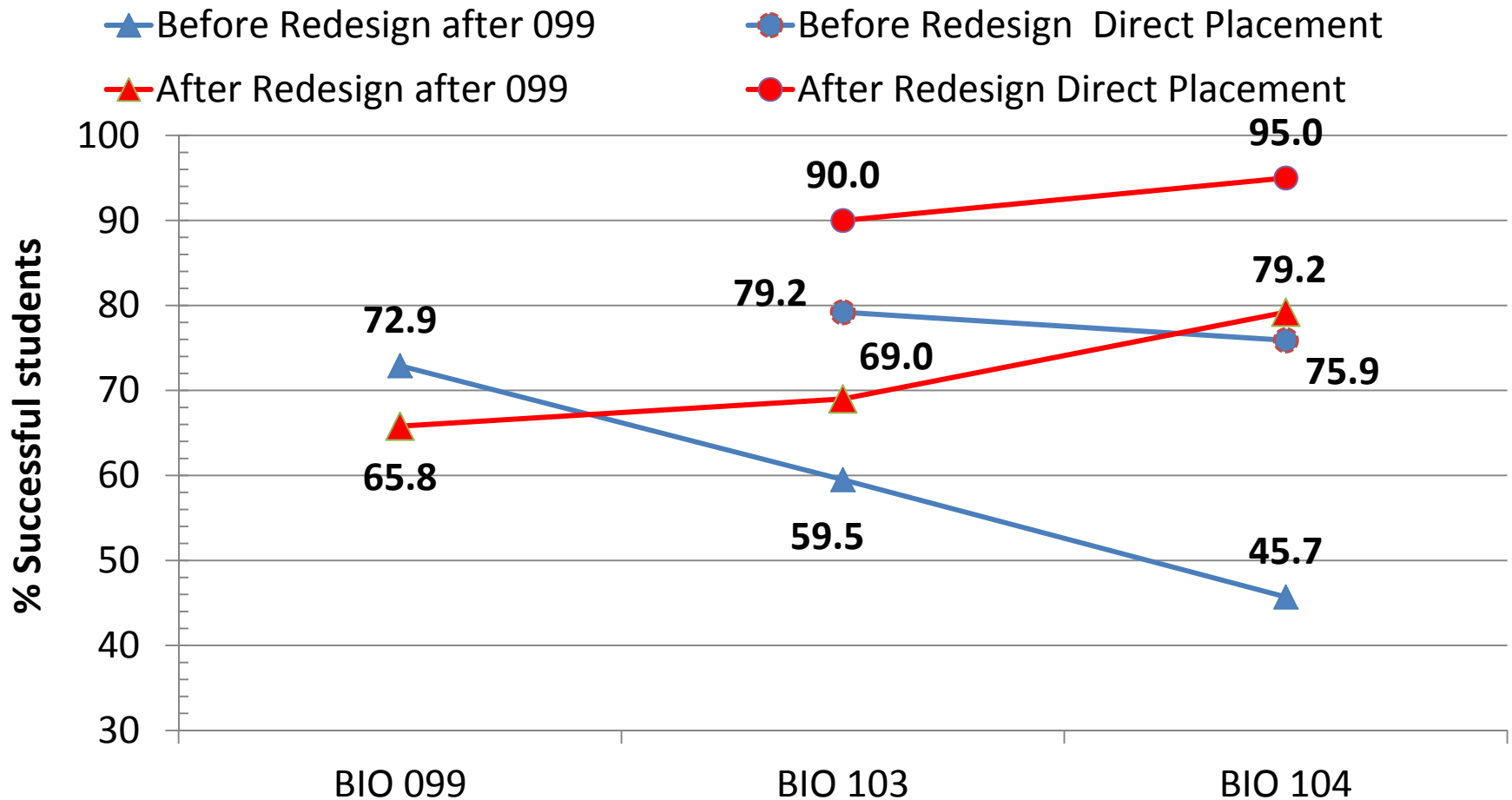
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Syllabus

	Prior to 2007	2008 - present
Credits	2	3
Pre-requisites	None	MAT 098 & ENG 098
Course Objectives		REFINED Added: basic math skills, dimensional analysis, dosage calculations  Removed: genetics, Punnett squares, meiosis
Text resources	Introduction to Chemistry for biology students (programmed text) and Chemistry of Life CD	Customized text based on Krogh
Placement Test	73 questions	100 questions

# \*Success in BIO 099, A&P I and A&P II Before and After Redesign

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\*Success = # students earning A,B,C grade/# students enrolled

# A&P Placement Exam

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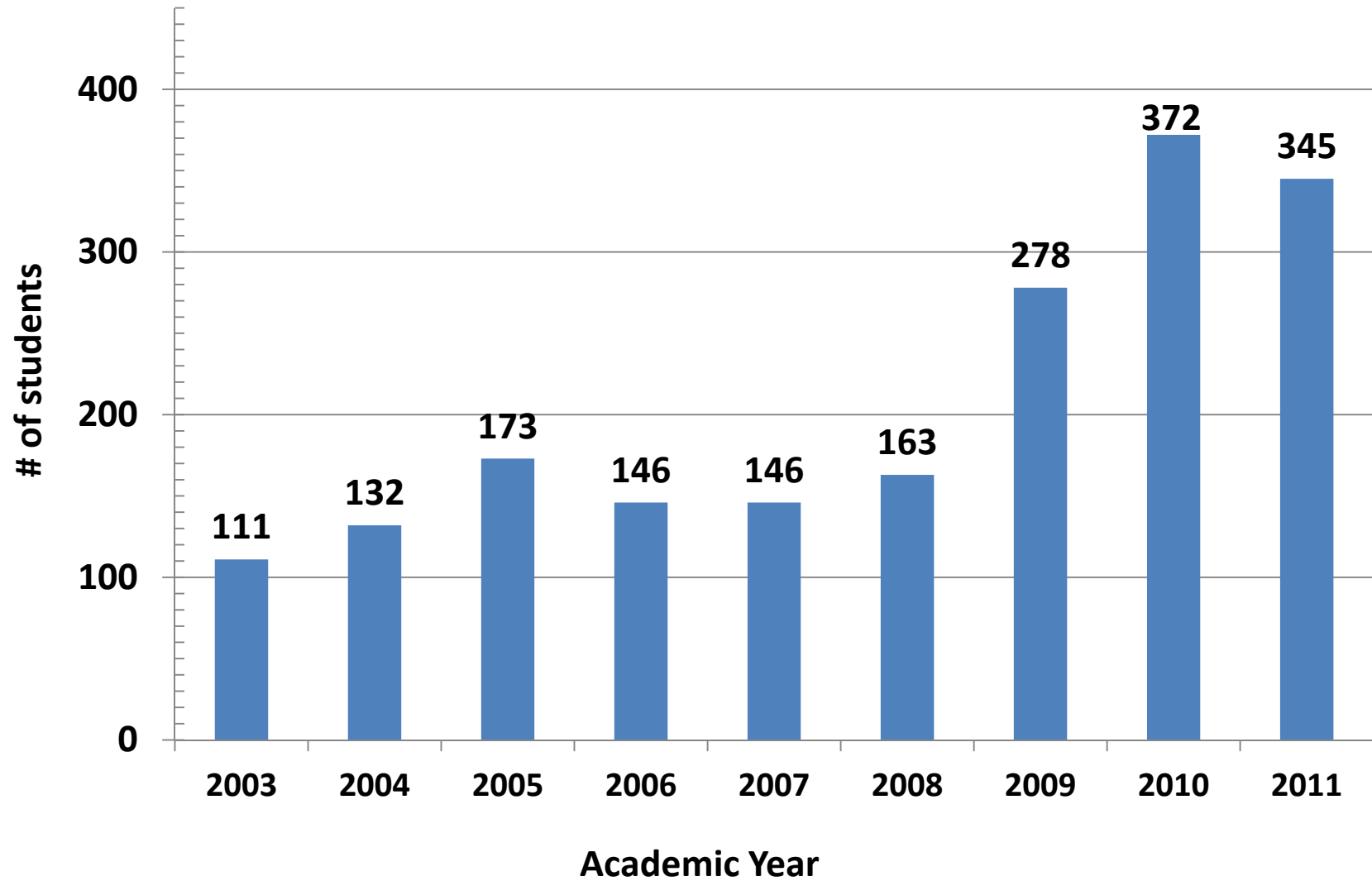
	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
<sup>1</sup> Unduplicated # of students tested	218	238	384	422	387
# students passing on first attempt	120	182	170	252	222
Mean score %	78	75	74.5	76.3	76.5
# students passing on second attempt	40	67	83	63	58
Mean score %	73	66	64.2	69.0	66.6
<sup>2</sup> students testing into BIO 099	58	55	131	107	107
# students testing after BIO 099	70	143	228	306	385
Mean test score of BIO 099 successful students	78.1	78.1	73.9	75.8	75.8

1 Includes students testing after completion of BIO 099 and students placing directly

2 Some students do not take the placement test. They just register for BIO 099

# BIO 099 Enrollments

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# HCC vs. NCCBP Student Success Data

BIO 099/103/104 Enrollee Success 2008-2011

	% Enrollee Success
HCC BIO 099 n = 1009	65.8%
HCC BIO 103 (A&P I) n= 849	75.5%
HCC BIO 104 (A&P II) n=643	84.1%
Other US colleges A&P I/II anecdotal data from HAPS listserv	40-60%
HCC Overall	76.95%
National CC Benchmark Project Overall (for 50 <sup>th</sup> percentile)	73.68%

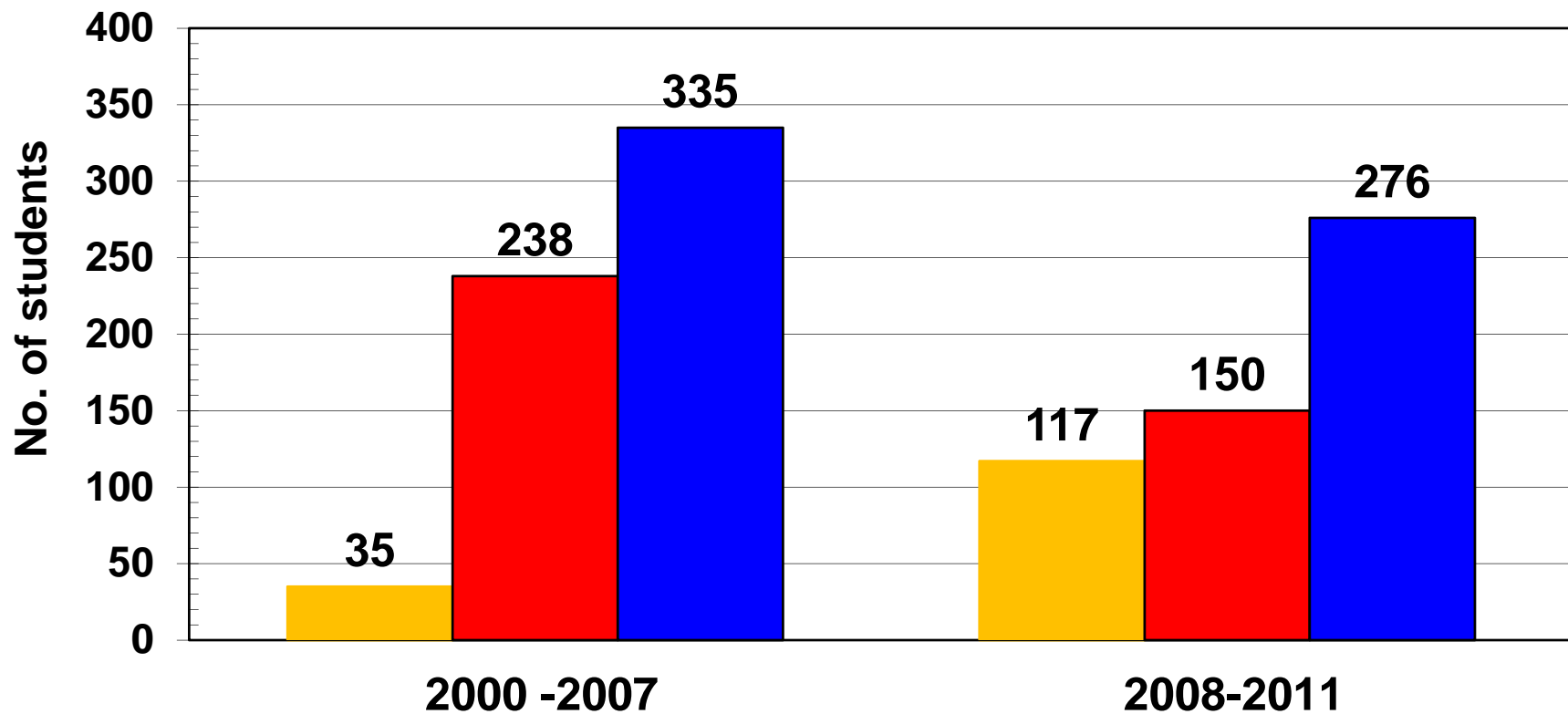
## HCC BIO 104 (A&P II) Students Vs. HAPS Reference Groups

Student Groups	Average $\pm$ Standard Deviation				
2-yr / 4-yr colleges n=2430	$53.46 \pm 11.88$				
4-yr colleges (n= 964)	$57.53 \pm 12.10$				
2-yr colleges (n=1466)	$50.80 \pm 10.45$				
HCC students	<b>2006 – 2007</b>	<b>2007- 2008</b>	<b>2008 -2009</b>	<b>2009-2010</b>	<b>2010-2011</b>
	<b><math>52.91 \pm 12.23</math></b> n=170	<b><math>55.93 \pm 12.22</math></b> n=163 (+5.7%)	<b><math>56.51 \pm 12.89</math></b> n=169 (+1.0%)	<b><math>57.8 \pm 12.44</math></b> n = 197 (+2.3%)	<b><math>54.38 \pm 11.62</math></b> n = 171 (-5.9%)

# Acceptance into ASN Before and After Redesign

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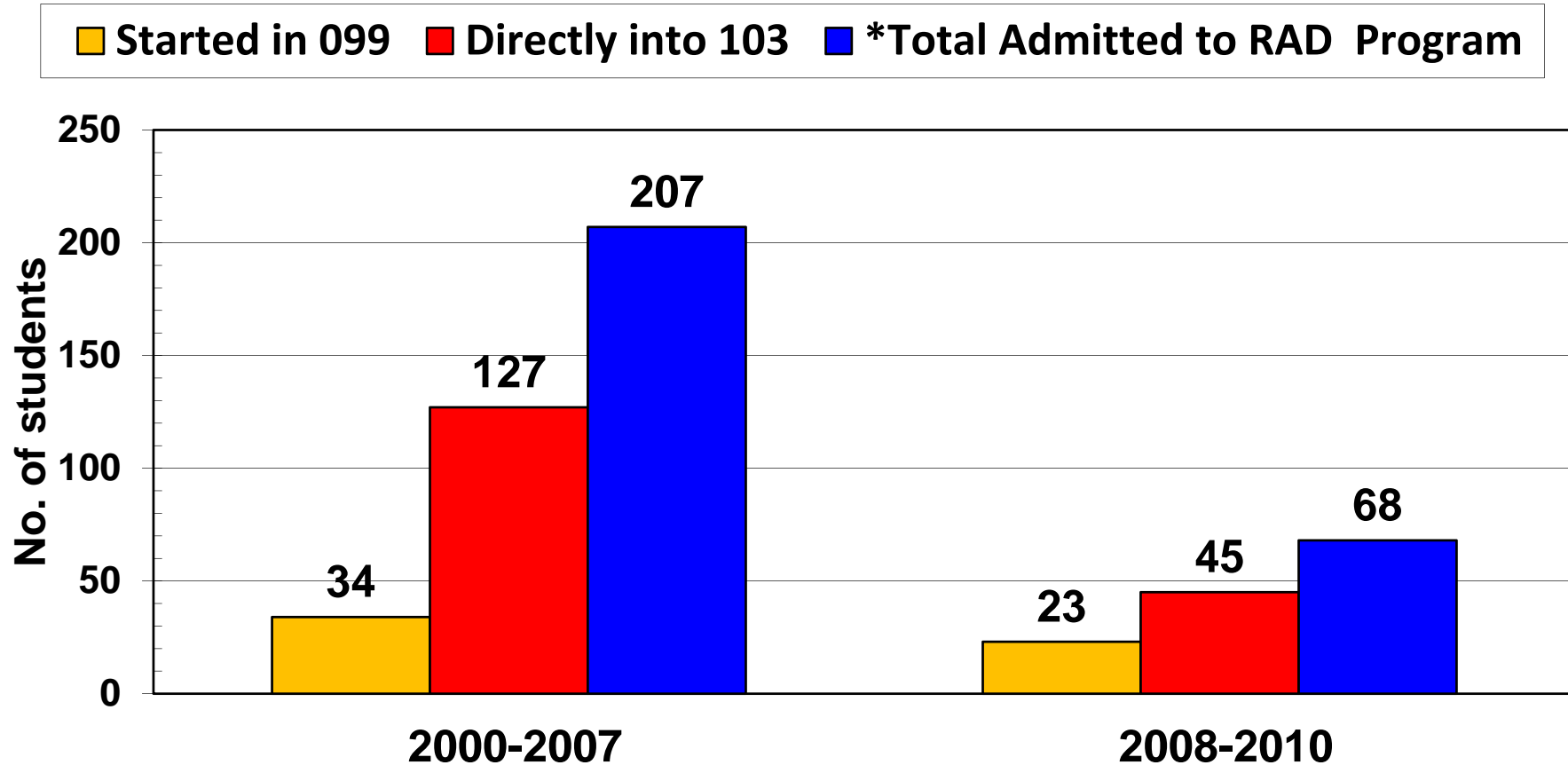
■ Started in 099    ■ Directly into 103    ■ \*Total Accepted into ASN



\* Some students transfer A&P from another institution

# Acceptance into RAD Before and After Redesign

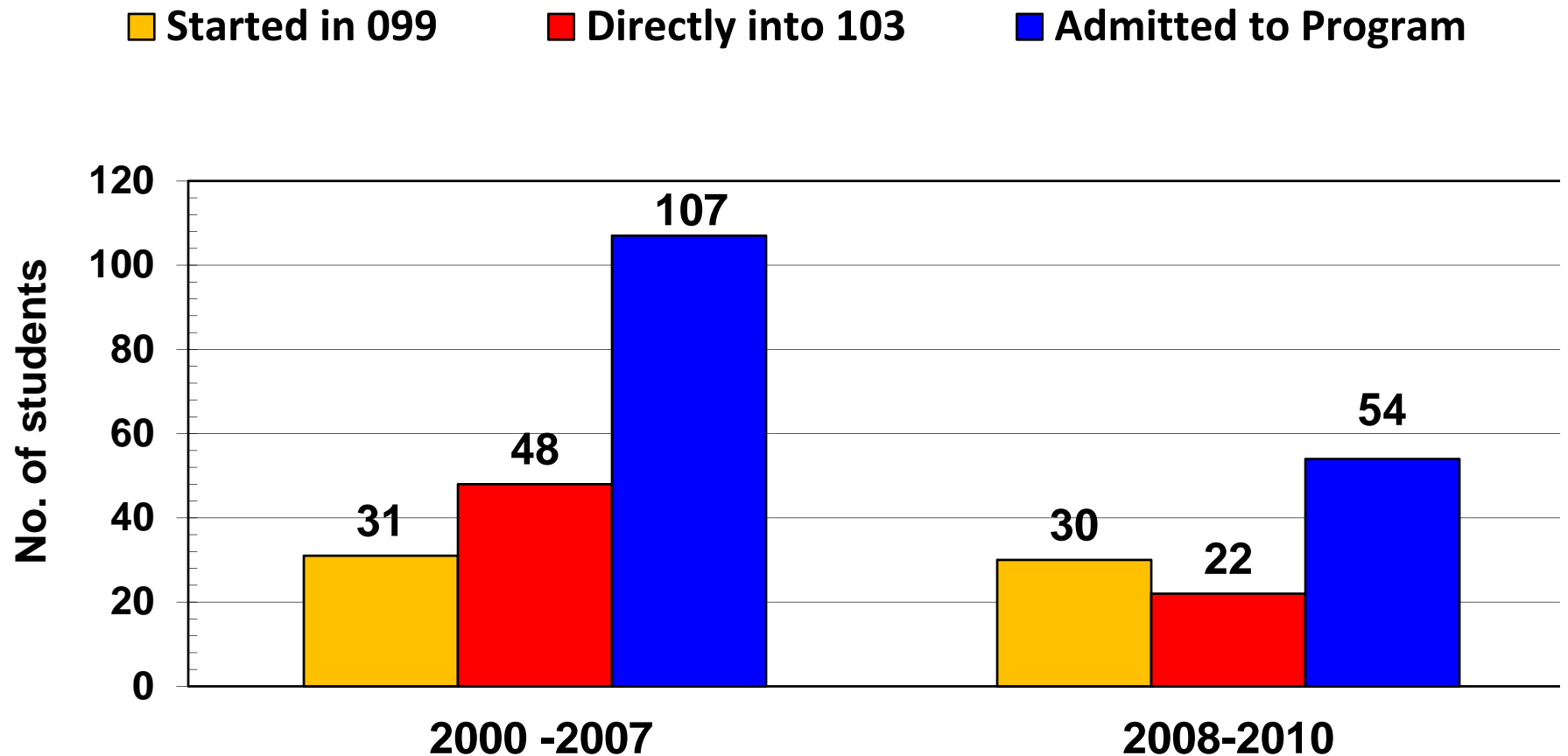
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\* Some students completed the A&P requirements at other institutions

# Acceptance into LPN Before and After Redesign

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# Summary

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- Enrollments of “at-risk” pre-Nursing, and pre-RAD students have increased significantly ( $p < 0.001$ )  
( $145.2 \pm 22.1$ , 2003-2008 vs.  $333.1 \pm 48.4$ , 2008-2011)
- **Before Redesign:** At-risk students who completed BIO 099 were 19.7% less successful in BIO 103 and 30.2 % less successful in BIO 104 compared to Direct Placement students
- **After Redesign:** BIO 099 students were 9.5% more successful in BIO 103 (a 16.0% improvement) and 33.5% more successful in Bio 104 (a 73.3% improvement)

# Summary, continued

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- HCC A&P students consistently score above the HAPS mean for 2-year colleges with no significant differences pre and post redesign
- Since the BIO 099 redesign **% acceptance of at-risk students into**
  - the ASN program has increased from 10.4% to 42.4%
  - The RAD program has increased from 16.4% to 33.8%
  - The LPN program has increased from 29.0% to 55.6%

# Summary Slide, continued

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- No significant differences in placement test scores after the redesign but there was a big difference in BIO 103 success of at risk students taking the redesigned BIO 099
- Higher % success in BIO 103/104 for HCC pre-nursing students is validated by scores on HAPS exam after BIO 104 for HCC students
- More and more at-risk students are being admitted to and completing rigorous Allied Health programs

# Additional Variables

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- In 2008, enrollments in NUR increased from a single Fall class of 36/year to 96/year when a Spring class was added
- Nursing program attrition peaked in Spring 2009 (60% retention; retention now increasing)
- TEAS test administered to applicants starting in 2009 for internal data analysis only.
- As of Jan 15, 2011, all RN applicants must take the TEAS and meet required scores prior to the admission deadline
- Full effect of the A&P changes and other variables not seen until 2011
- Dramatic improvement in academics for Fall 2011class
- Rubric for ranking students for admission may add more variables

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