



Industry/University
Cooperative Research
Centers

IUCRC Program Findings from The Center Structure Database

FY2015-2016

*Data collected from 68 out of 68 total active centers

Trends from Center Structure Database: 1980-2016

*McGowen, L. & Leonchuk, O.
IUCRC Evaluation Project at
North Carolina State University*



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Overview

- Data collection methodology and timeframe
 - Slides 3-7
- Number of Centers through 2016-2017
 - Slides 8-10
- Detailed analyses through 2015-2016 (structural, outcomes)
 - Slides 11-42
- CISE and ENG breakdowns
 - Slides 43-50
- Comparison by program Phase (I, II, III)
 - Slides 51-62



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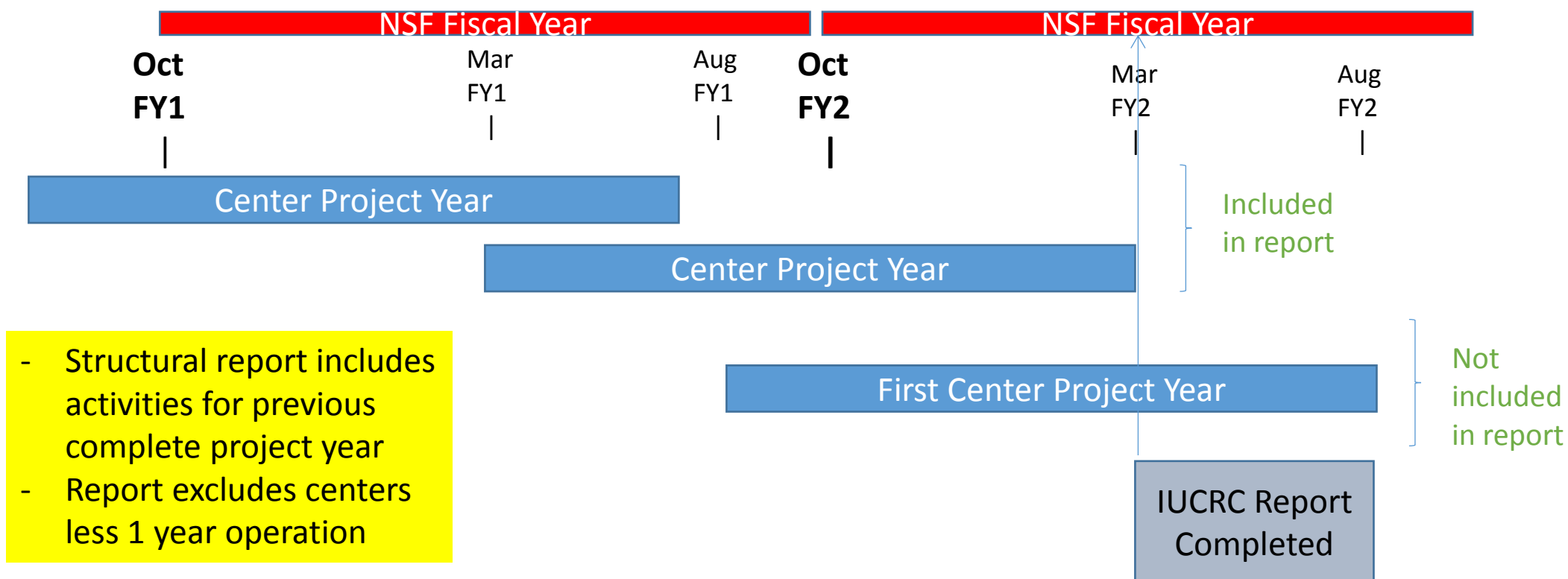
Methodology

- Collection of 2015-16 structural data from centers and sites completed between November 2016 and January 2017.
 - Centers were asked to report on their most recently completed project year
 - Some variables changed last year (trends adjusted to standardize)
- Data on number of funded centers collected from NSF (through 2017)
- Reporting issues:
 - Issue of how to count centers under NCE (no cost extension) will need to be addressed in the future (e.g., between phase NCE; end-of-funding NCE)



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NSF and Center Budgeting Life Cycle

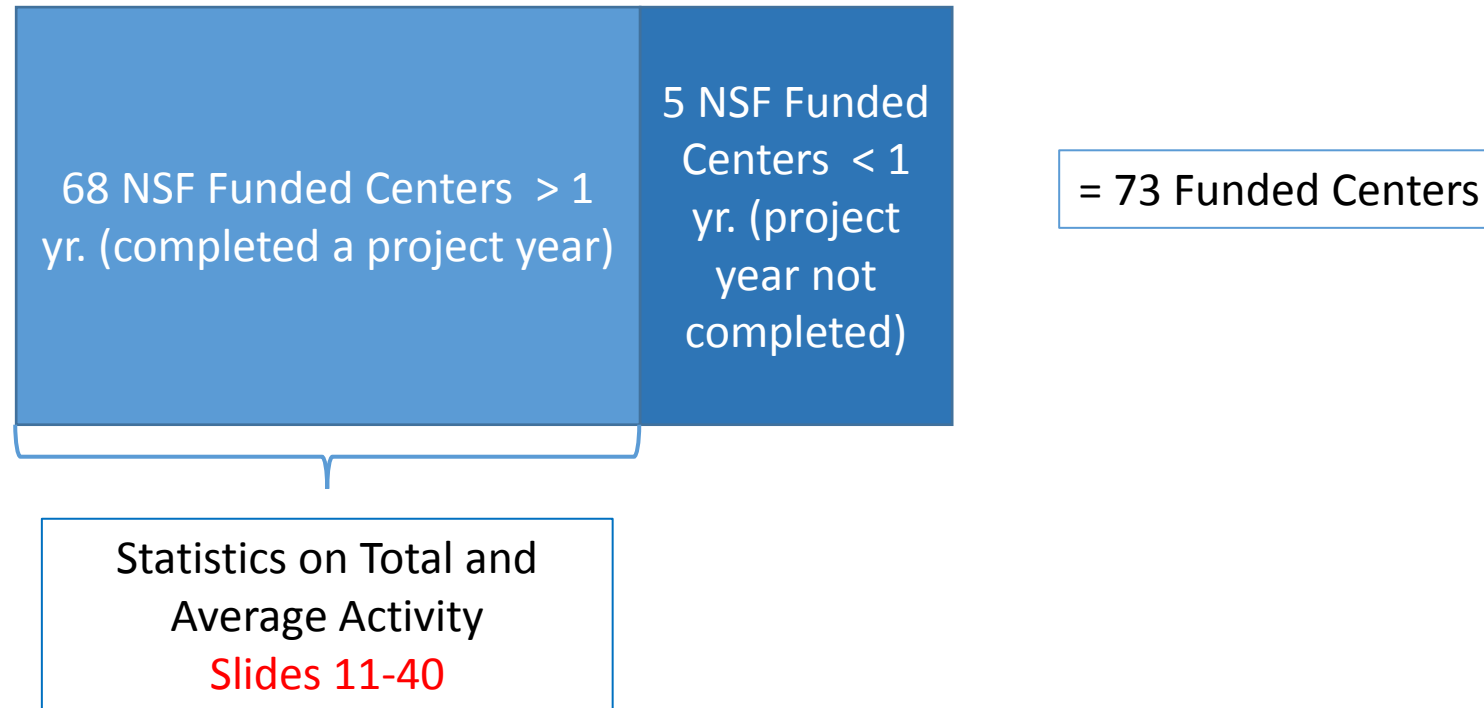


Understanding Center Counts Through 2016



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FY 2016

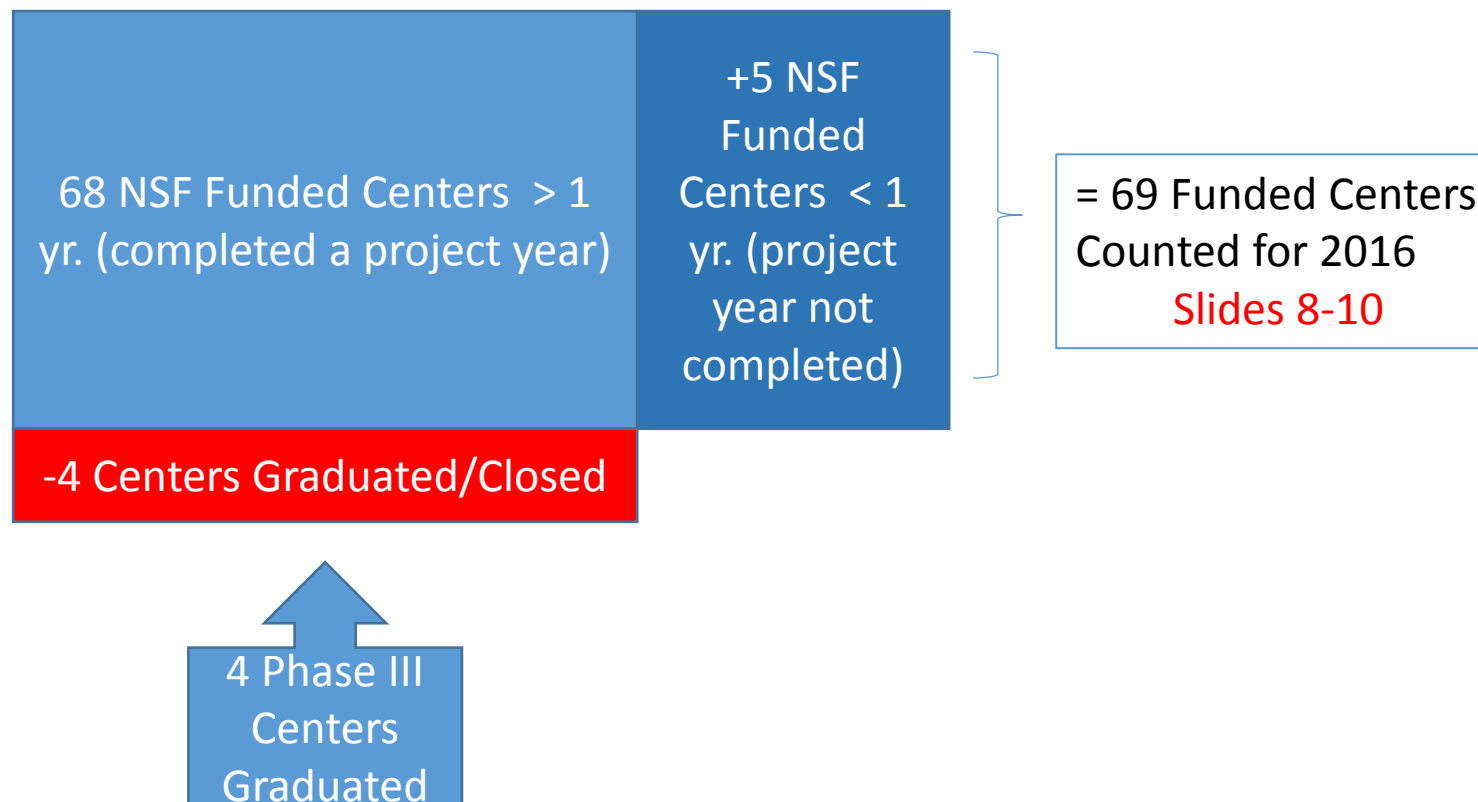




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Understanding Center Counts Through 2016

FY 2016





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2015-2016 Graduated & Closed Centers

- Centers dropped from the FY15-16 report.

Phase III

1. Design of Analog/Digital Integrated Circuits: OSU, U WA, WSU
2. Friction Stir Processing: BYU, UNT, SDSMT, USC
3. Nondestructive Evaluation: ISU

Phase II

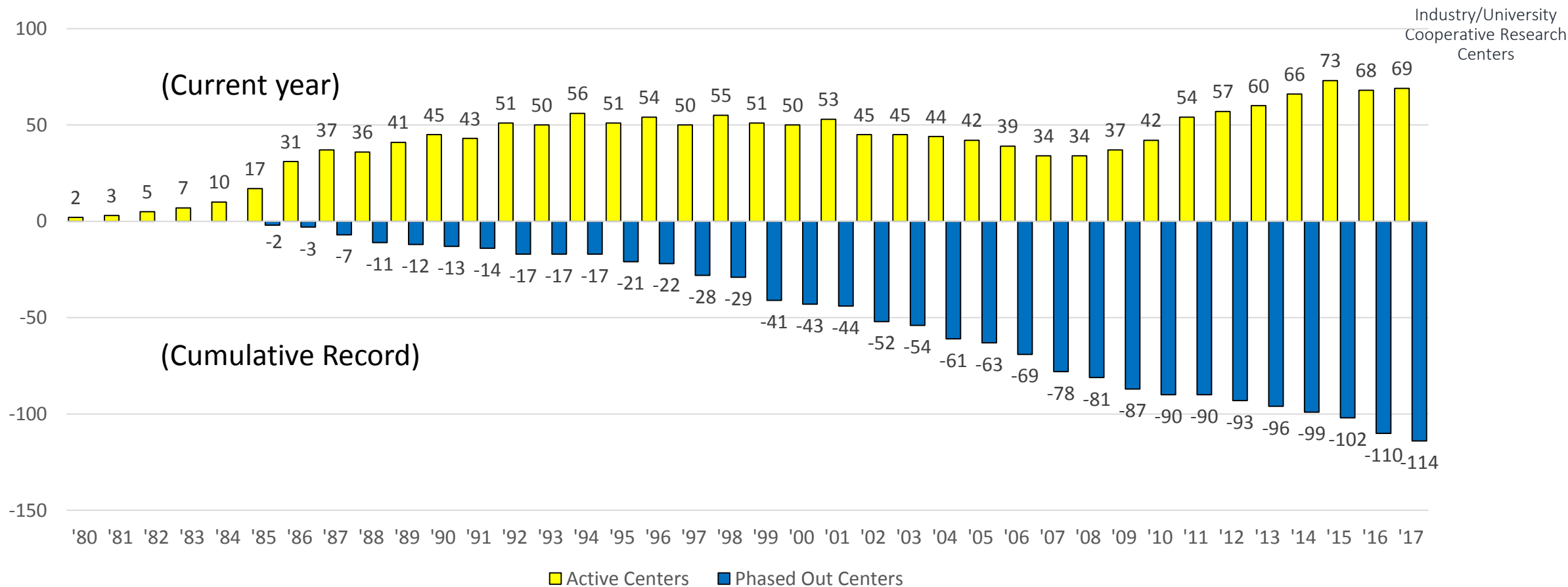
4. Safety, Security, Rescue Research Center: UMN, UNCC, DU, Upenn
5. Silicon Solar Consortium: NCSU, GIT

Phase I

6. Electric Vehicles: Transportation & Electricity Convergence: UTA, TXA&M
7. Innovative Instrumentation Technology: UI
8. Optical Wireless Applications: PSU



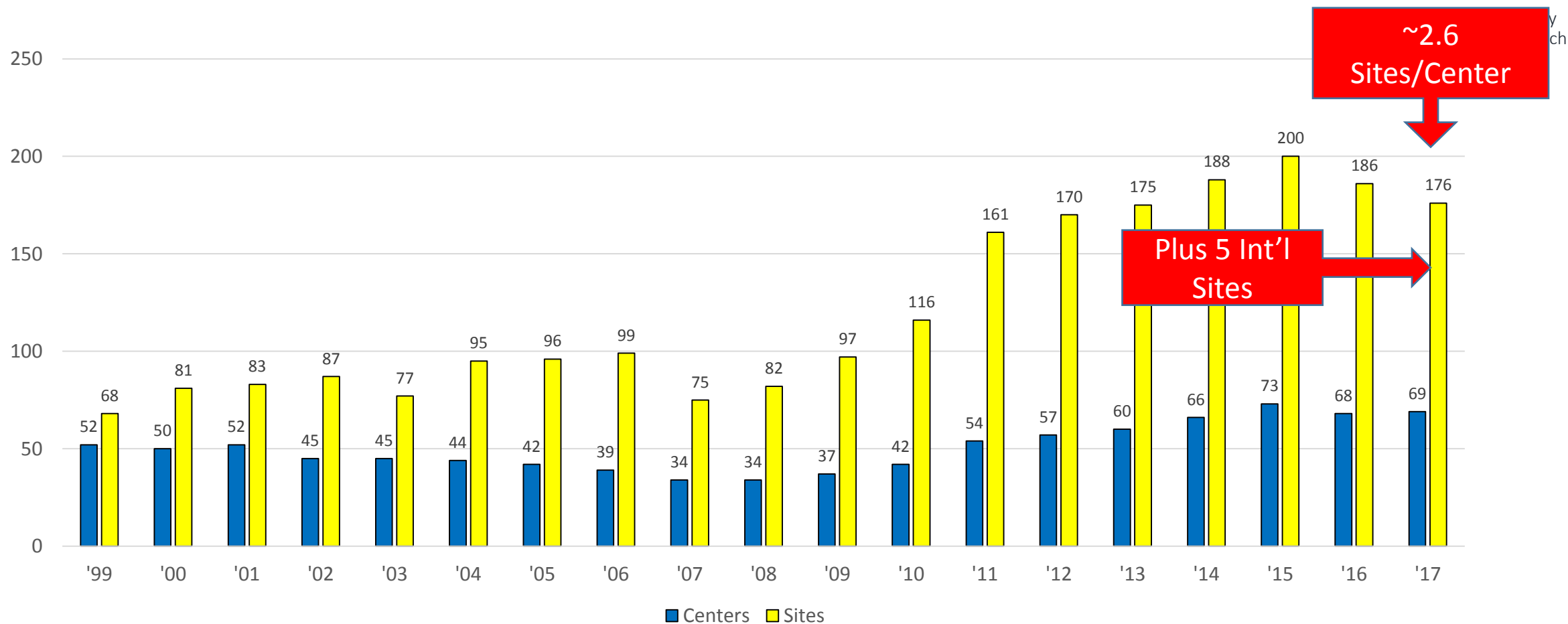
Center Life Cycle Through 2017*



*Data Current for FY2017



Active Centers and Sites by Year*

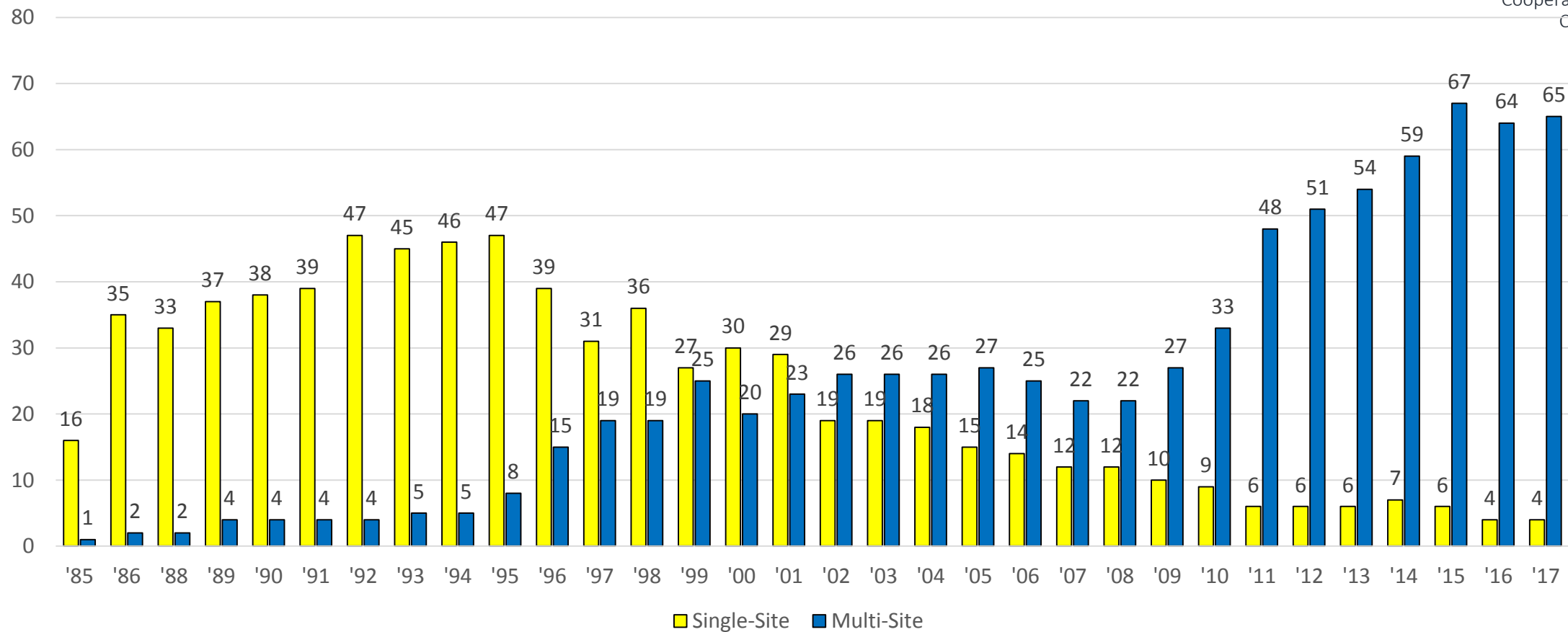


*Data Current for FY2017



Single & Multi-Site Centers*

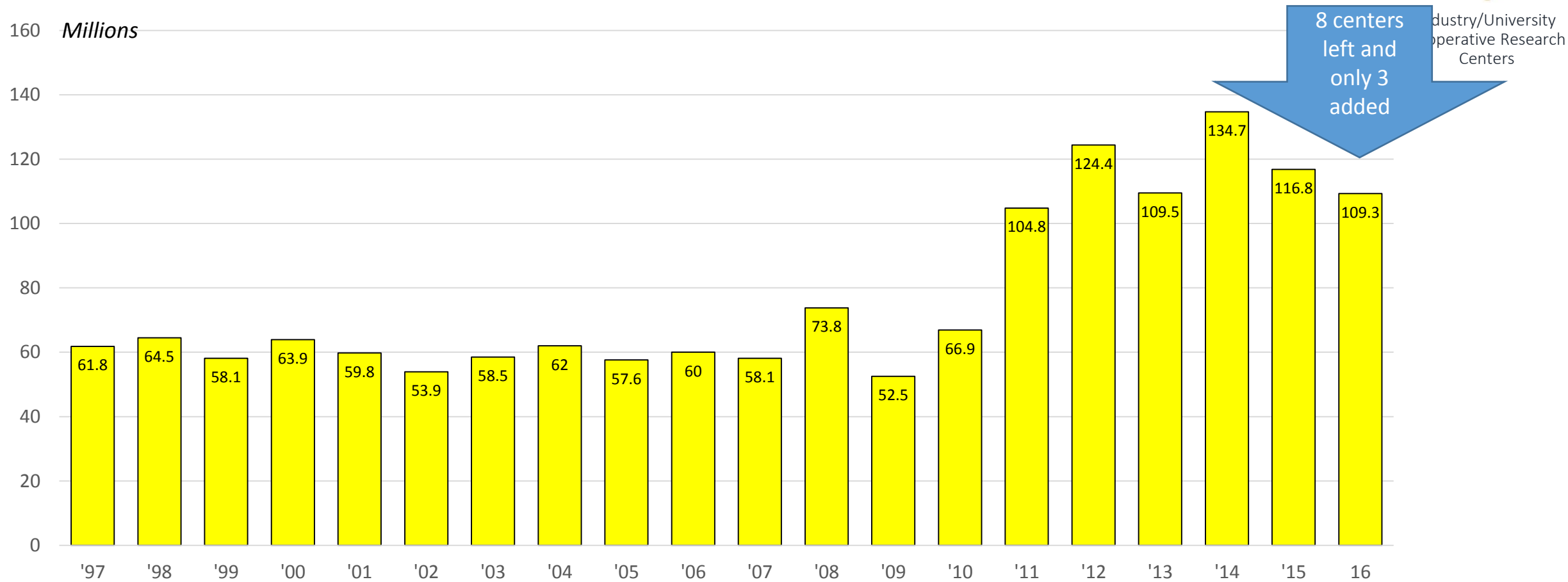
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*Data Current for FY2017



Total Program Funding[^]

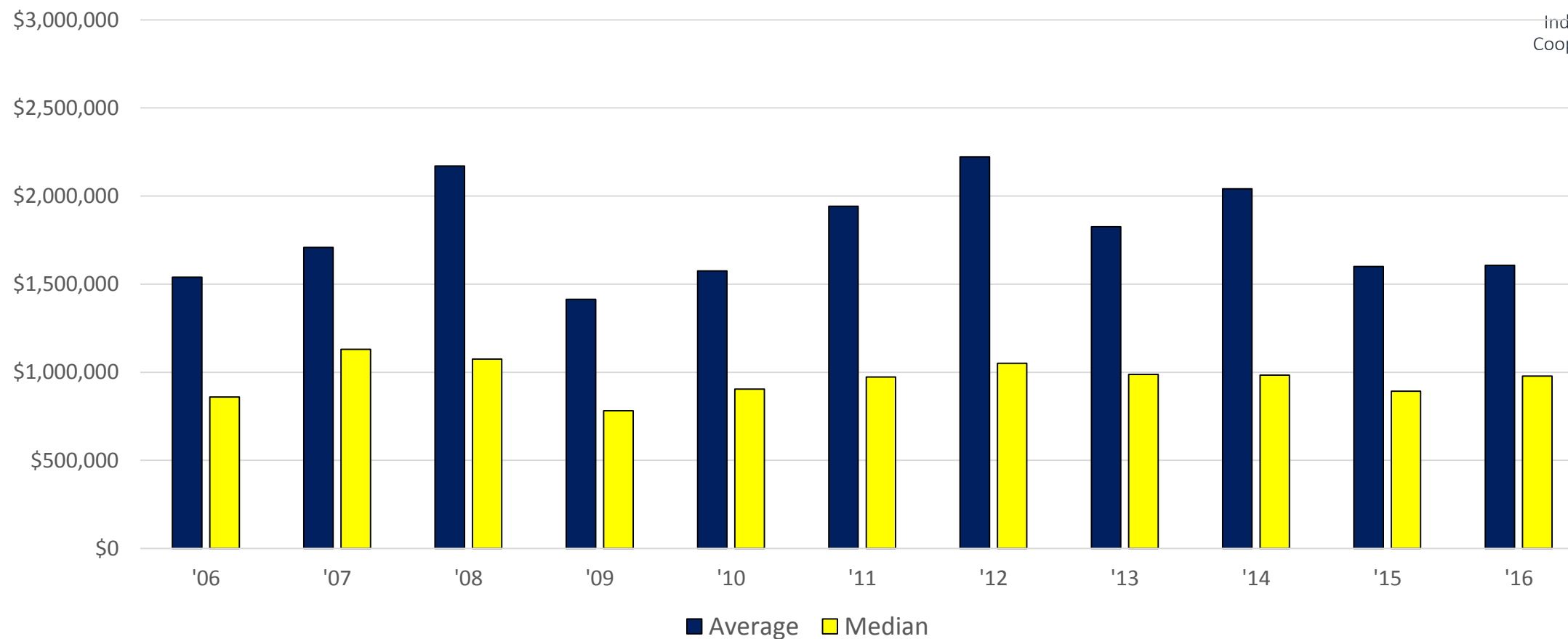


[^]Univ. & Other Cash Excluded



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Average & Median Total Center Funding[^]

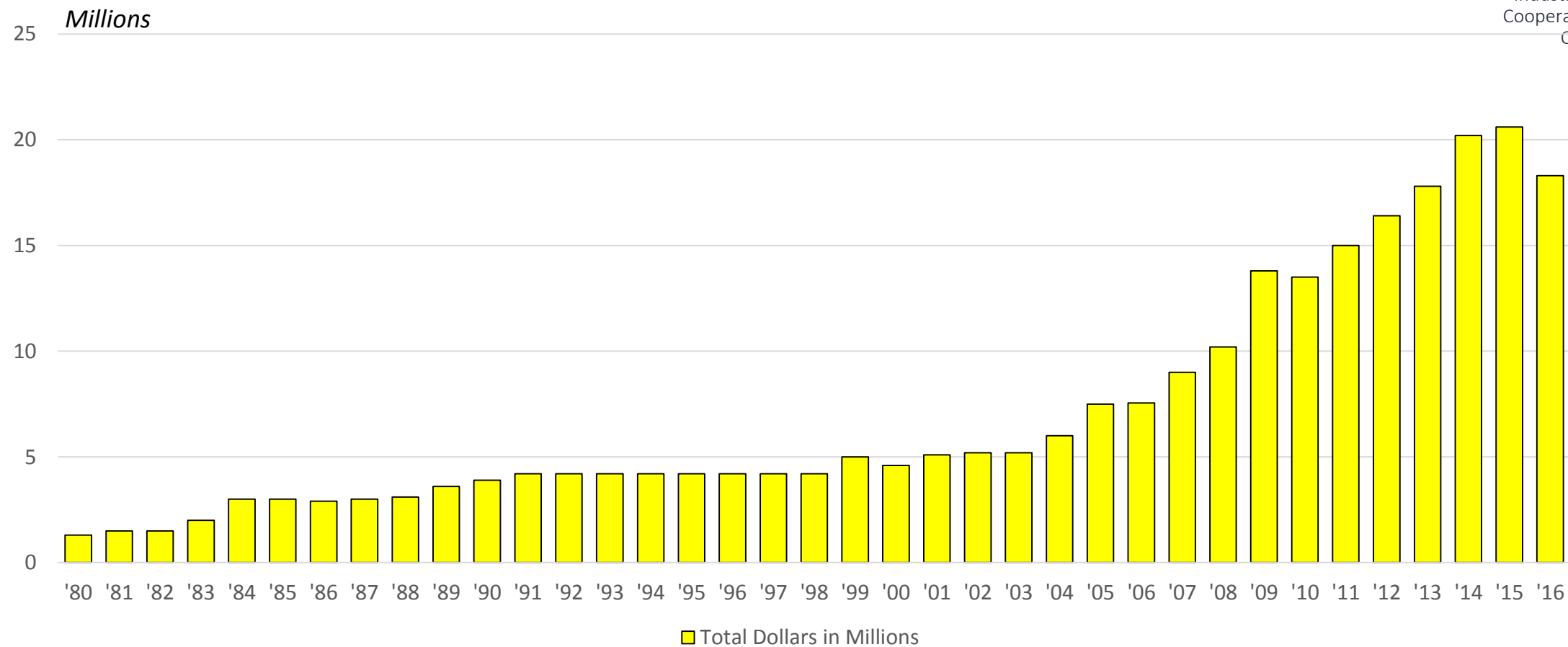


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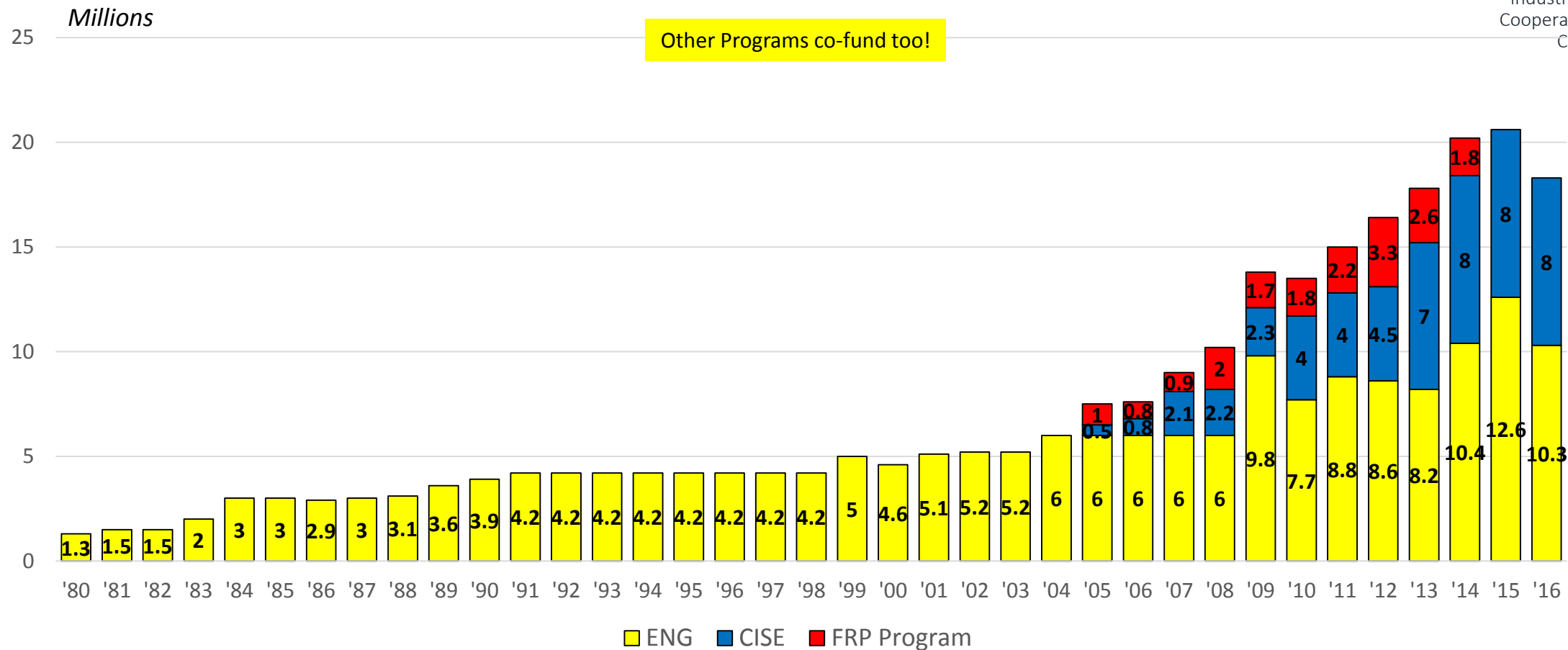
NSF Budget by Year





NSF Budget by Year

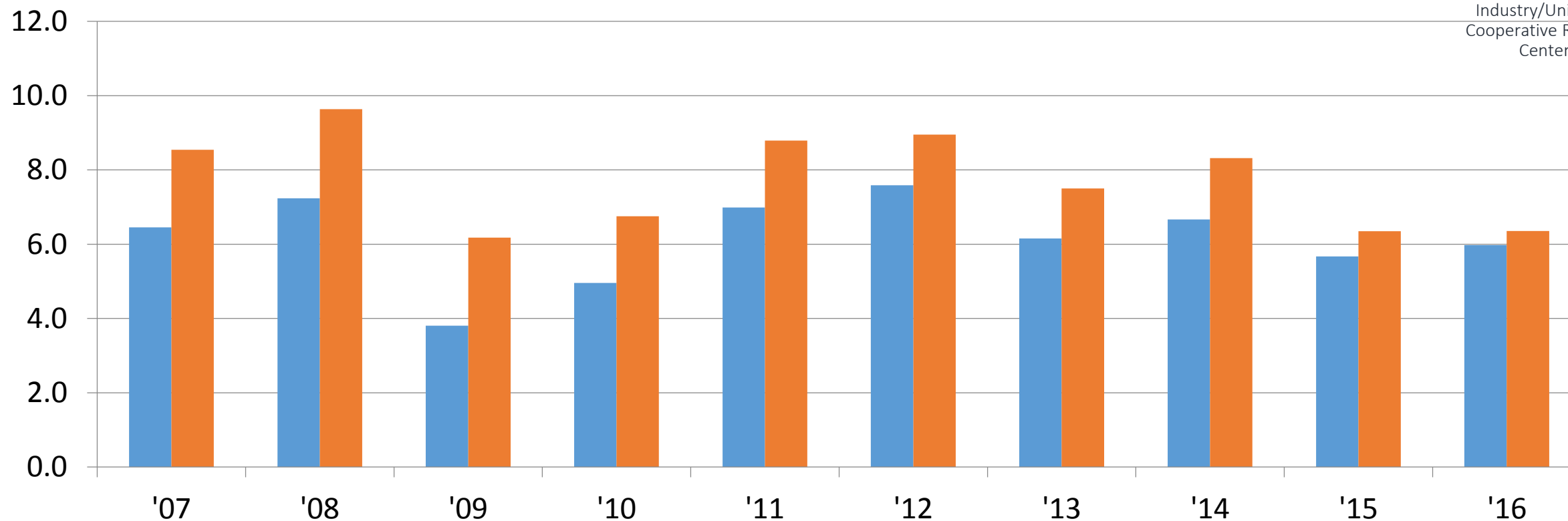
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NSF : Total Funding Leveraging Ratios



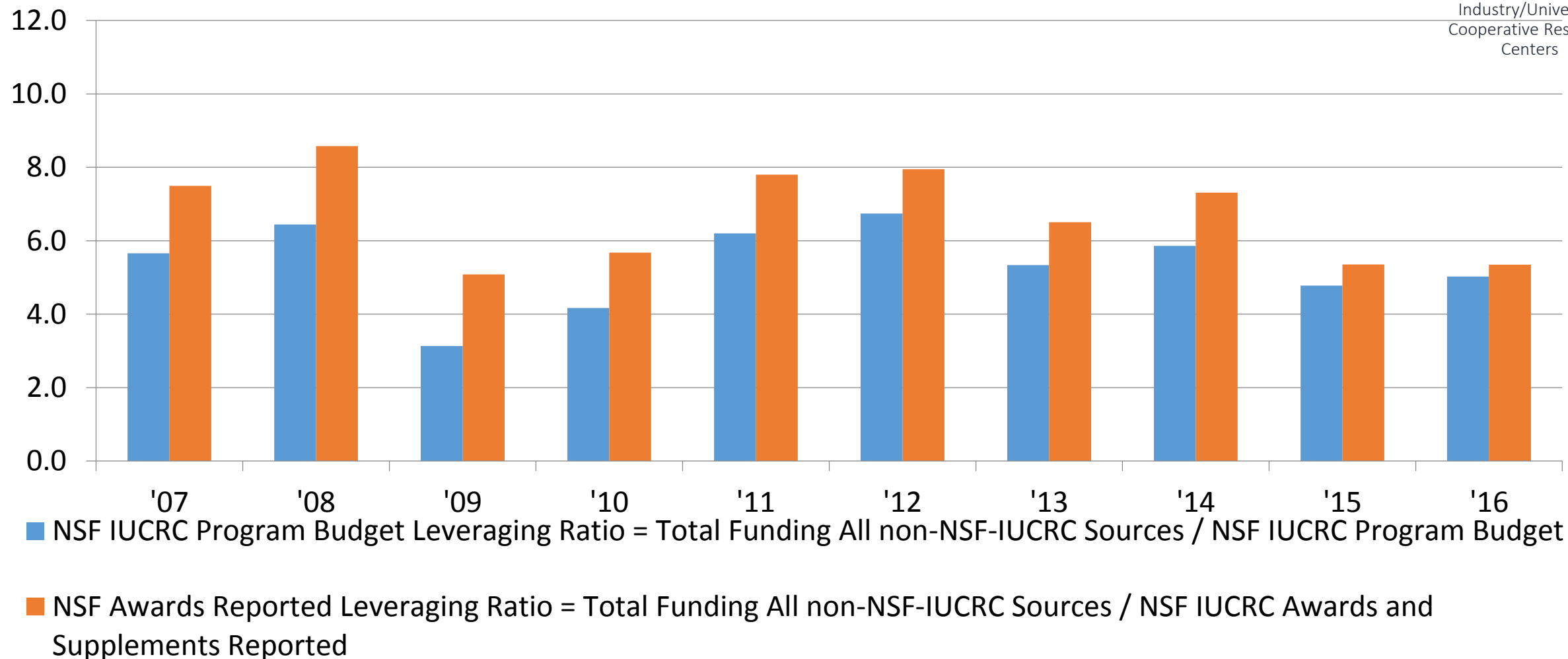
■ NSF IUCRC Program Budget Leveraging Ratio = Total Funding All Sources / NSF IUCRC Program Budget

■ NSF Awards Reported Leveraging Ratio = Total Funding All Sources / NSF IUCRC Awards and Supplements Reported



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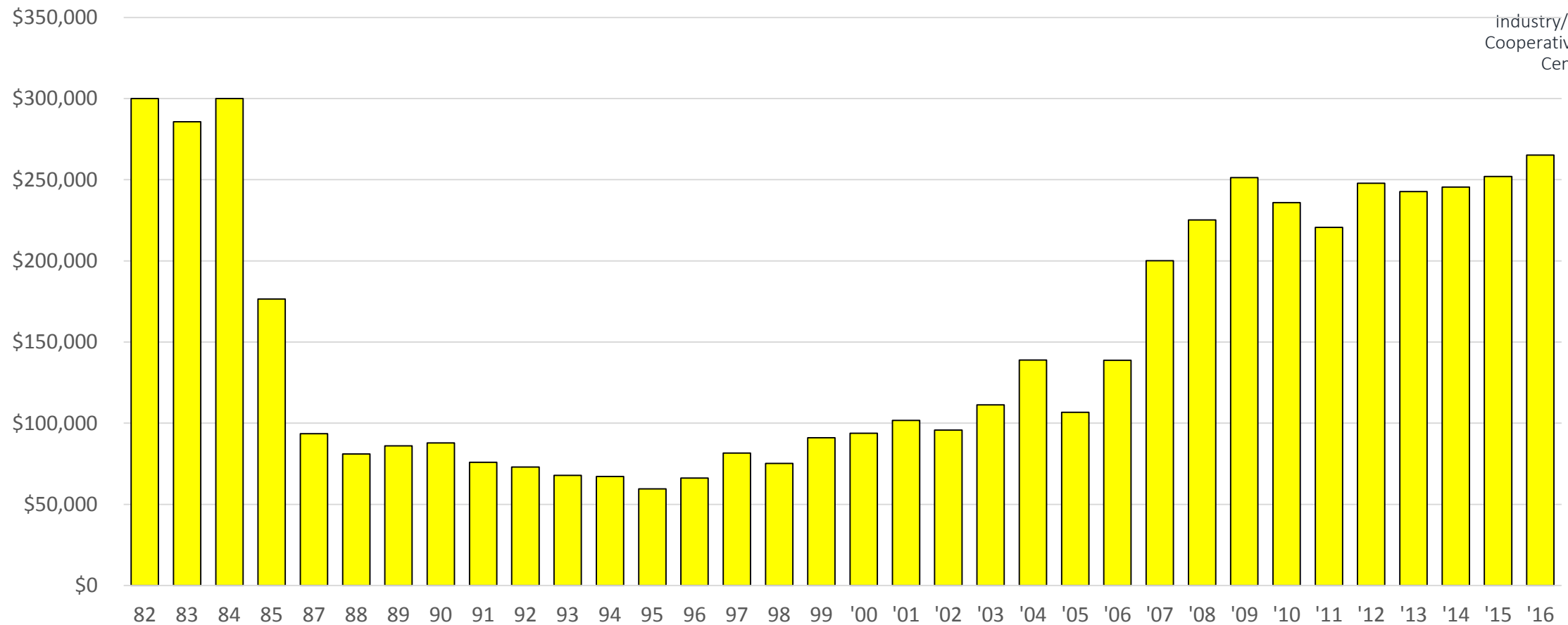
NSF : Total Funding (Excluding NSF IUCRC) Leveraging Ratios



Average NSF IUCRC Awards & Supplements per Center*



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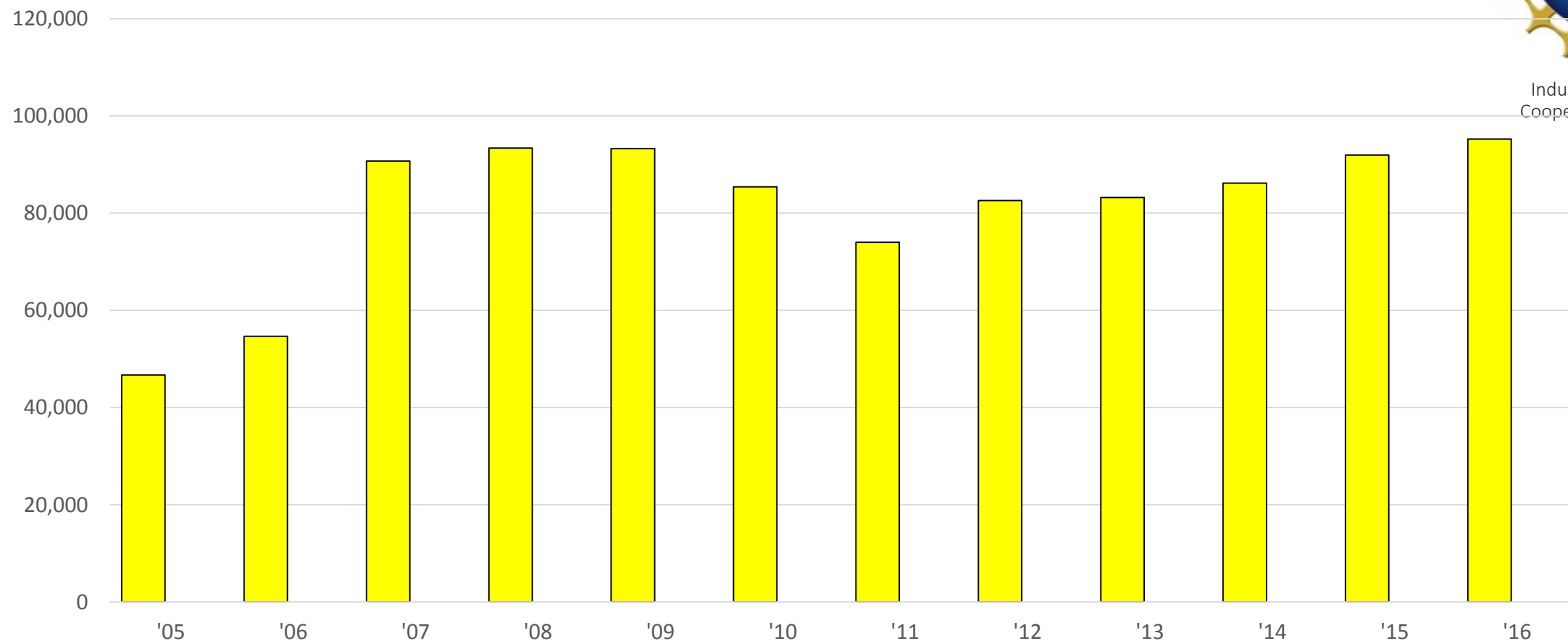


*The averages do not include centers that were on no-cost extension and received \$0 from NSF during that fiscal year. The average for FY2016 excludes three centers that were on no cost extension.



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Average NSF IUCRC Funding per Site*

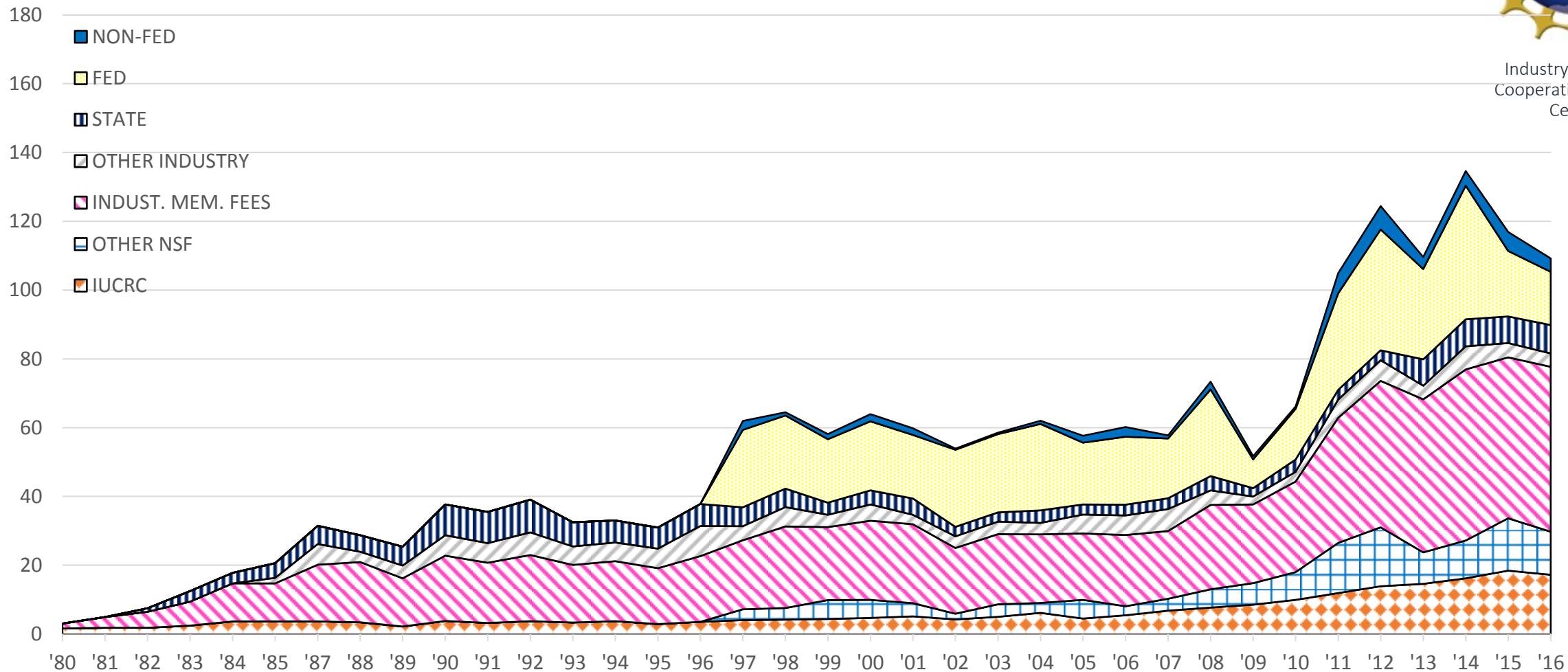


*The averages do not include sites that were on no-cost extension and received \$0 from NSF during that fiscal year. The average for FY2016 excludes 5 sites of three centers that were on no cost extension, five international sites and two additional sites that did not receive NSF IUCRC support.



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Total Funding by Source in Dollars[^]

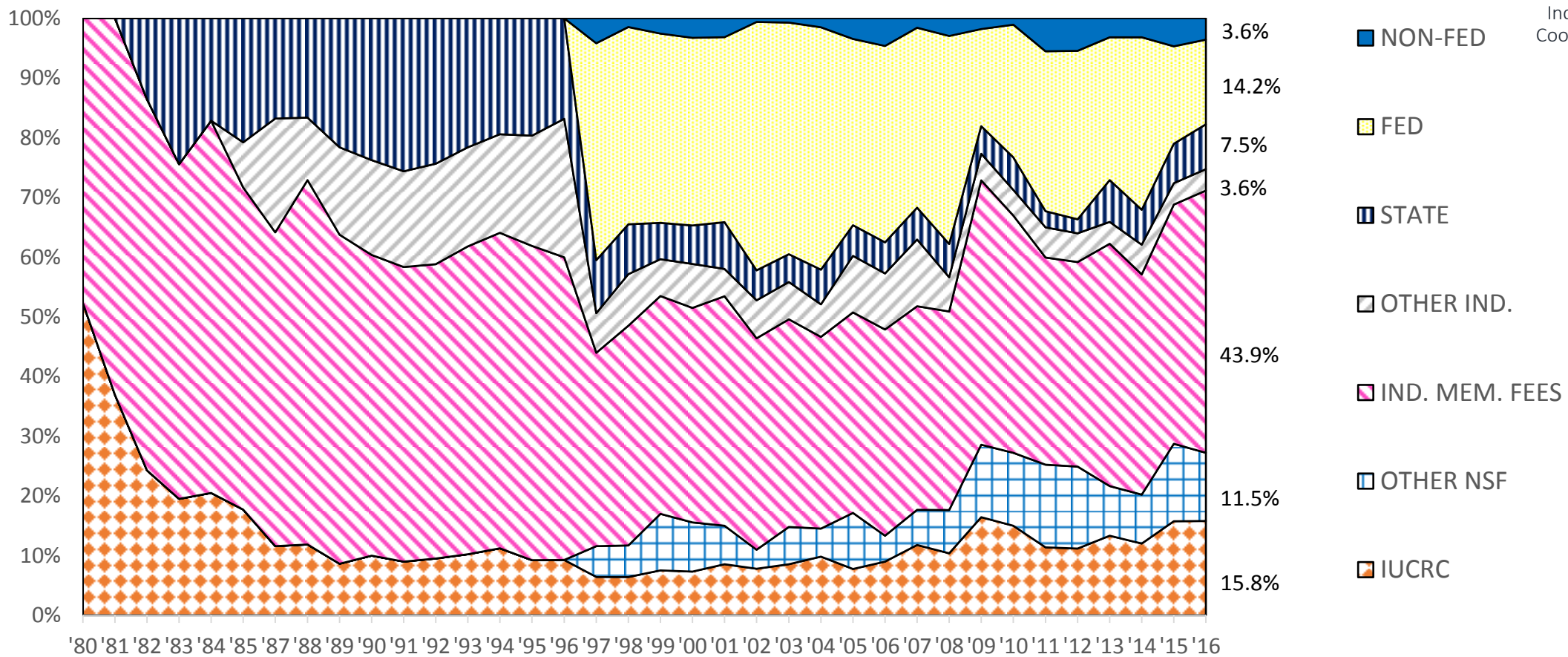


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Total Funding by Source in Percentages[^]

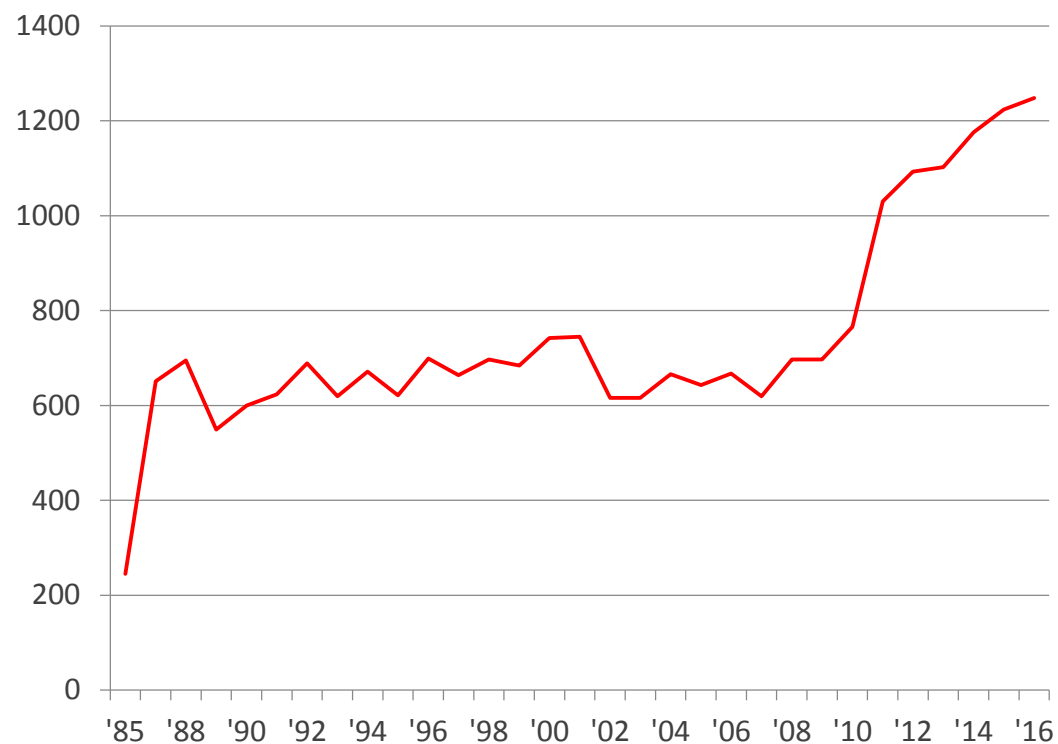




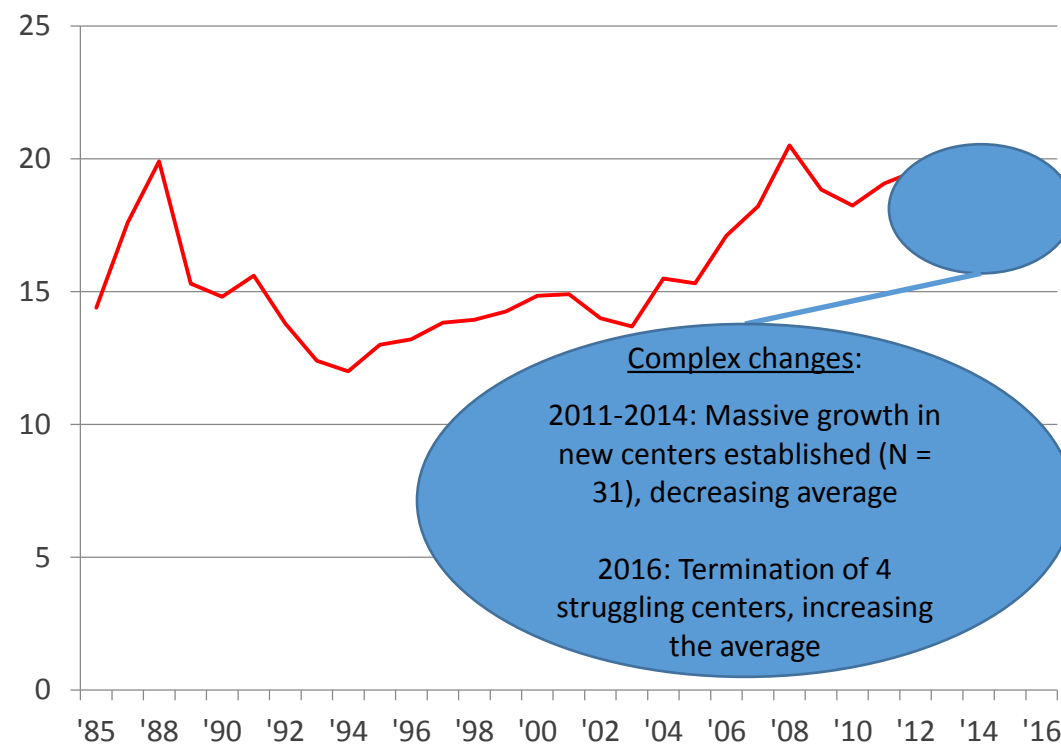
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Industrial Memberships

Total Number of Memberships



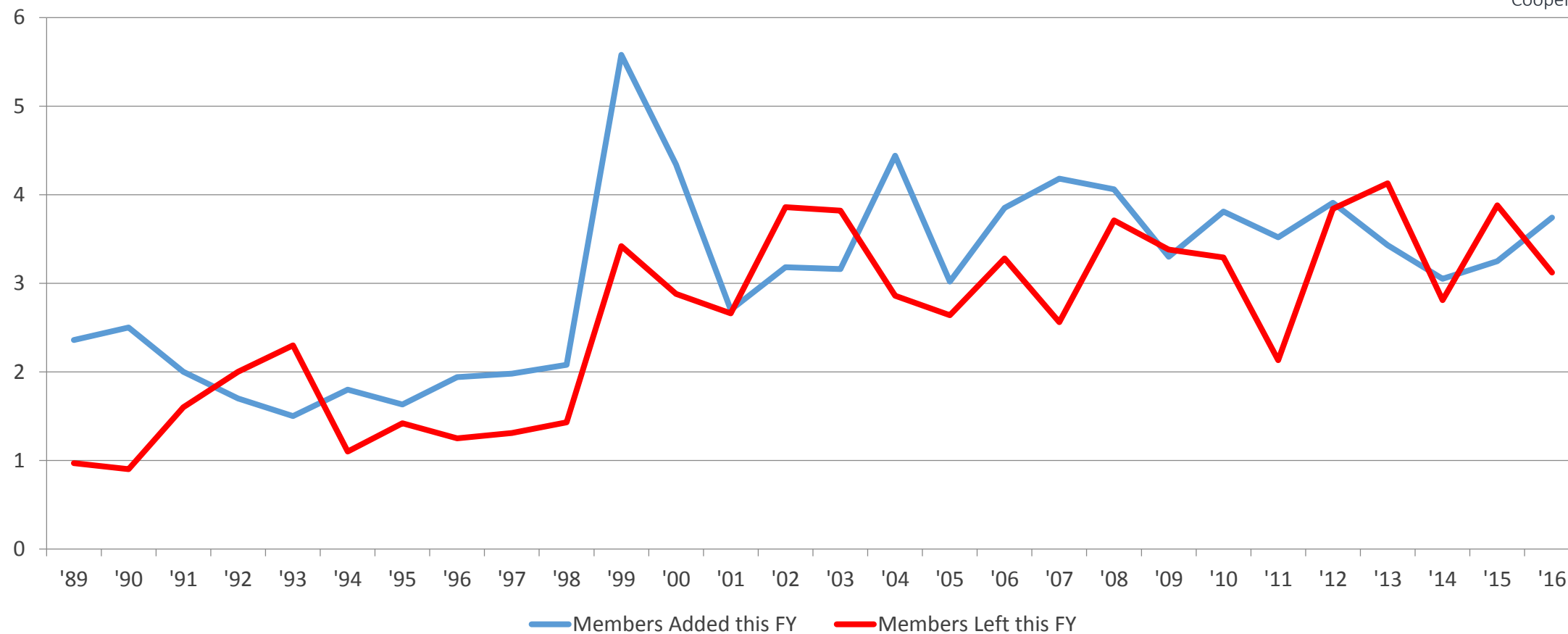
Average Number of Memberships





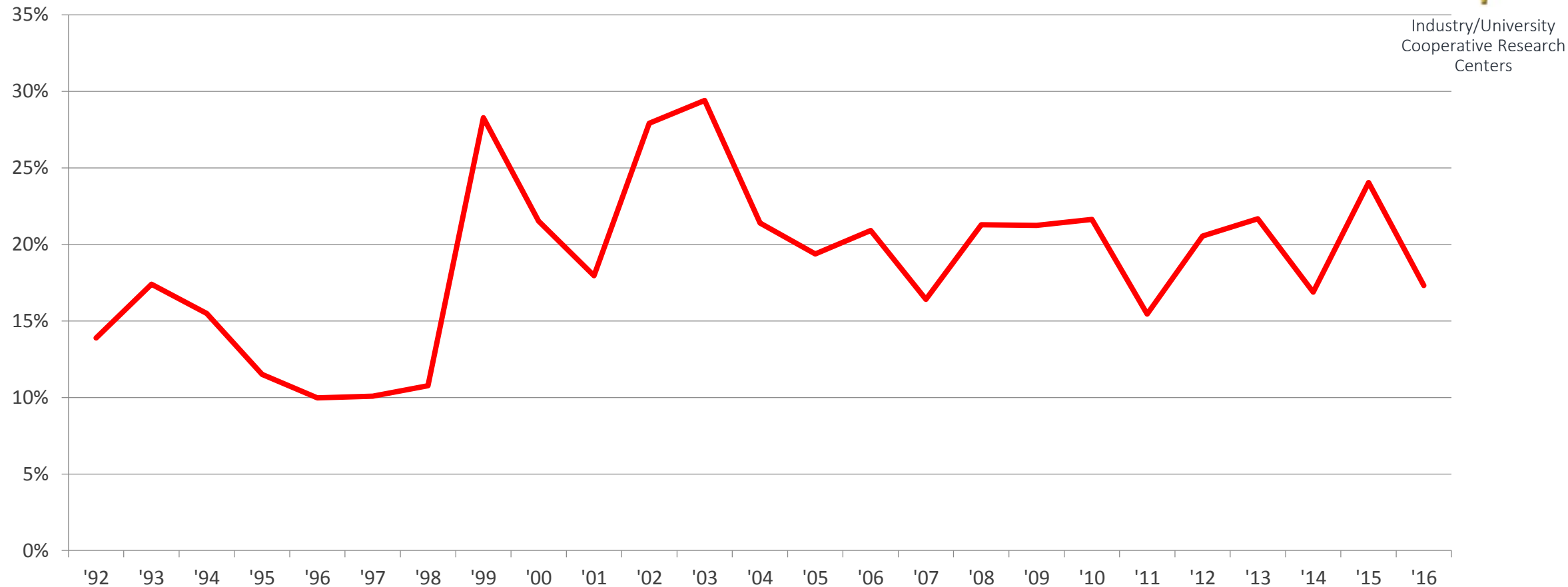
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Average Membership Turn Over





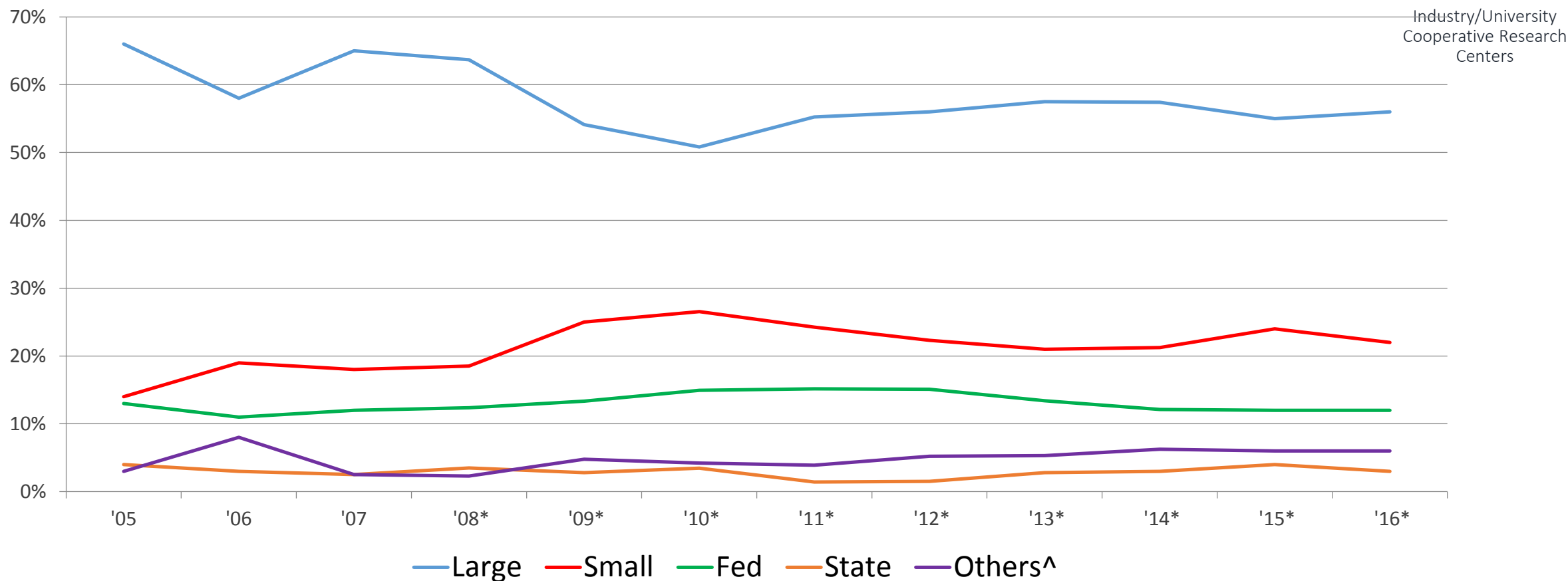
Member Turnover Rate



Turnover % = Members terminated in “year X+1” / Total members in “year X”



Member Composition 2005-2016*

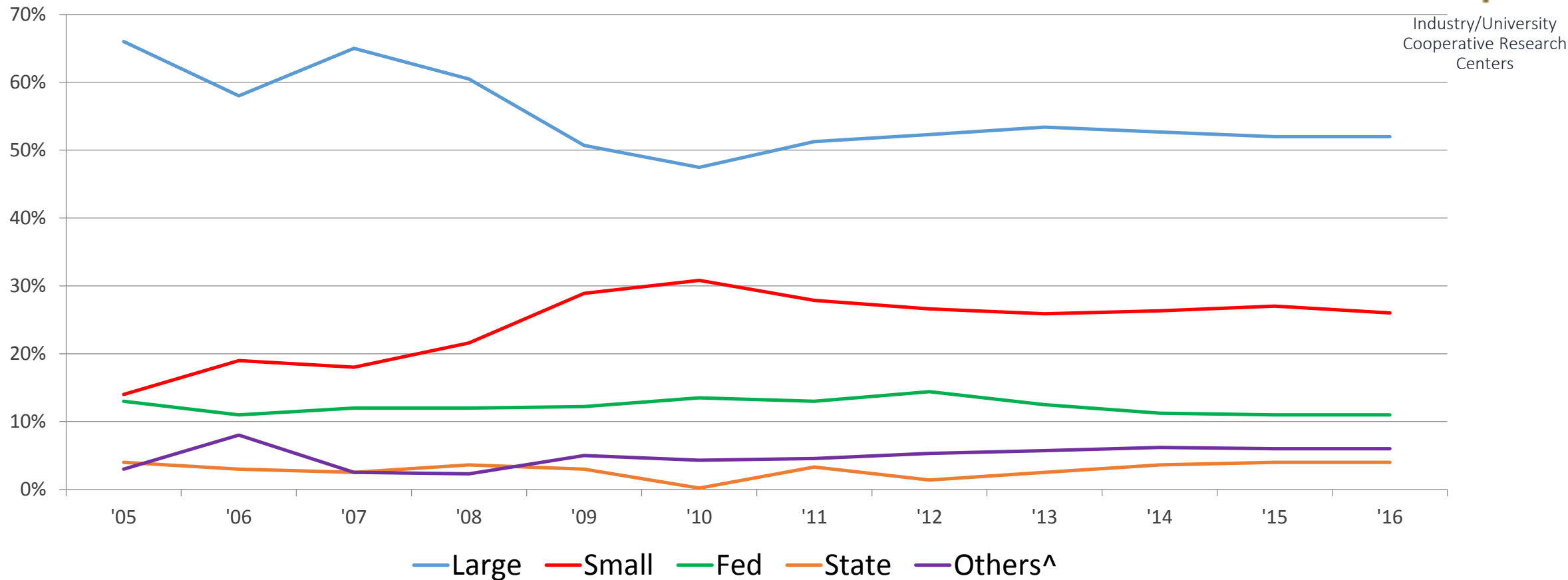


*Years Advanced Forestry excluded as a small business outlier: '08=36, '09=49, '10=57, '11=66, '12=71, '13=77, '14=86, '15=71, '16=69.

^ Categories comprising Others include: non-profit, non-US gov't, and other org.



Member Composition 2005-2016



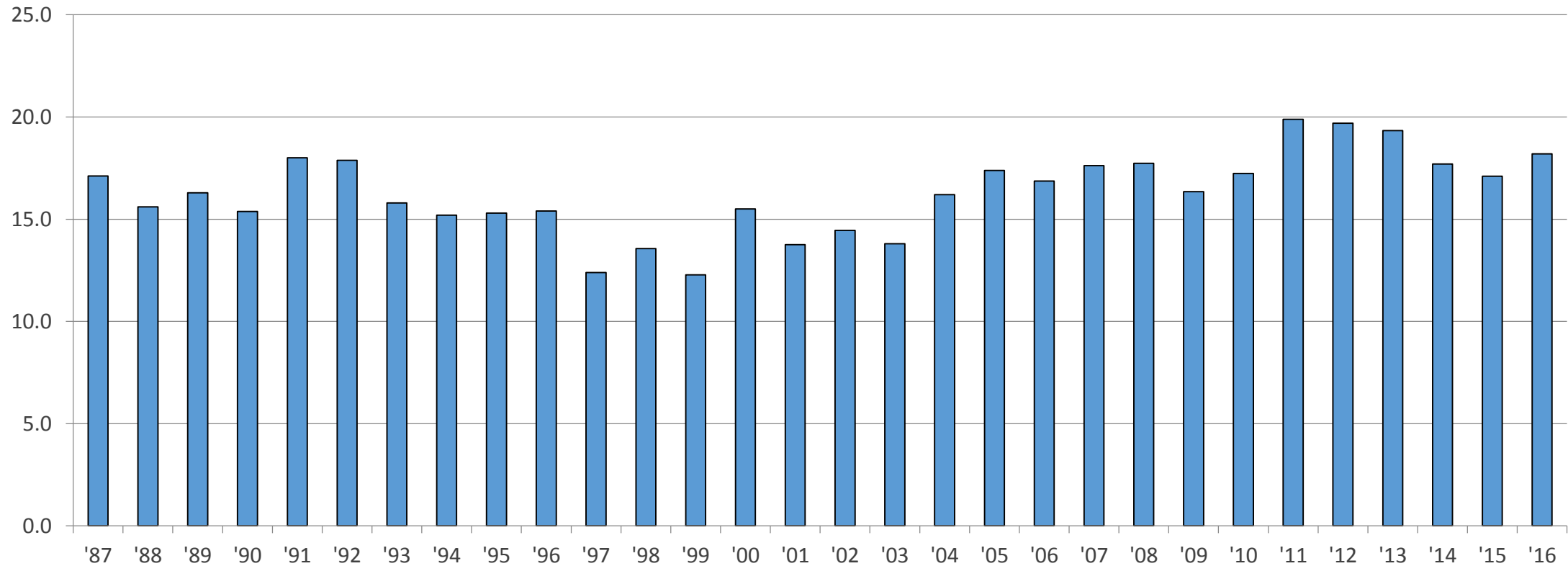
^ Categories comprising Others include: non-profit, non-US gov't, and other org.

Average Number of Researchers per Center



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Faculty & Post Doc Researchers

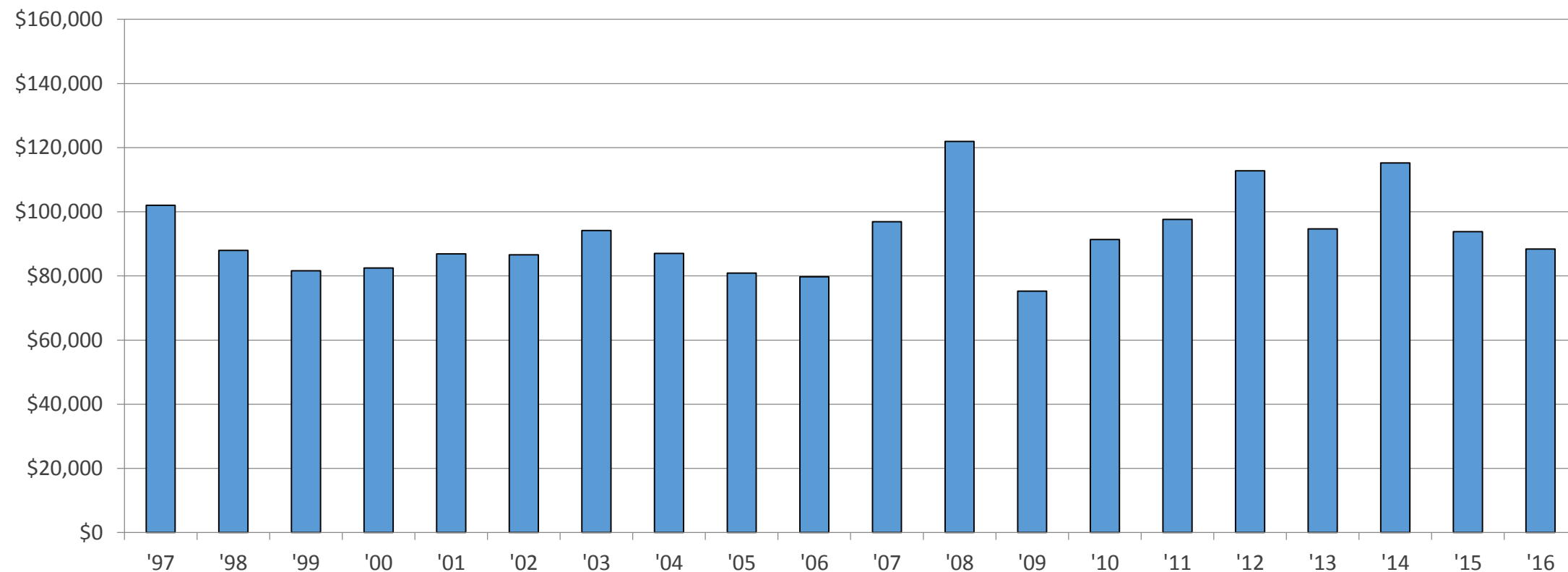




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Total Funding per Researcher[^]

Total Dollars per Researcher

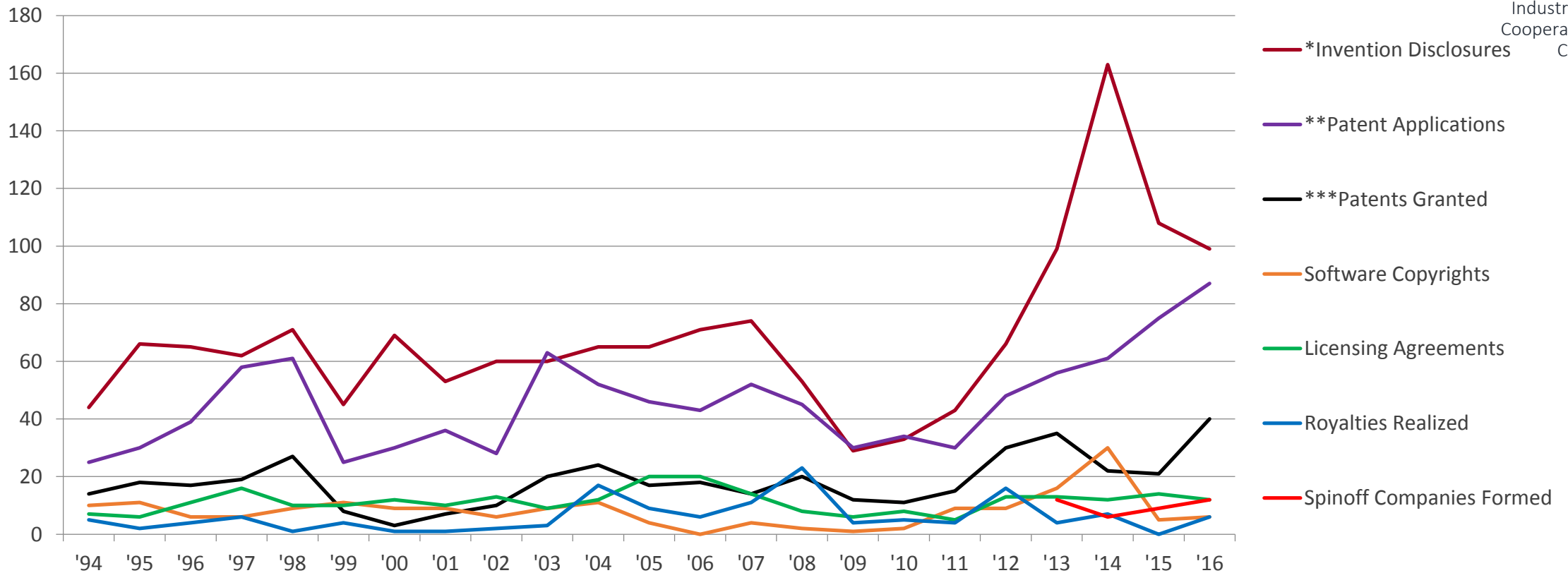


[^]Univ. & Other Cash Excluded

Total Intellectual Property & Commercialization Events 05-16



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*Invention Disclosures Outliers: 2014: CVDI = 40, BSAC = 20, E-Design = 12, CITeR = 17. 2015: BSAC = 32, 2016: BSAC = 31.

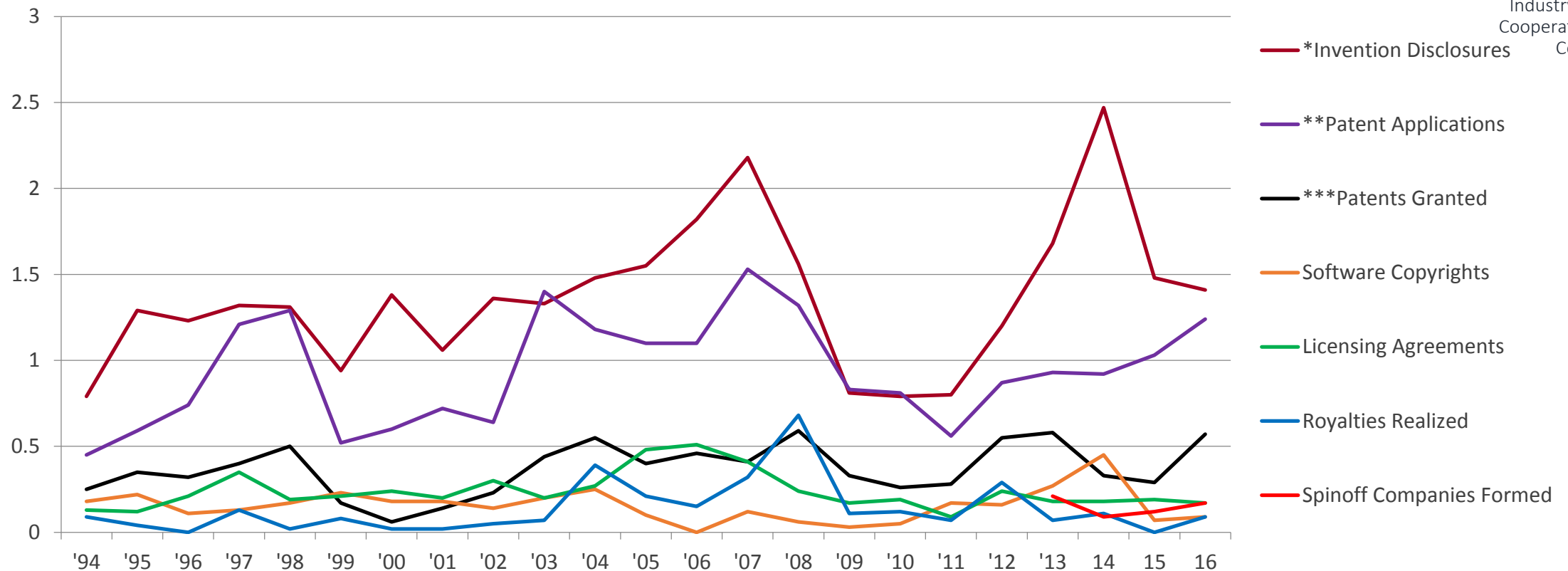
**Patent Applications Outliers: 2016: BSAC = 25, DDA = 9.

*** Patents Granted Outliers: 2016: BSAC = 6, DDA = 11.

Average Intellectual Property & Commercialization Events 05-16



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*Invention Disclosures Outliers: 2014: CVDI = 40, BSAC = 20, E-Design = 12, CITeR = 17. 2015: BSAC = 32.

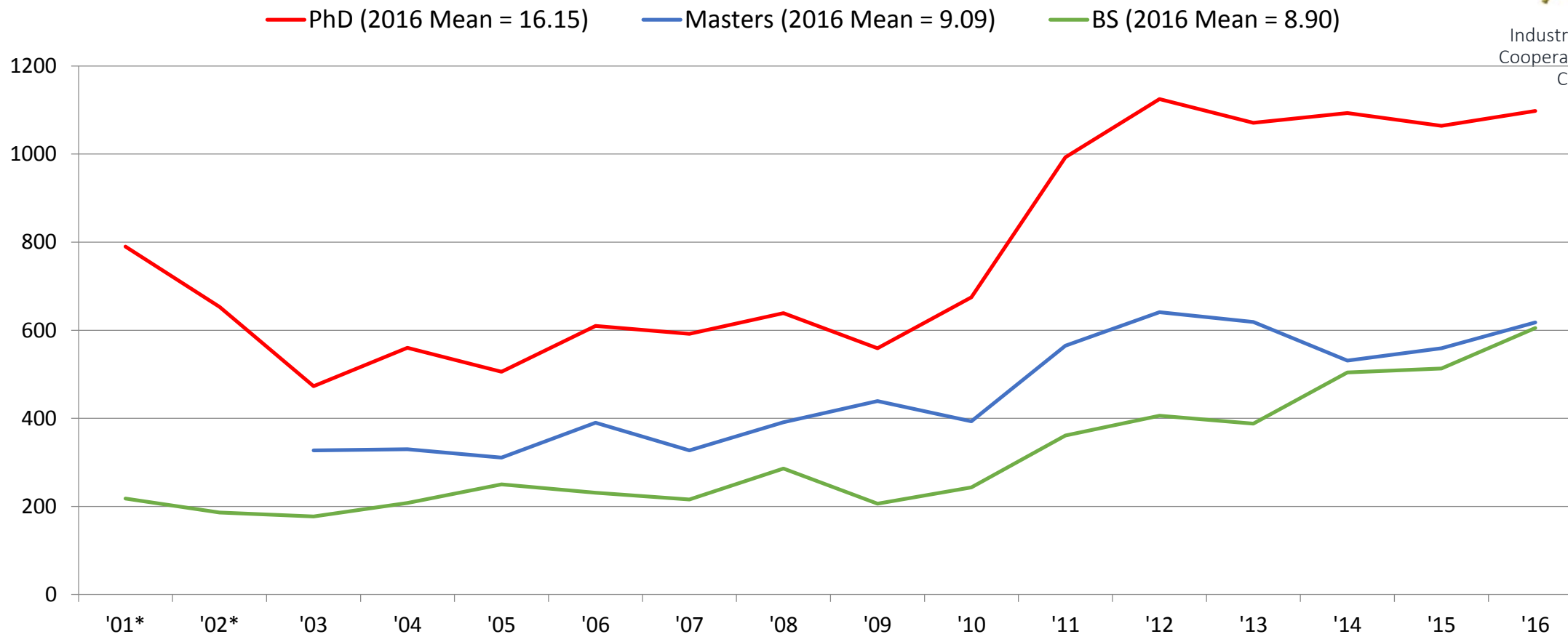
**Patent Applications Outliers: 2016: BSAC = 25, DDA = 9.

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Total Students Trained

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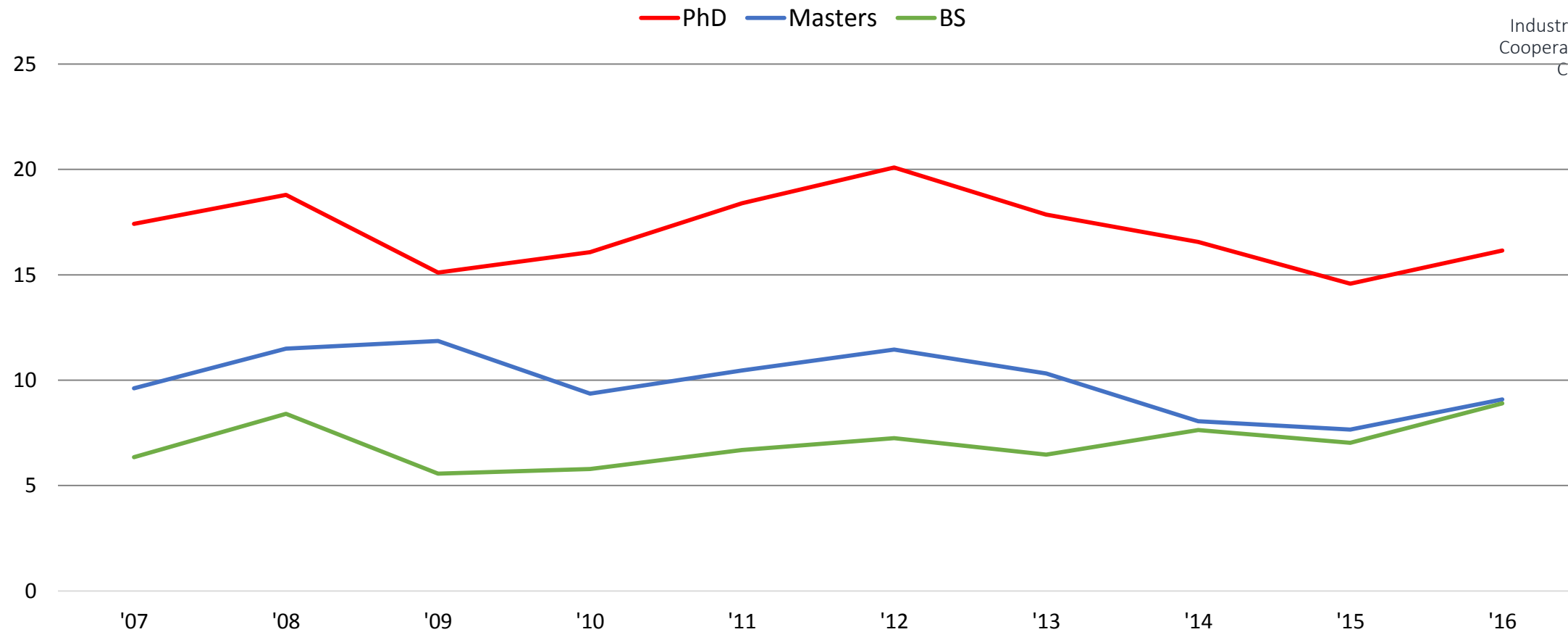


* For 2001 and 2002, the data on PhD and Master's students were collected together.



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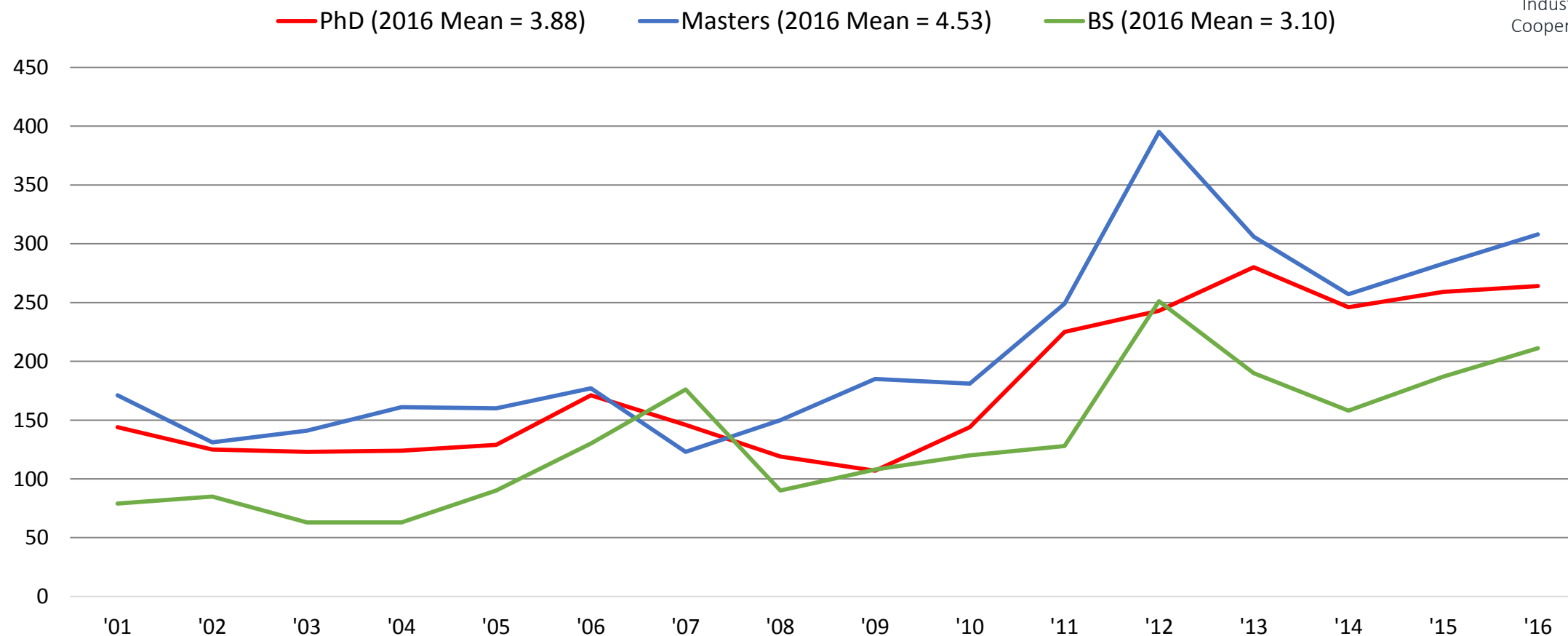
Average Students Trained





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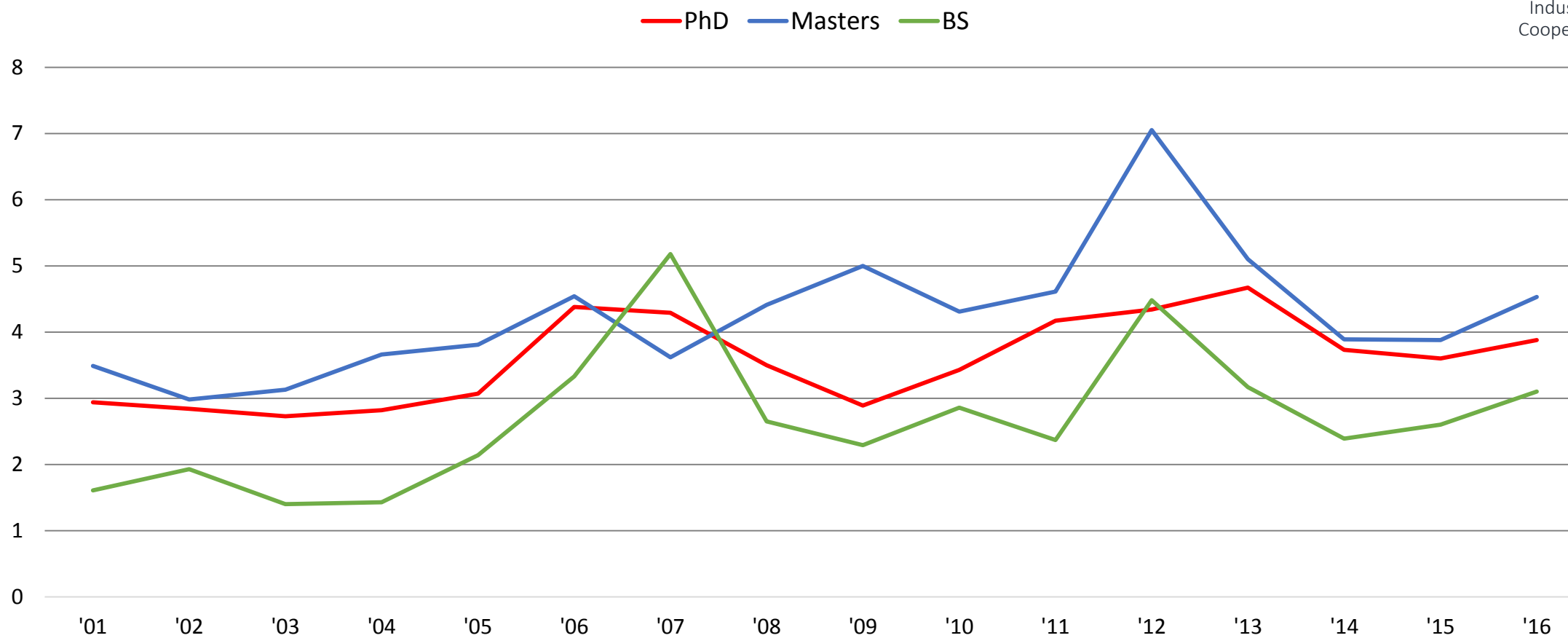
Total Students Graduated





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Average Students Graduated

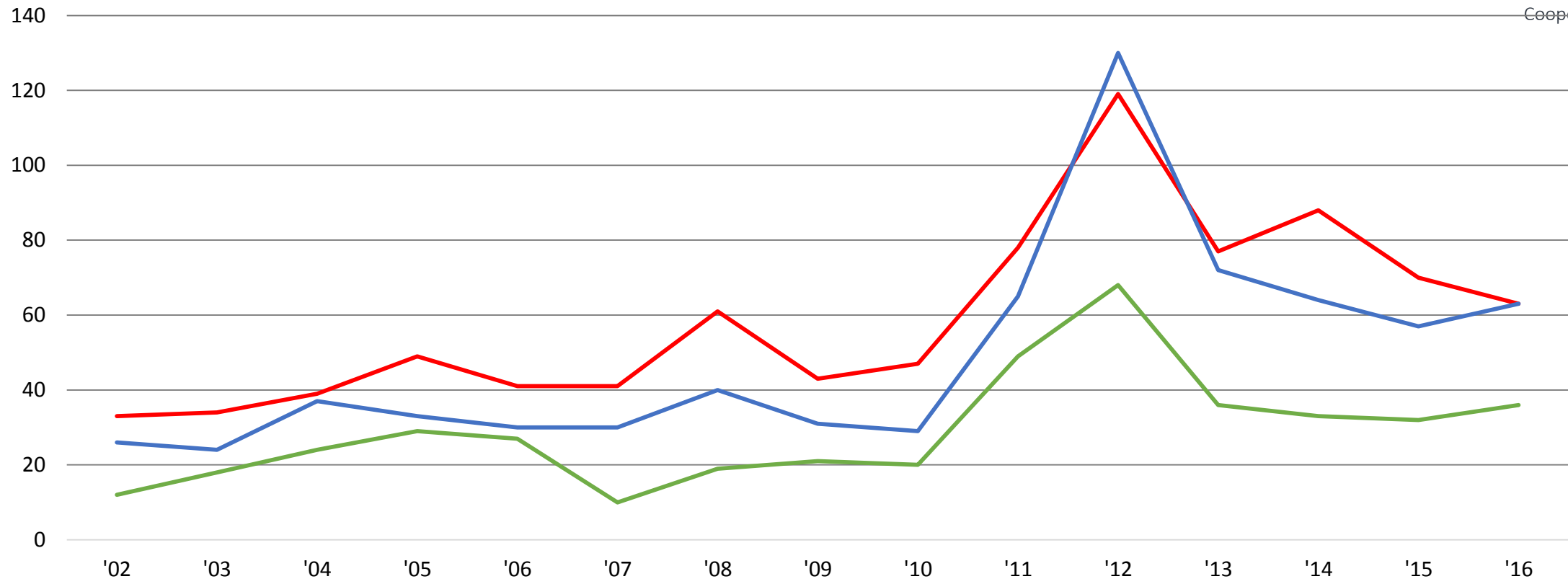


Total Graduates Hired by Industry & Government Members



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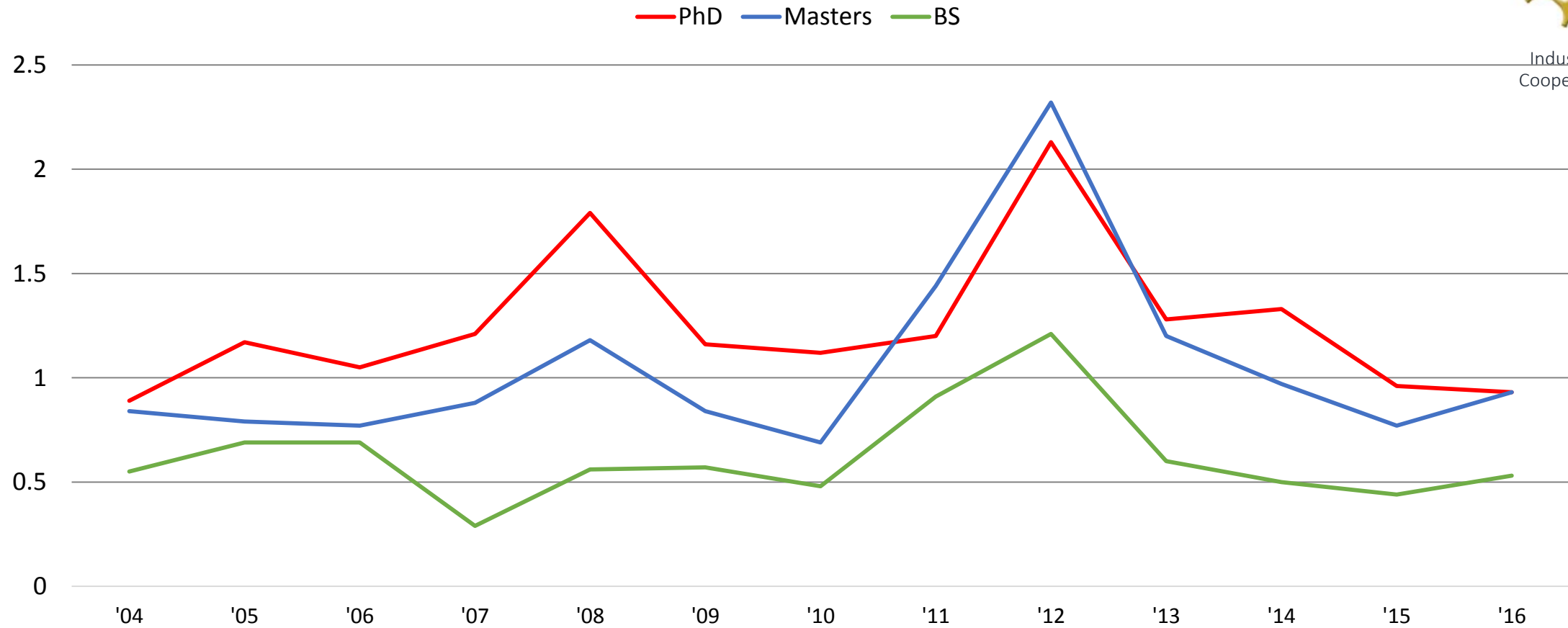
— PhD (2016 Mean = .93) — Masters (2016 Mean = .93) — BS (2016 Mean = .53)



Average Graduates Hired by Industry & Government Members



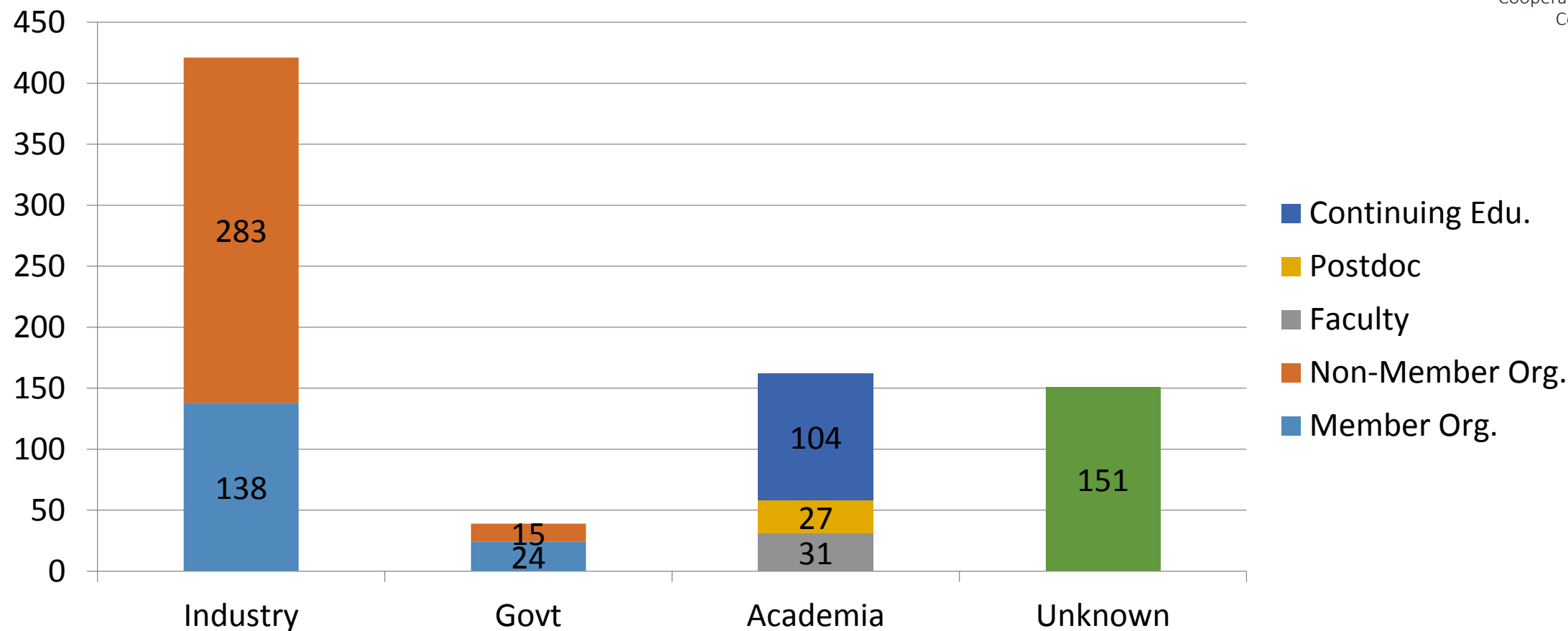
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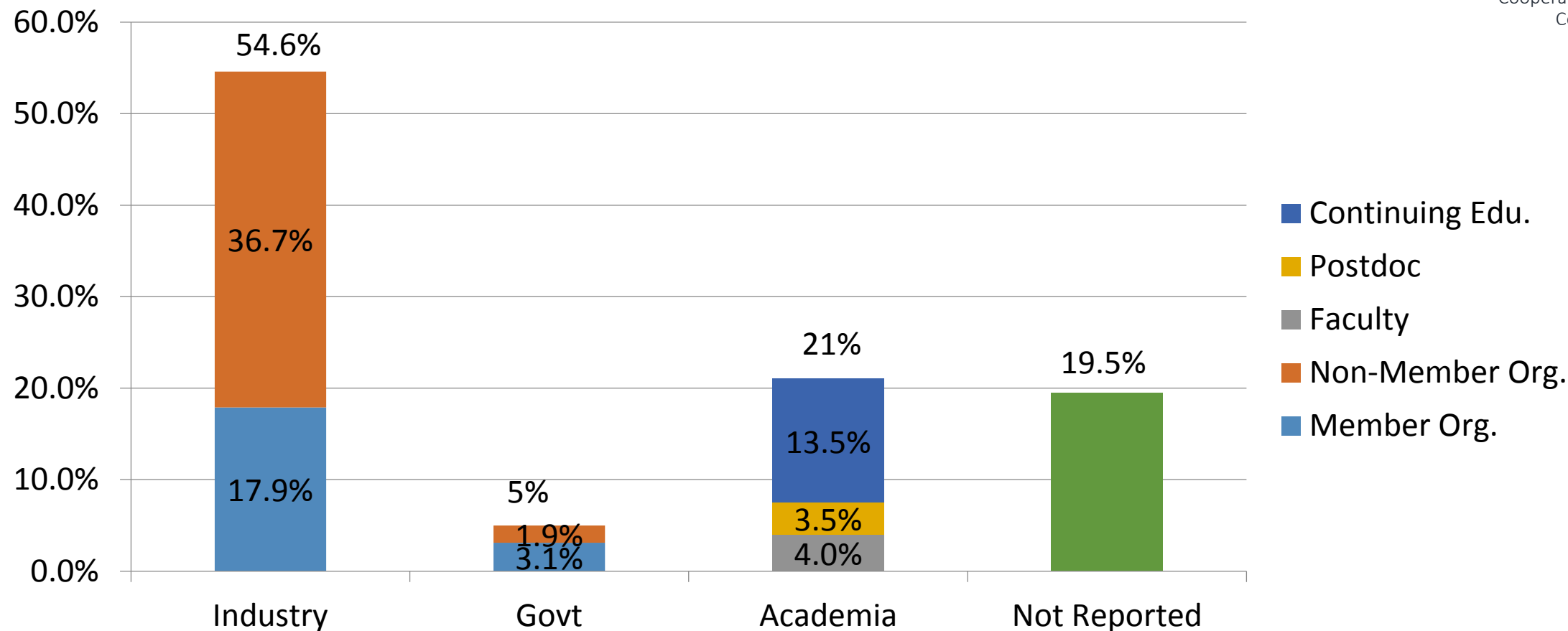
IUCRC Alumni Career Outcomes: Total FY2016 Graduates Hired





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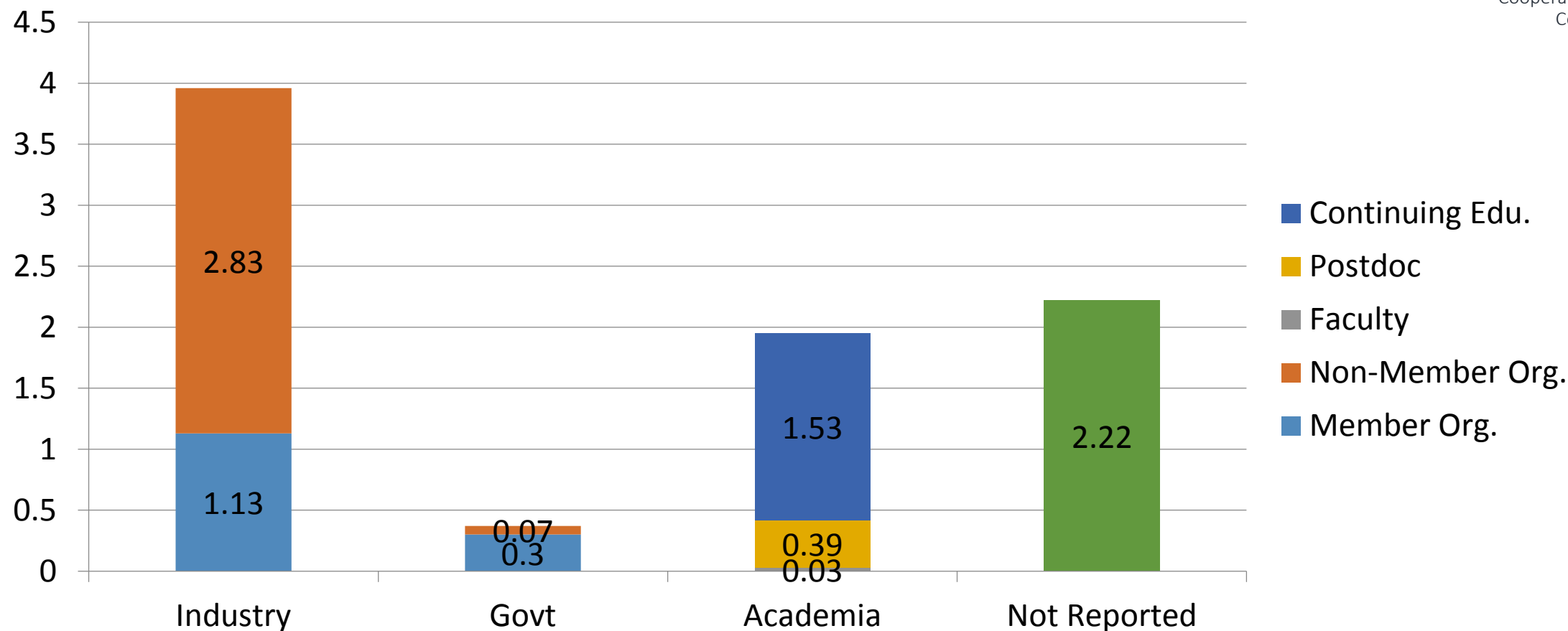
IUCRC Alumni Career Outcomes: Percent of FY2016 Graduates Hired





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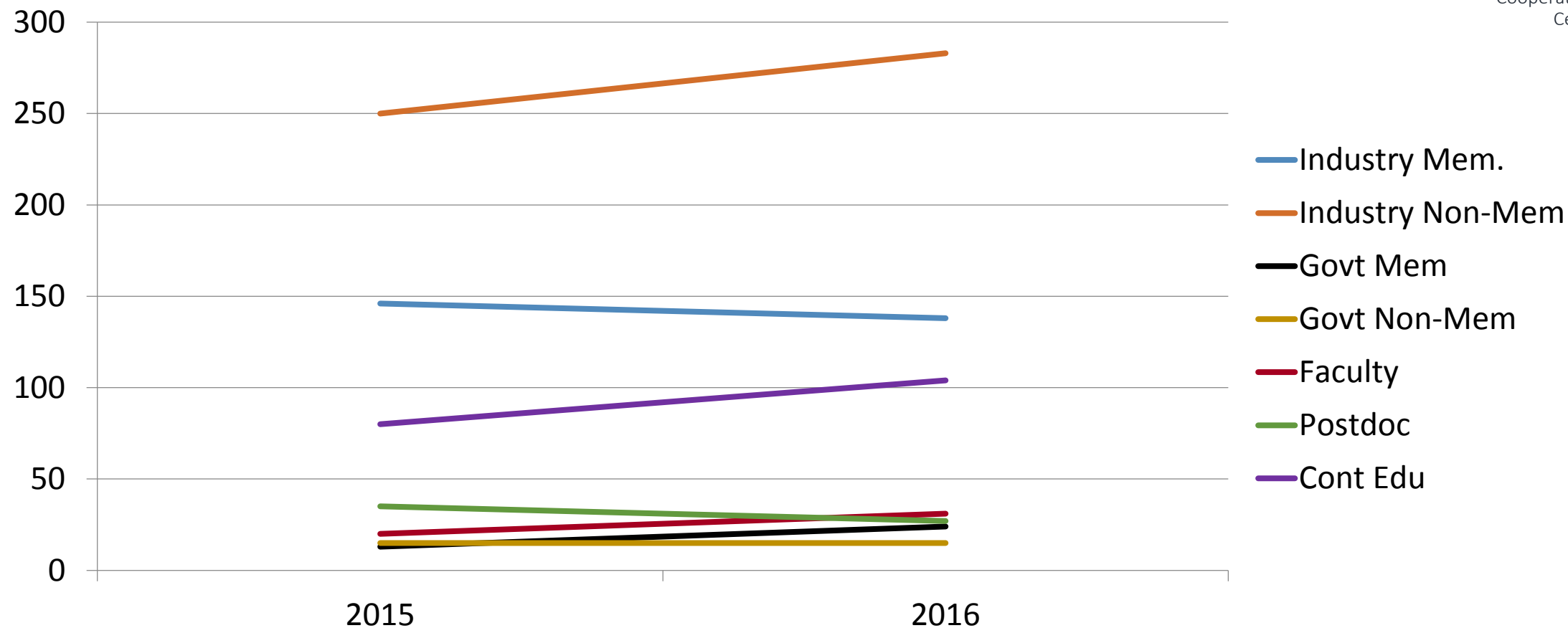
IUCRC Alumni Career Outcomes: Mean FY2016 Graduates Hired per Center





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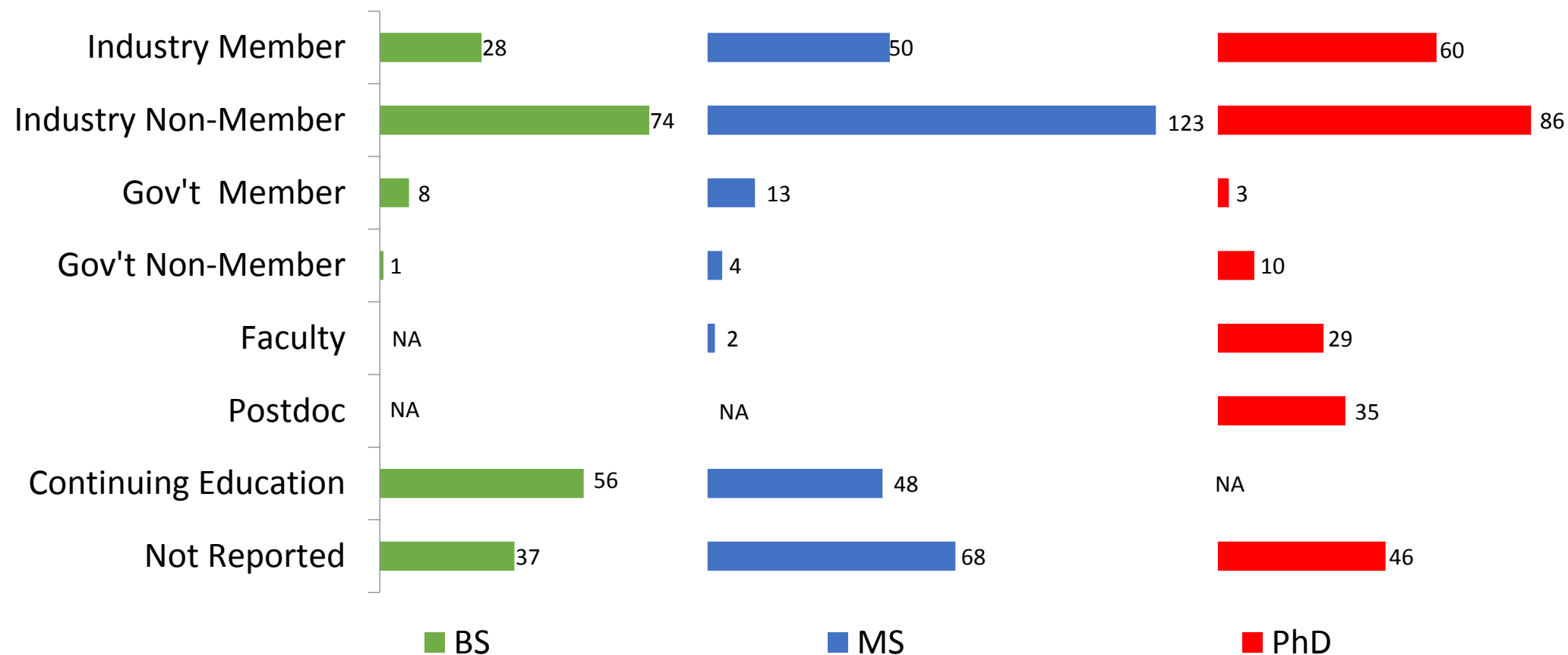
IUCRC Alumni Career Outcomes: Total Graduates Hired over time





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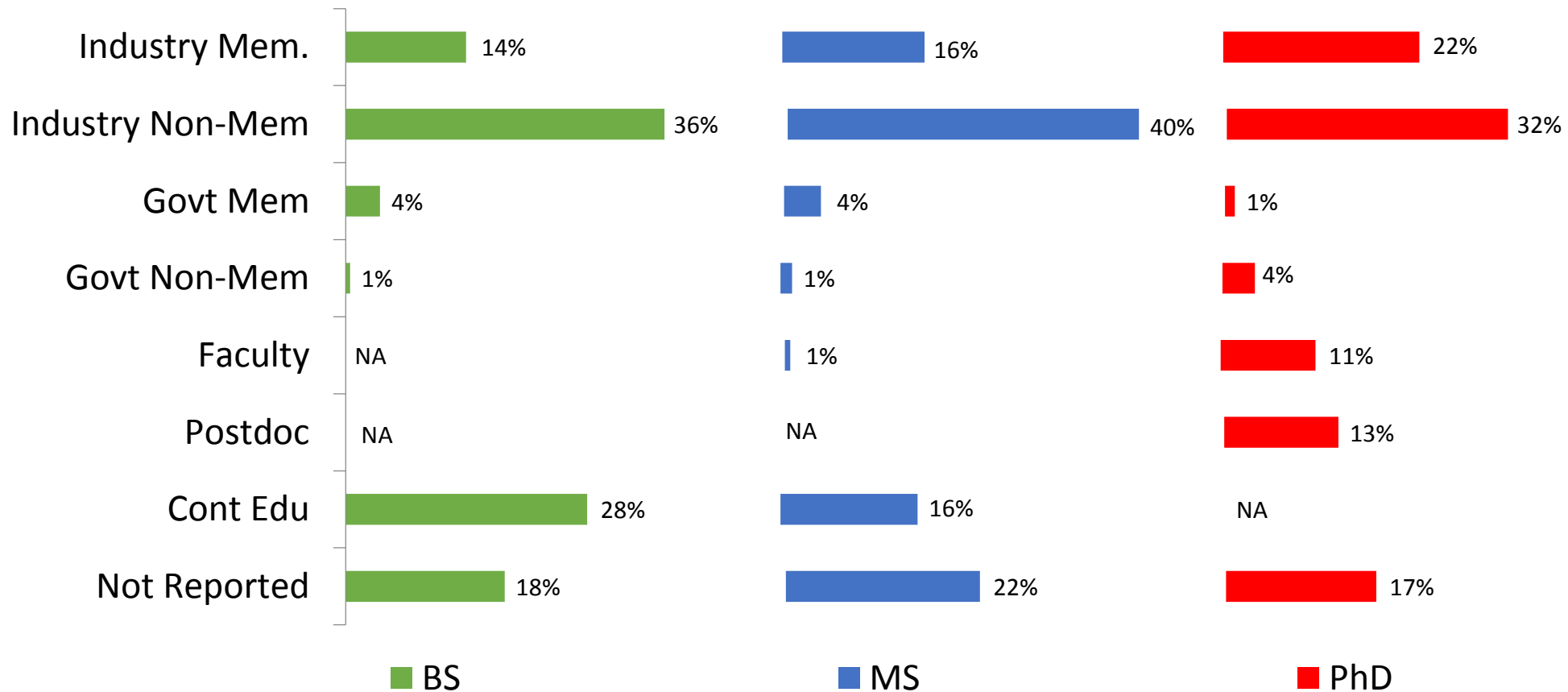
IUCRC Alumni Career Outcomes: Total FY2016 Graduates Hired by Degree Level



IUCRC Alumni Career Outcomes: Percent of FY2016 Graduates Hired by Degree Level



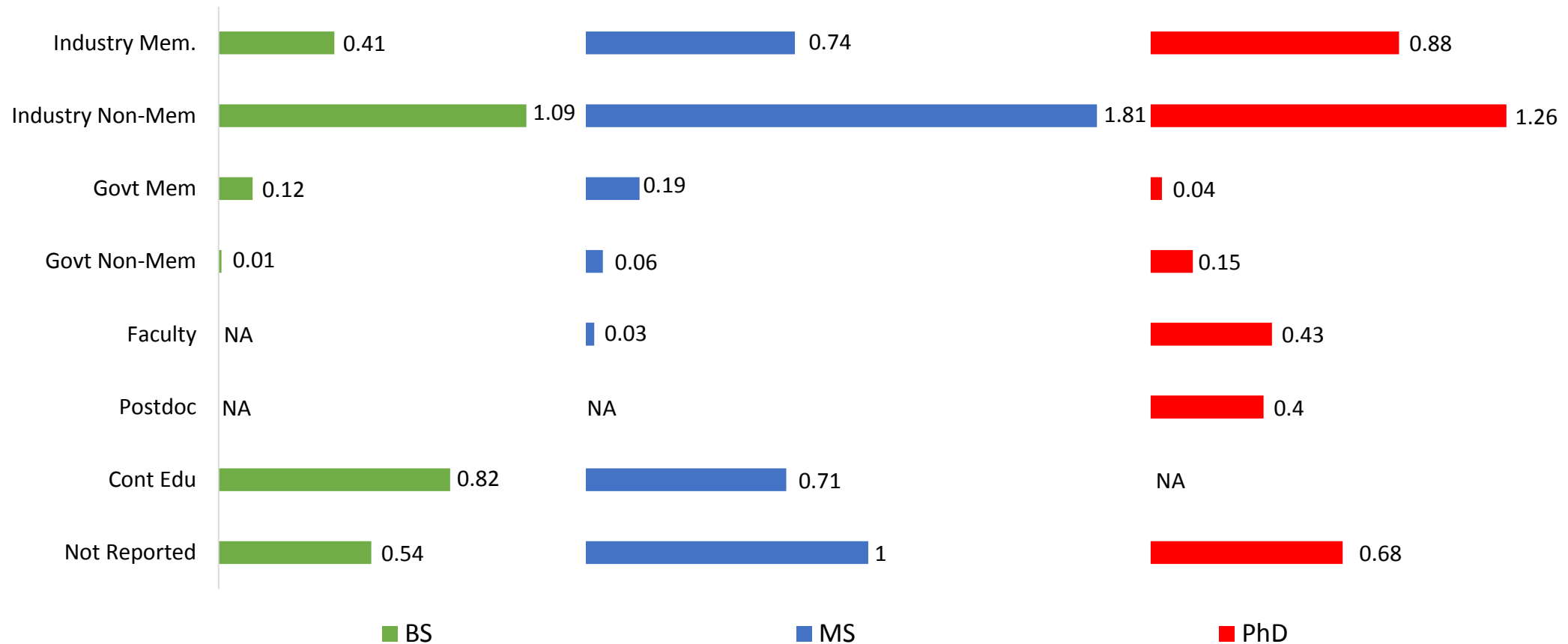
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IUCRC Alumni Career Outcomes: Average FY2016 Graduates Hired per Center by Degree Level



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CISE & ENG Partnership

Some Comparisons and Recent Trends



Growth in N of CISE & ENG Centers over time

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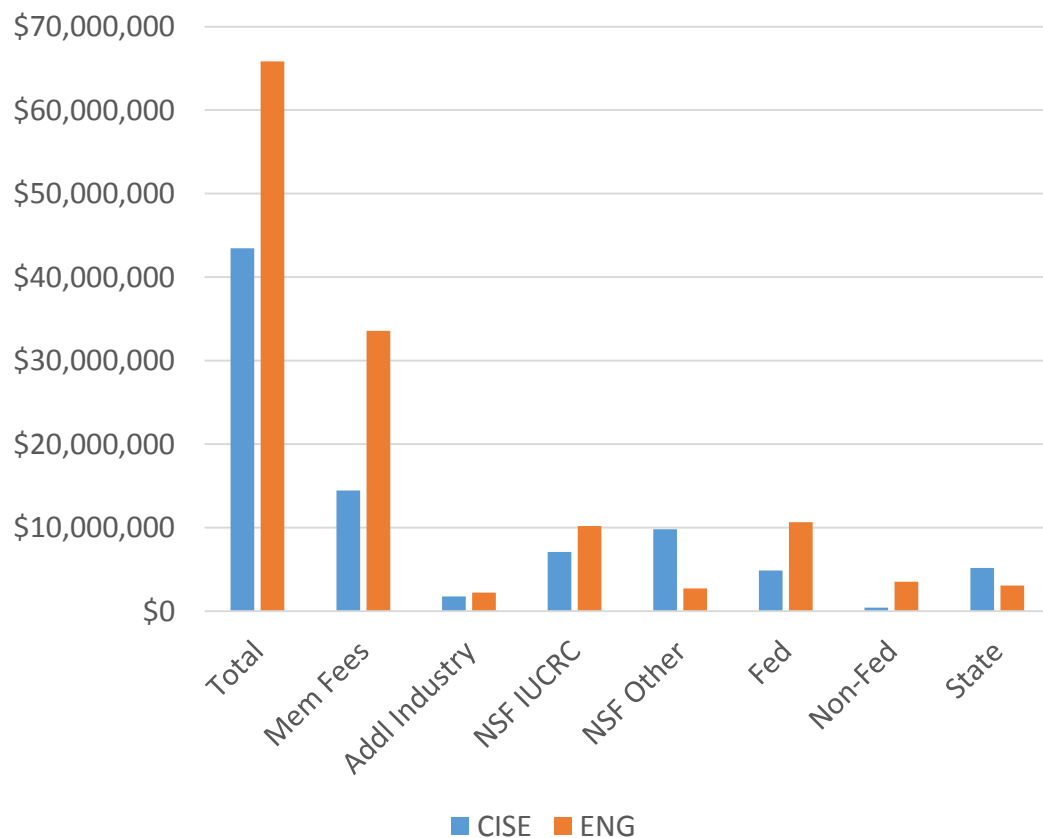




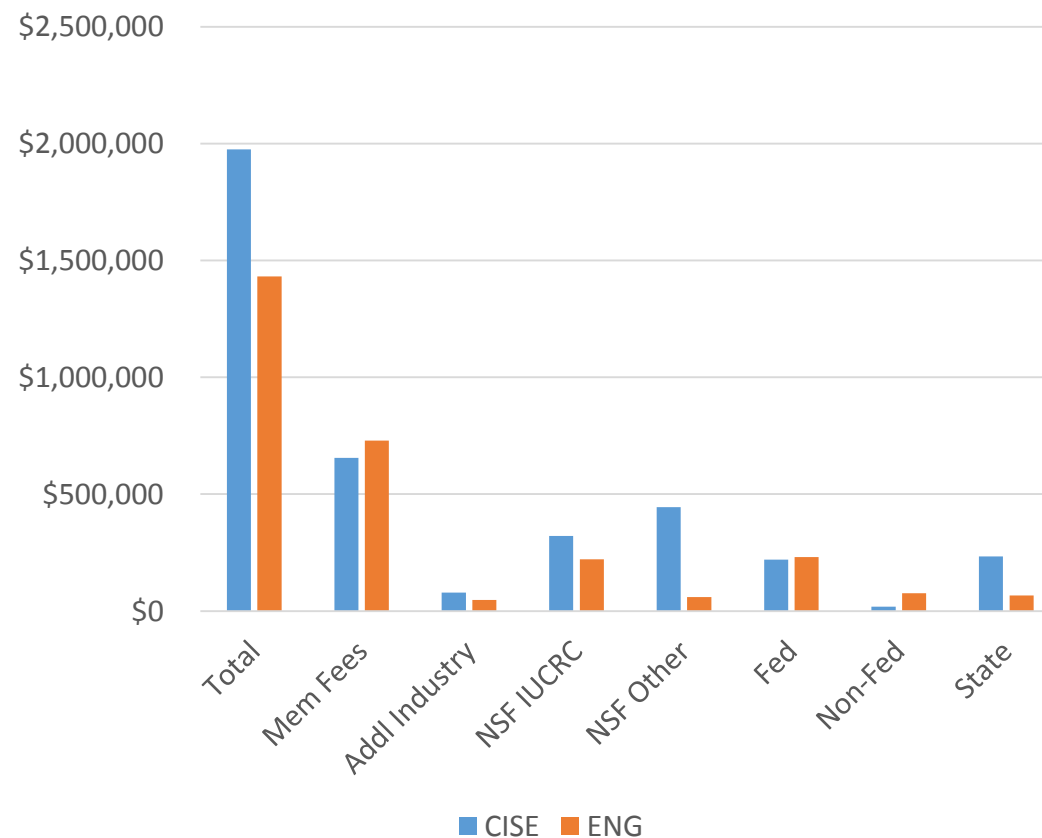
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2016 CISE & ENG: Funding by Source

Total Dollars



Average Dollars

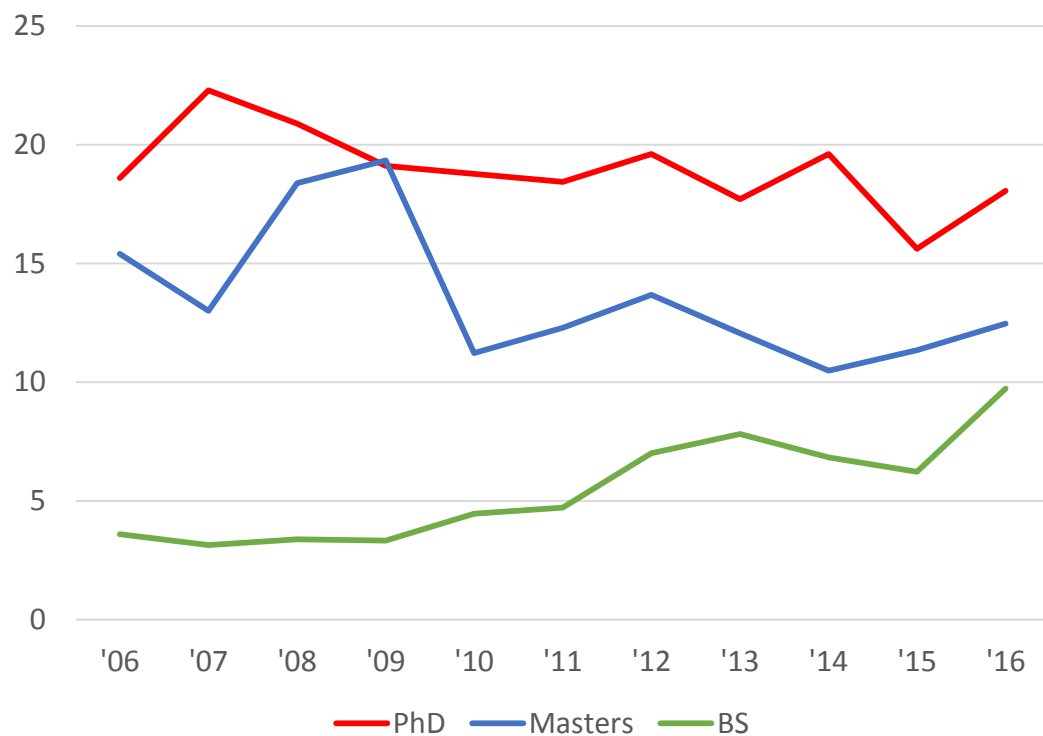




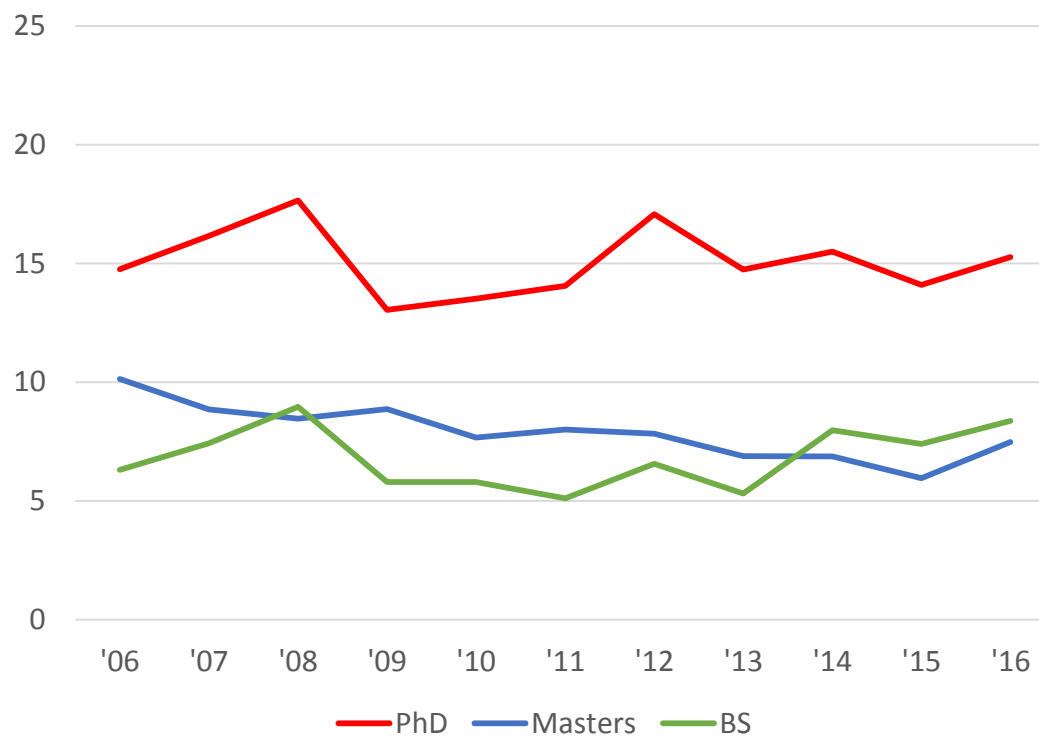
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CISE & ENG: Average Students Trained

CISE



ENG

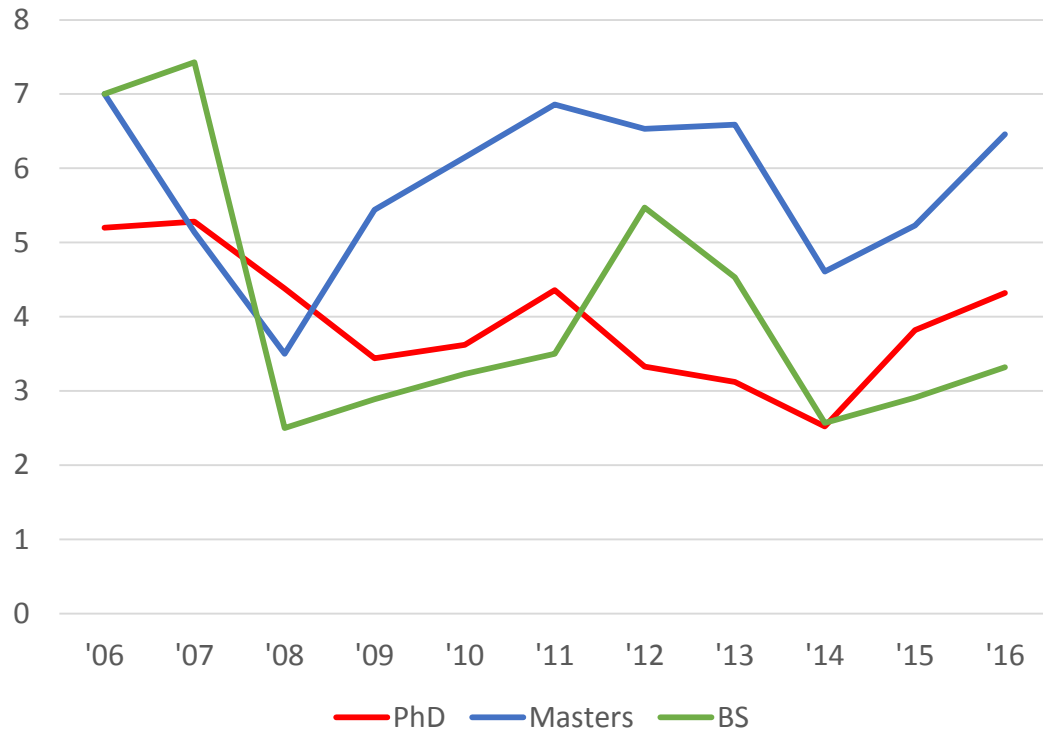




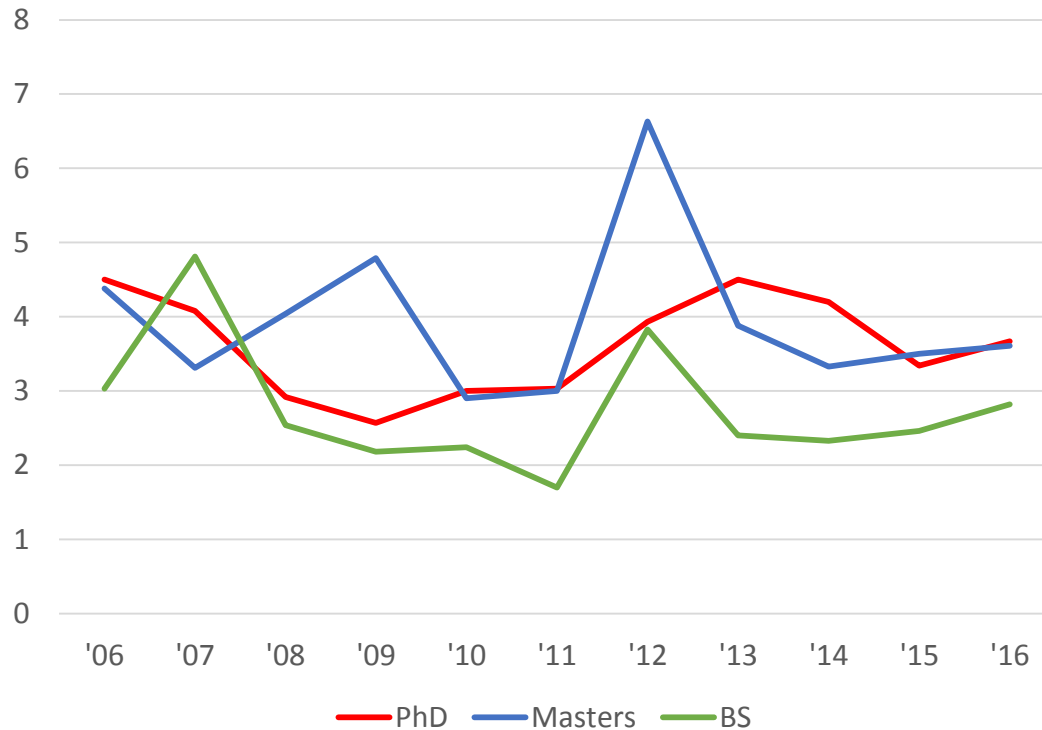
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CISE & ENG: Average Students Graduated

CISE



ENG



CISE & ENG: Average Students Hired by Members

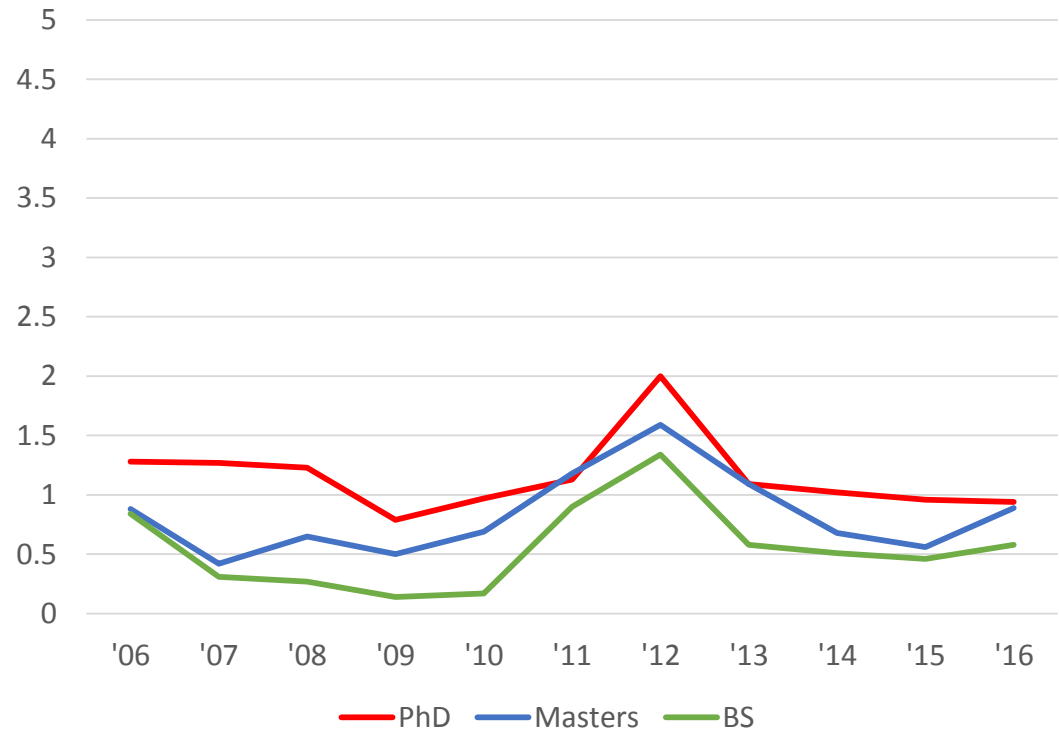


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CISE



ENG

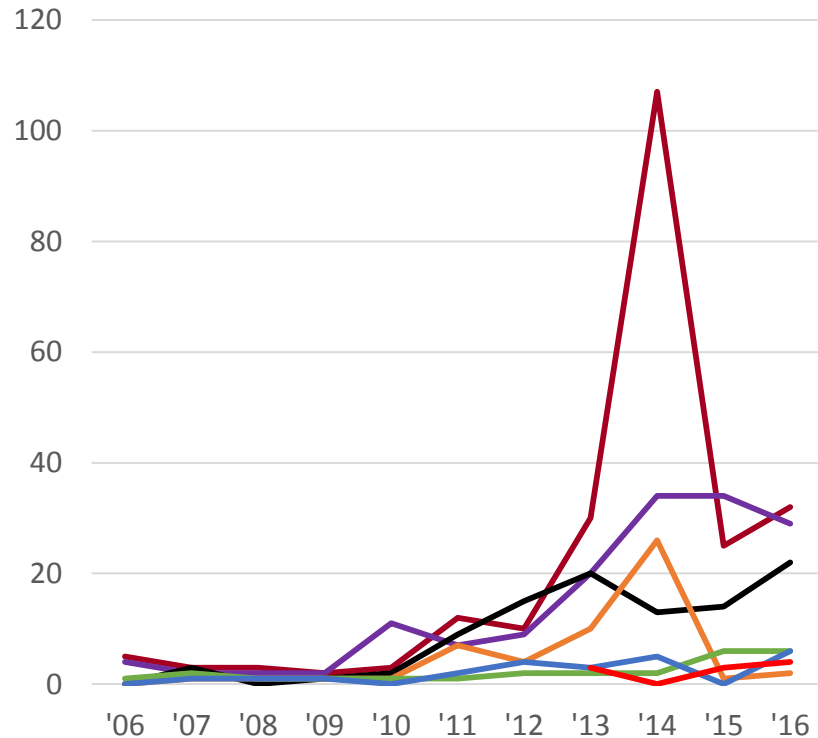


CISE & ENG: Total Intellectual Property & Commercialization Events 06-16

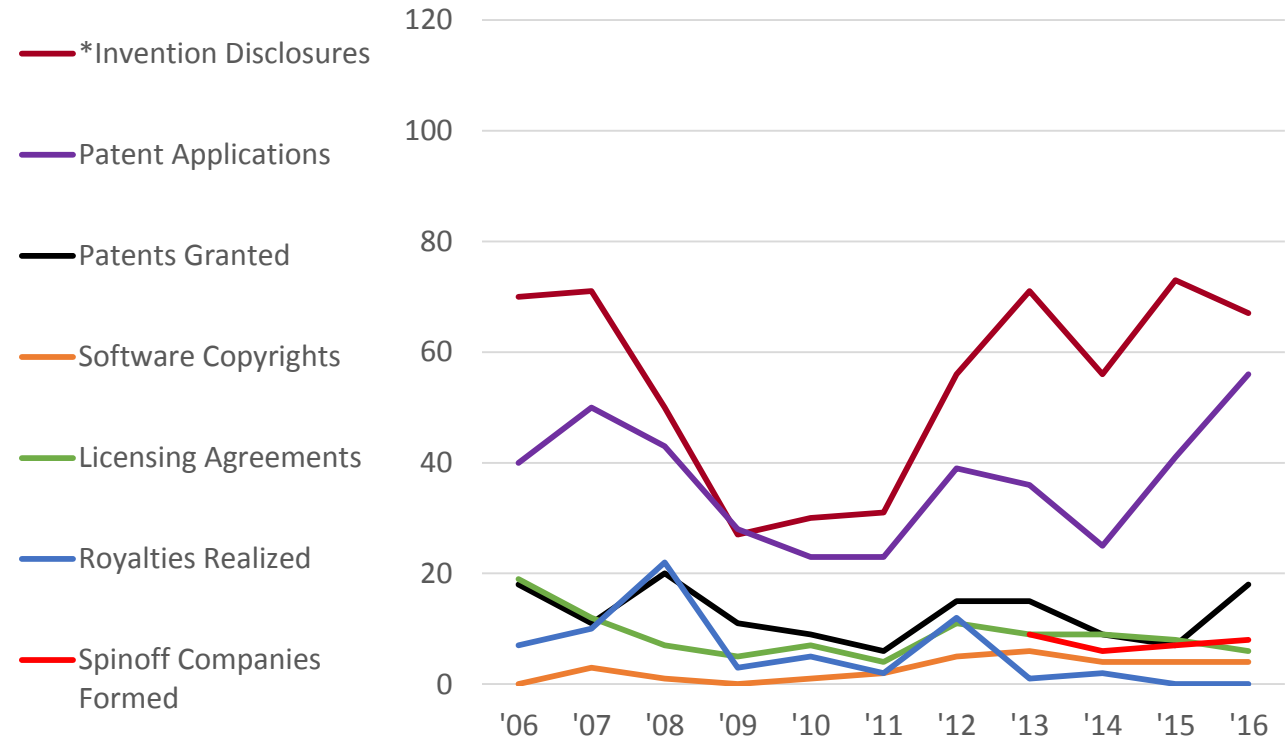


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CISE



ENG



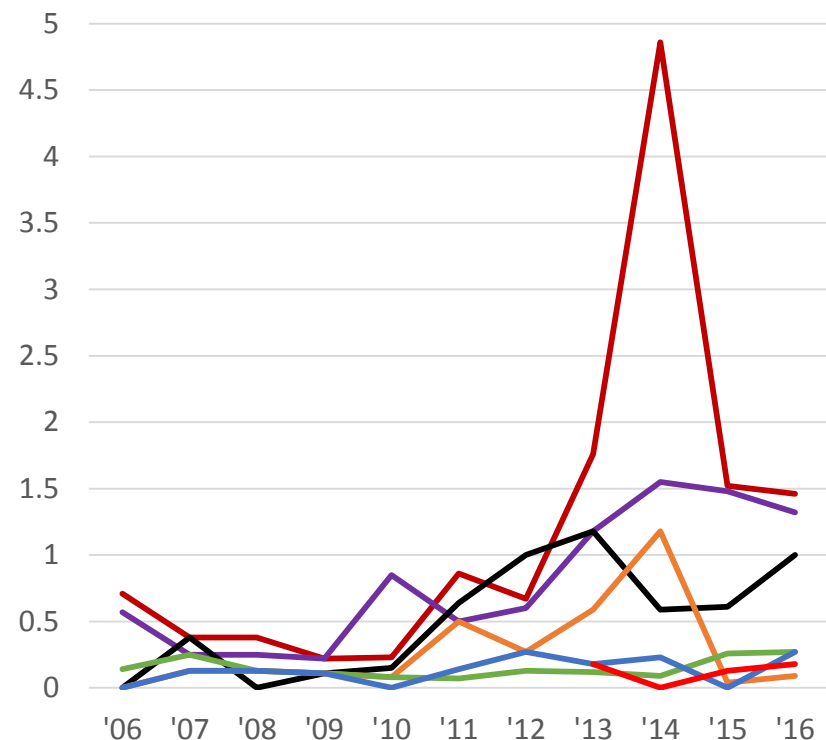
*Invention Disclosures Outliers: CISE 2014: CVDI = 40, CITeR = 17, E-Design = 12. ENG 2014: BSAC = 20. ENG 2015: BSAC = 32, ENG 2016: BSAC = 25.



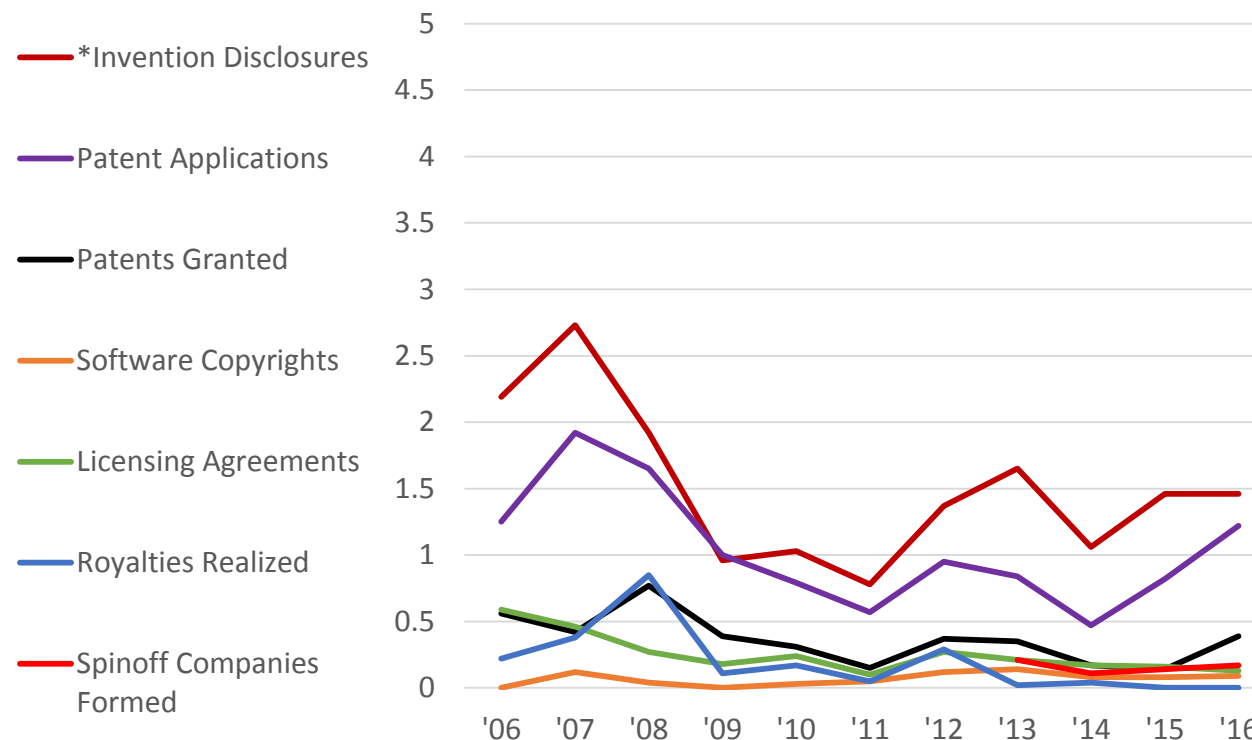
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CISE & ENG: Average Intellectual Property & Commercialization Events 06-16

CISE



ENG



*Invention Disclosures Outliers: CISE 2014: CVDI = 40, CITeR = 17, E-Design = 12. ENG 2014: BSAC = 20. ENG 2015: BSAC = 32, , ENG 2016: BSAC = 25.



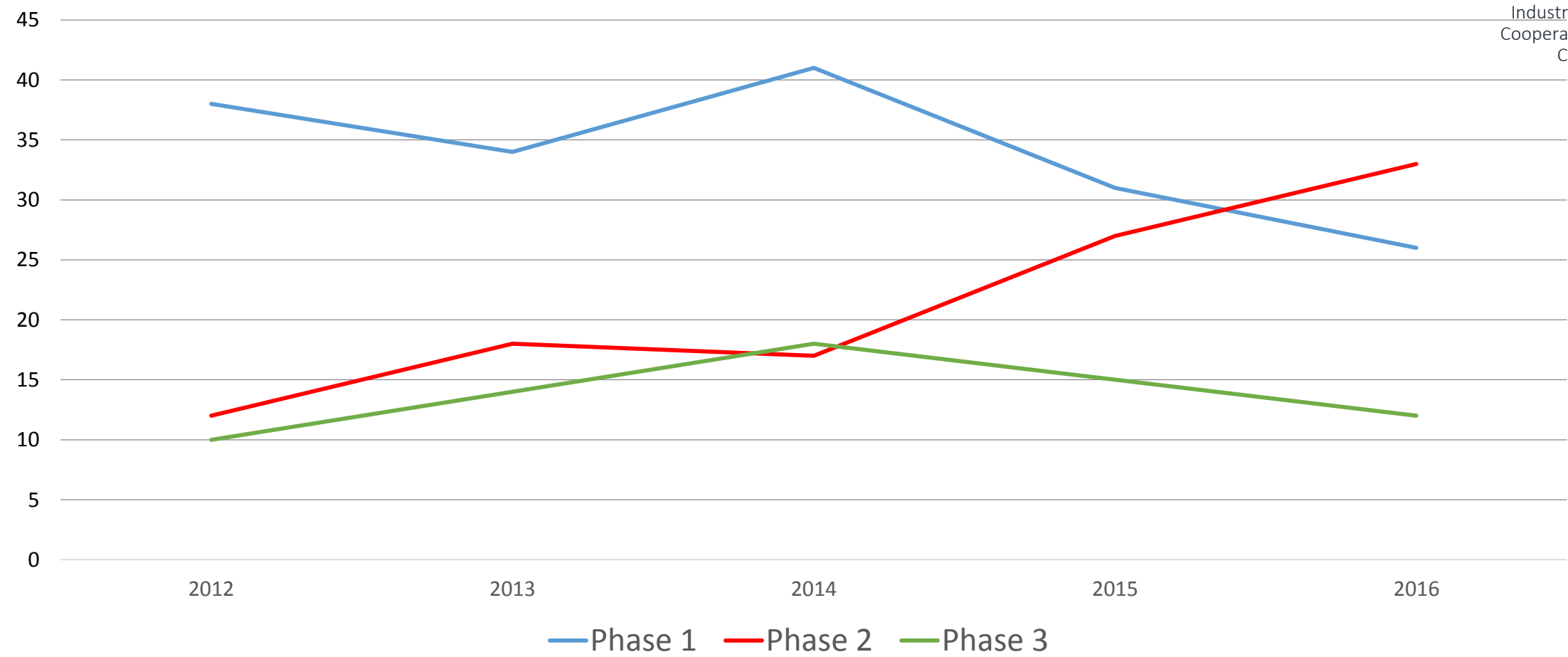
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2016 Phase-based comparison



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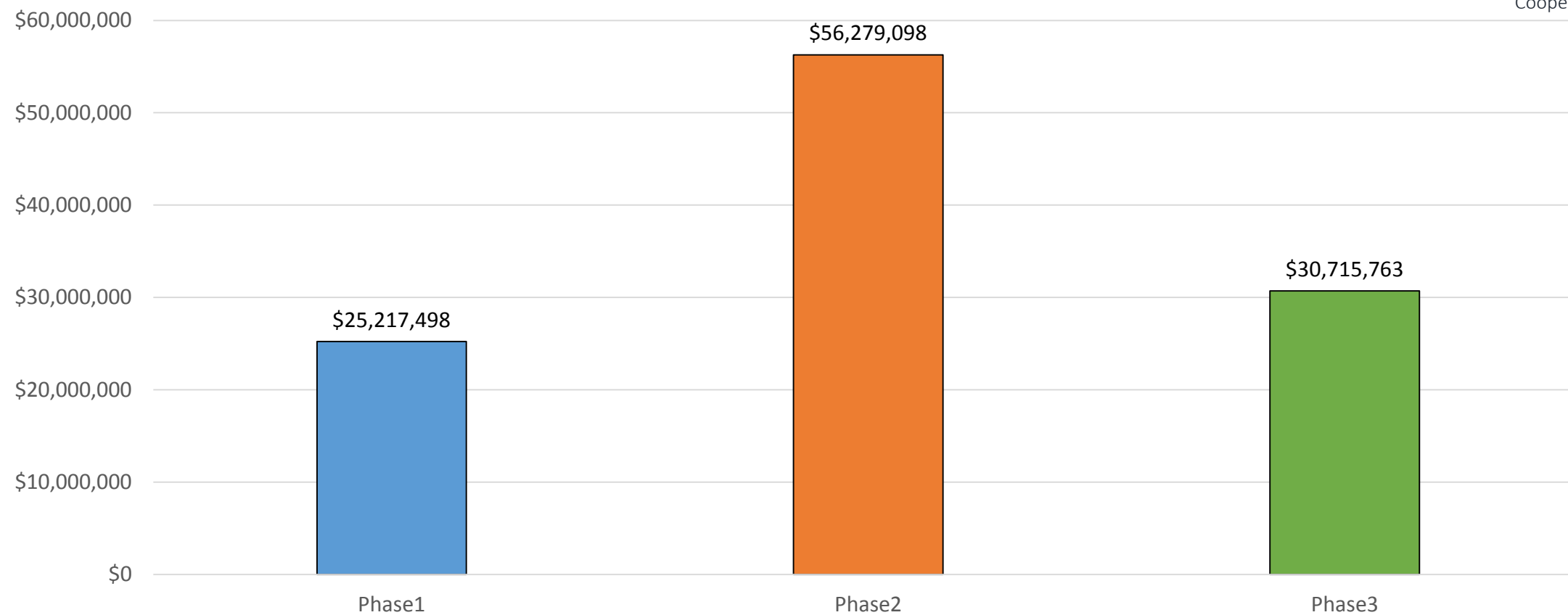
N of Centers by Phase





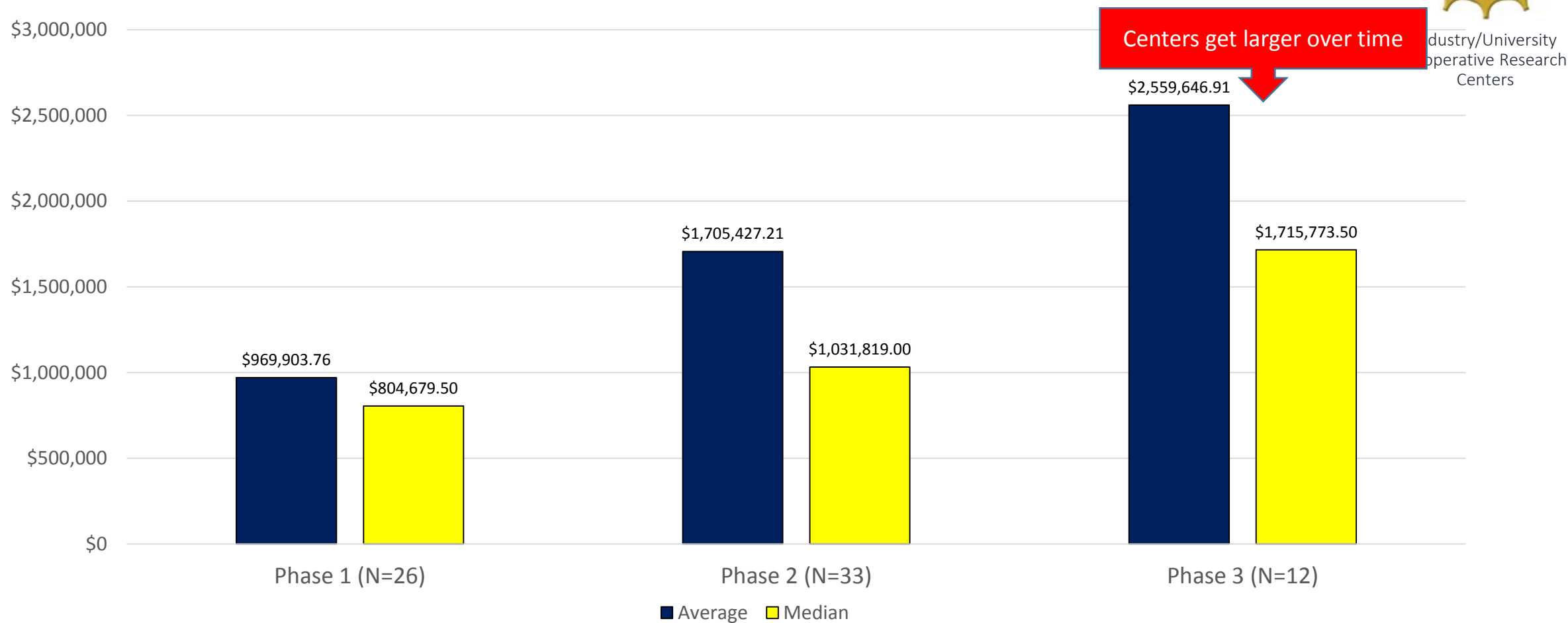
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Total Program Funding





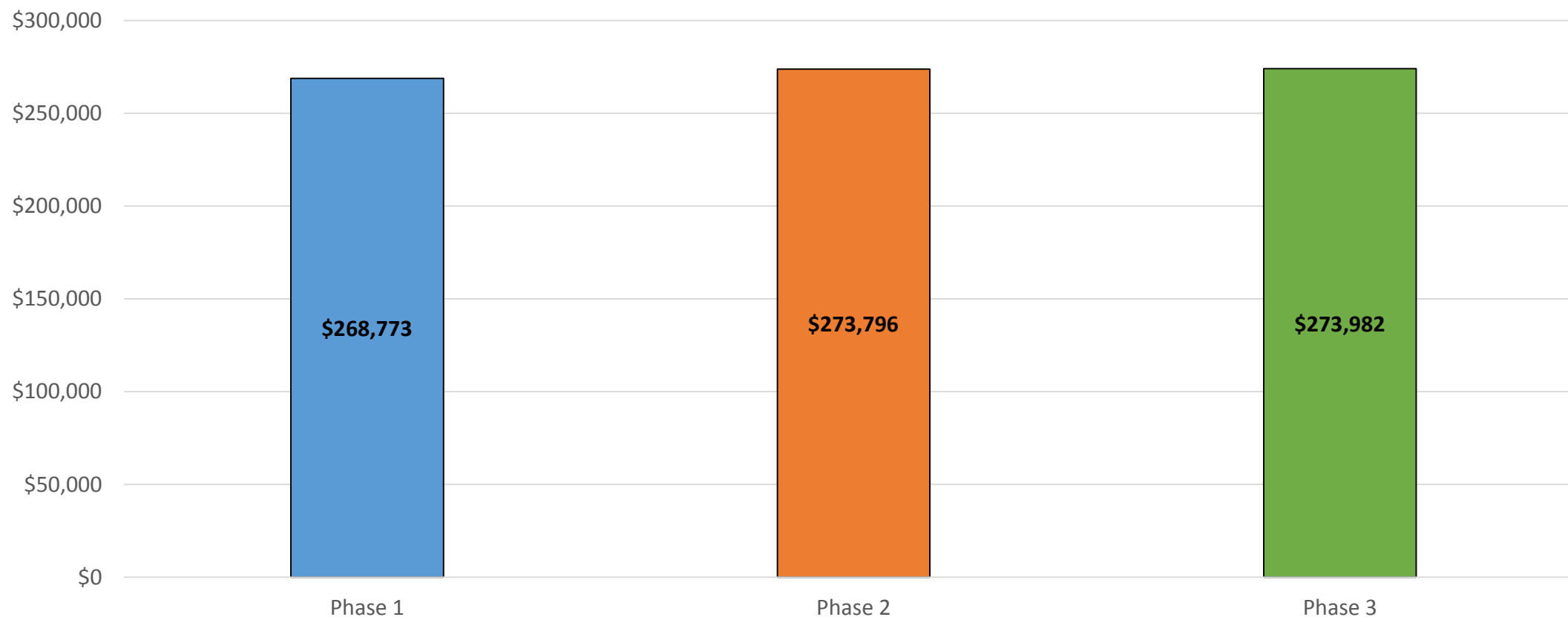
Average & Median Total Center Funding





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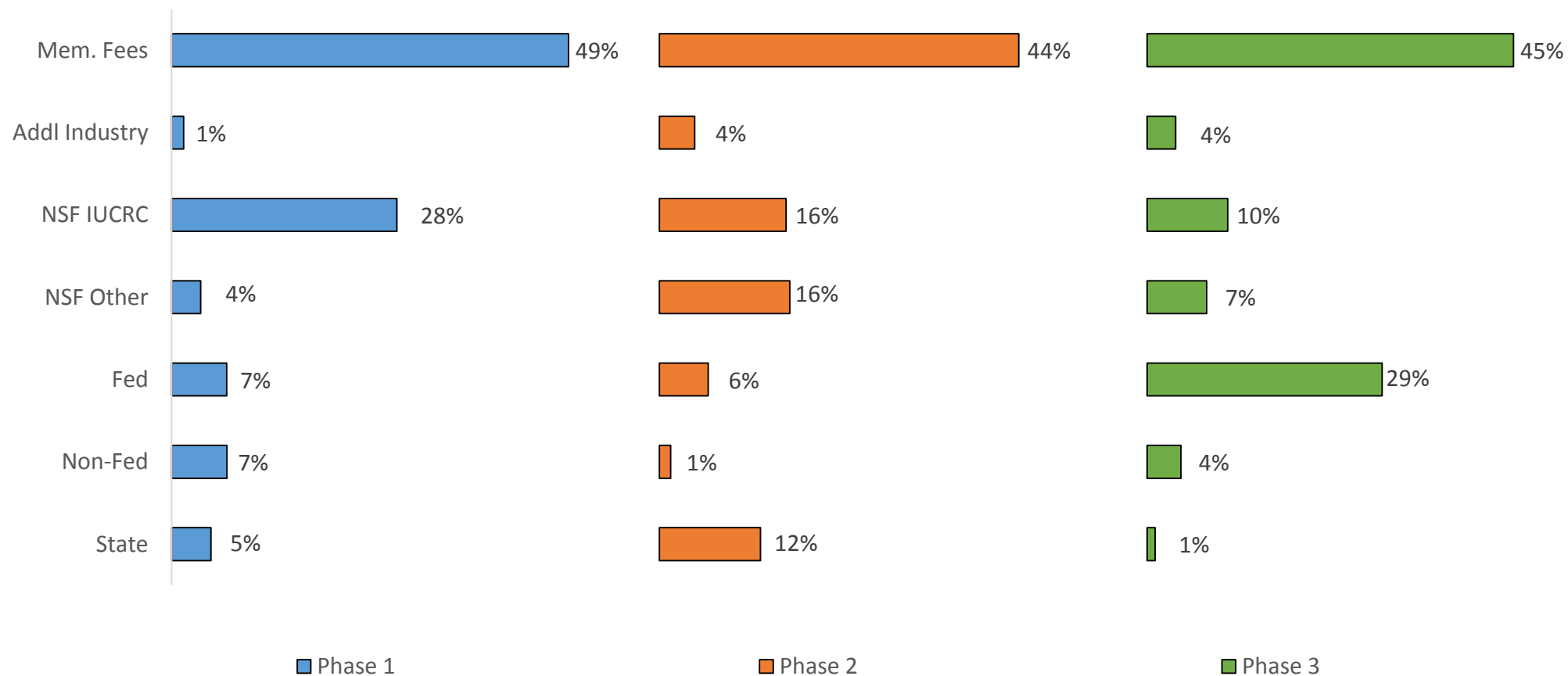
Average NSF IUCRC Awards & Supplements





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Total Funding by Source in Percentages

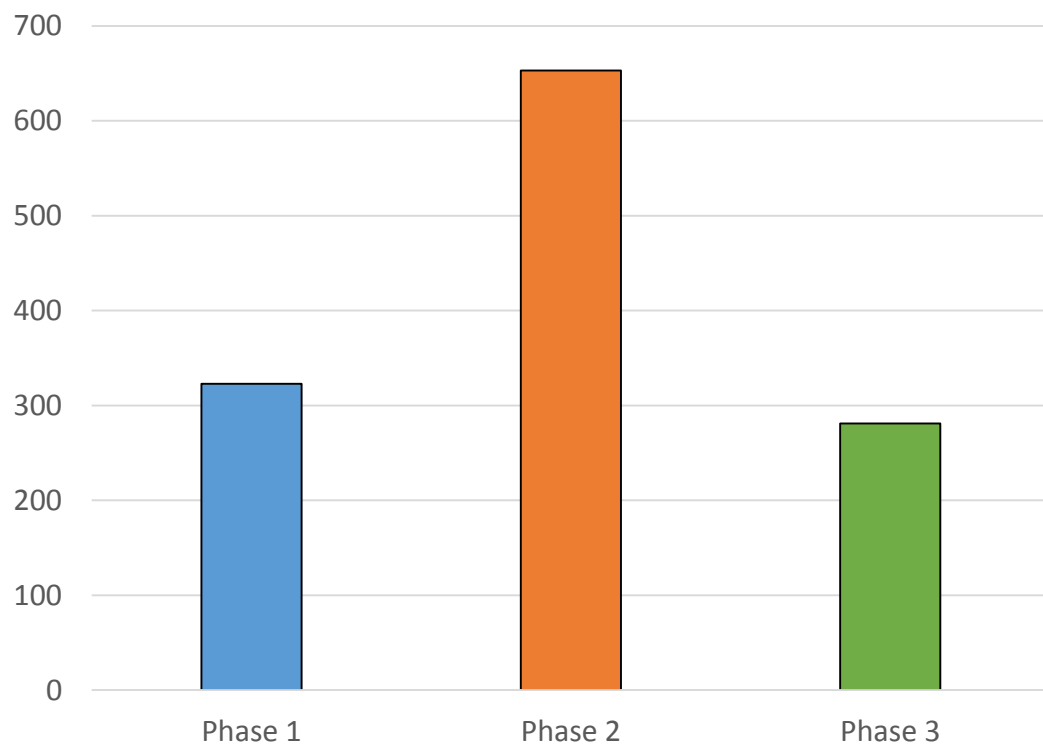




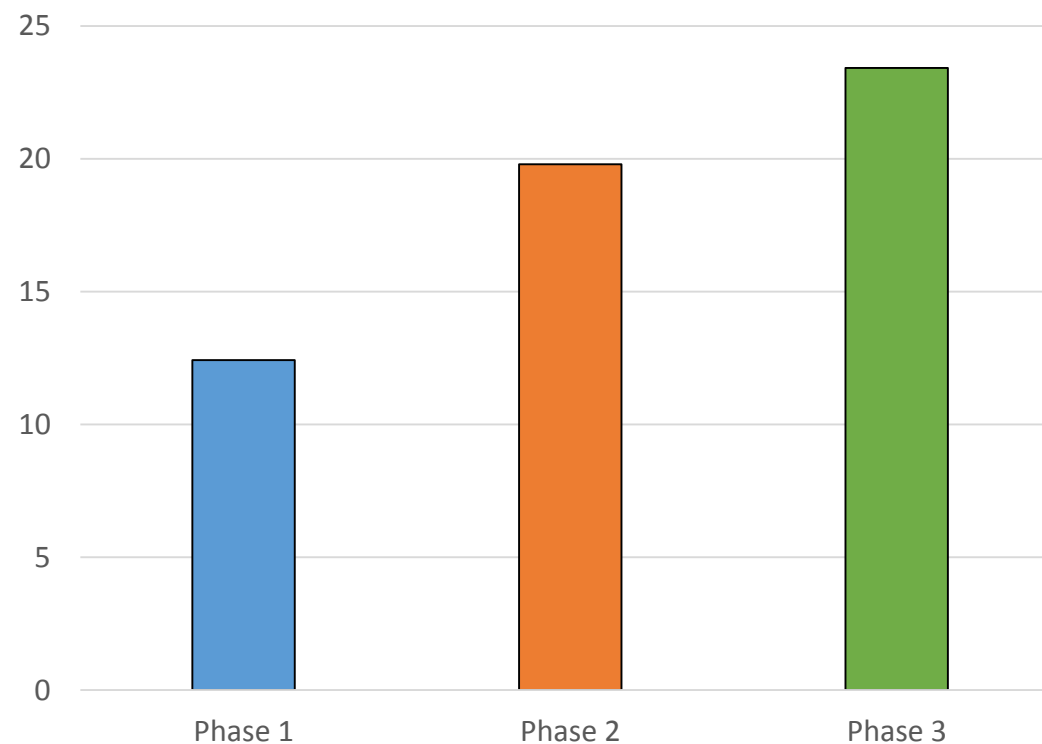
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Industrial Memberships

Total Number of Memberships



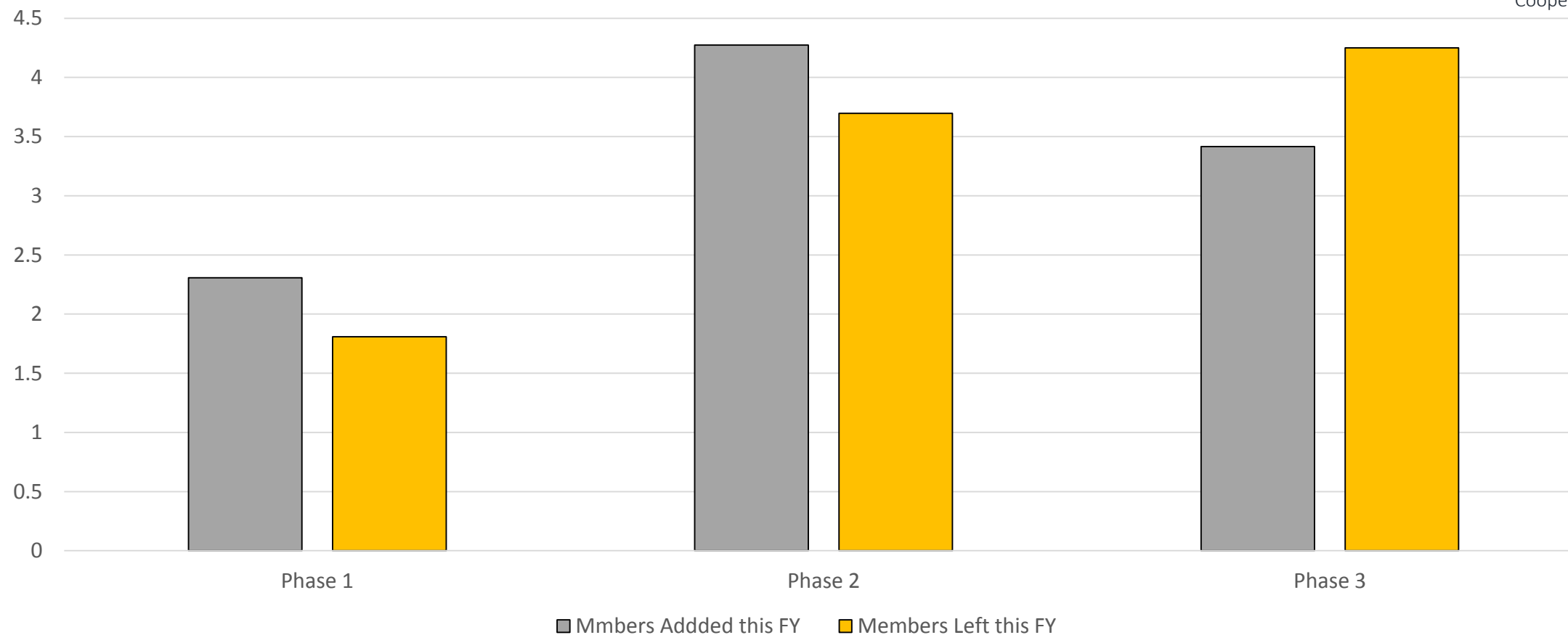
Average Number of Memberships





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Average Membership Turn Over

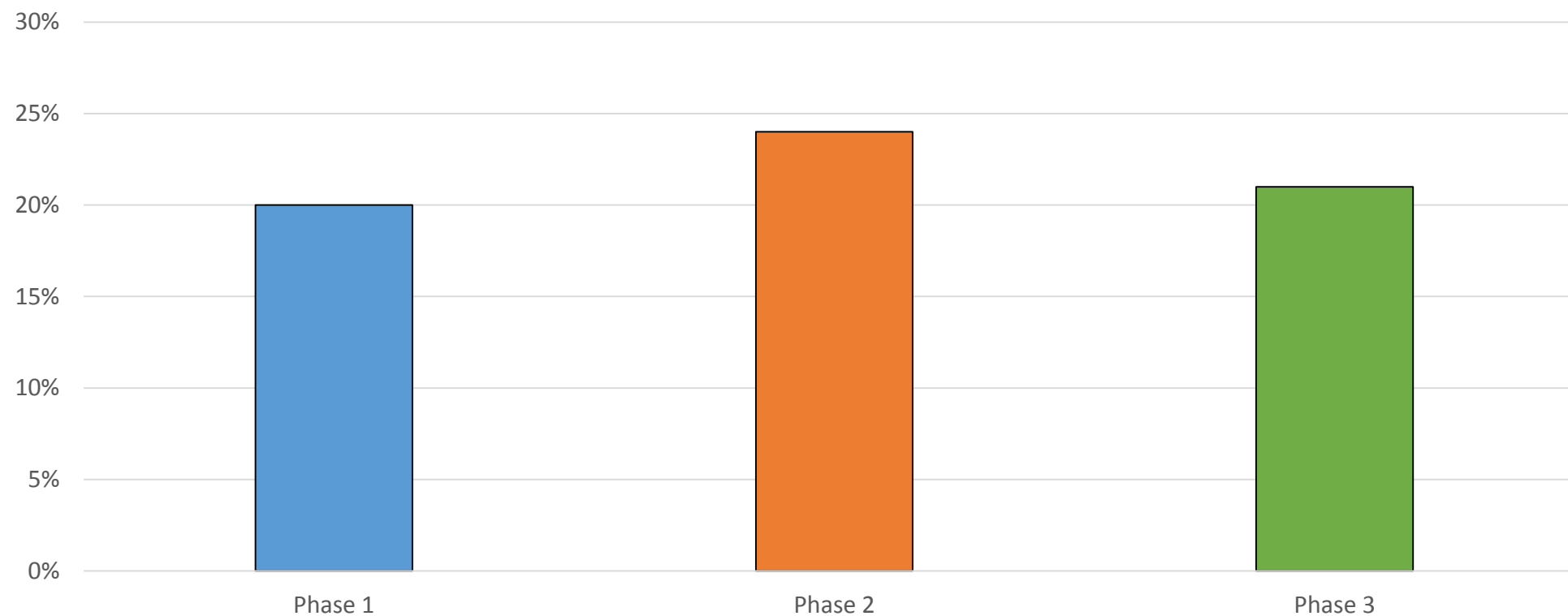


*Newly funded Centers' members are not counted as Members Added



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Member Turnover Rate

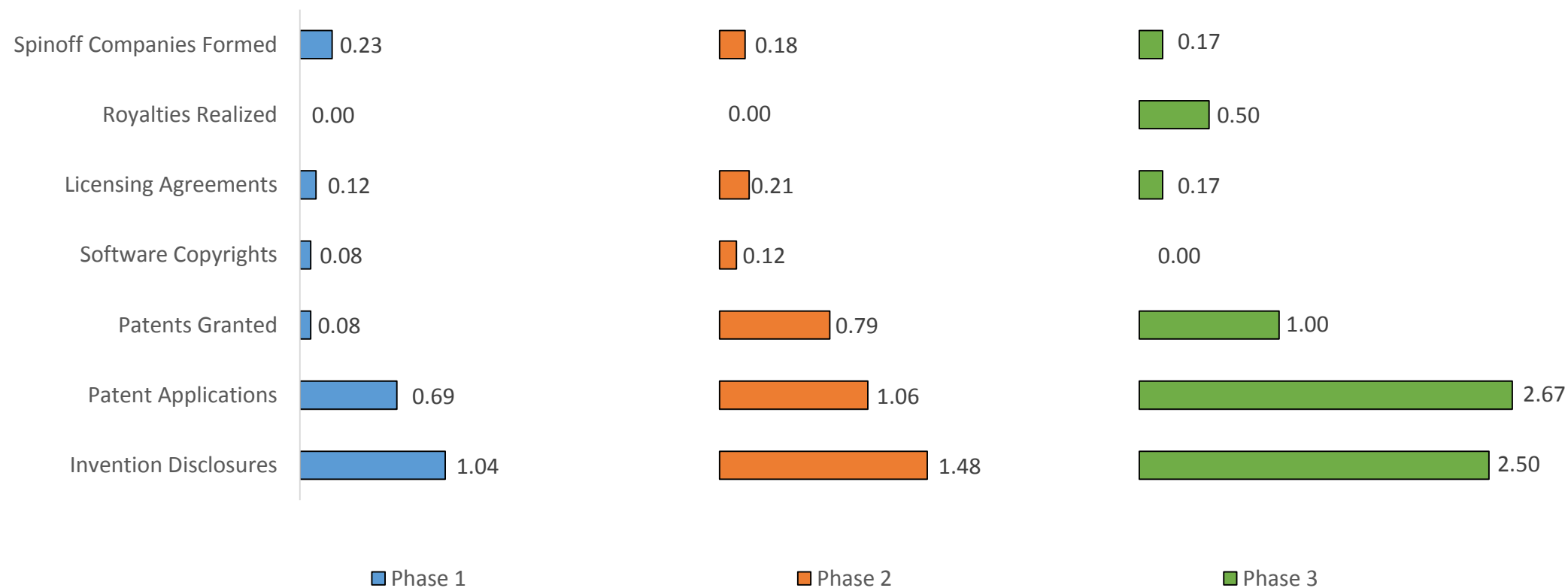


Turnover % = Members terminated in “year X+1” / Total members in “year X”



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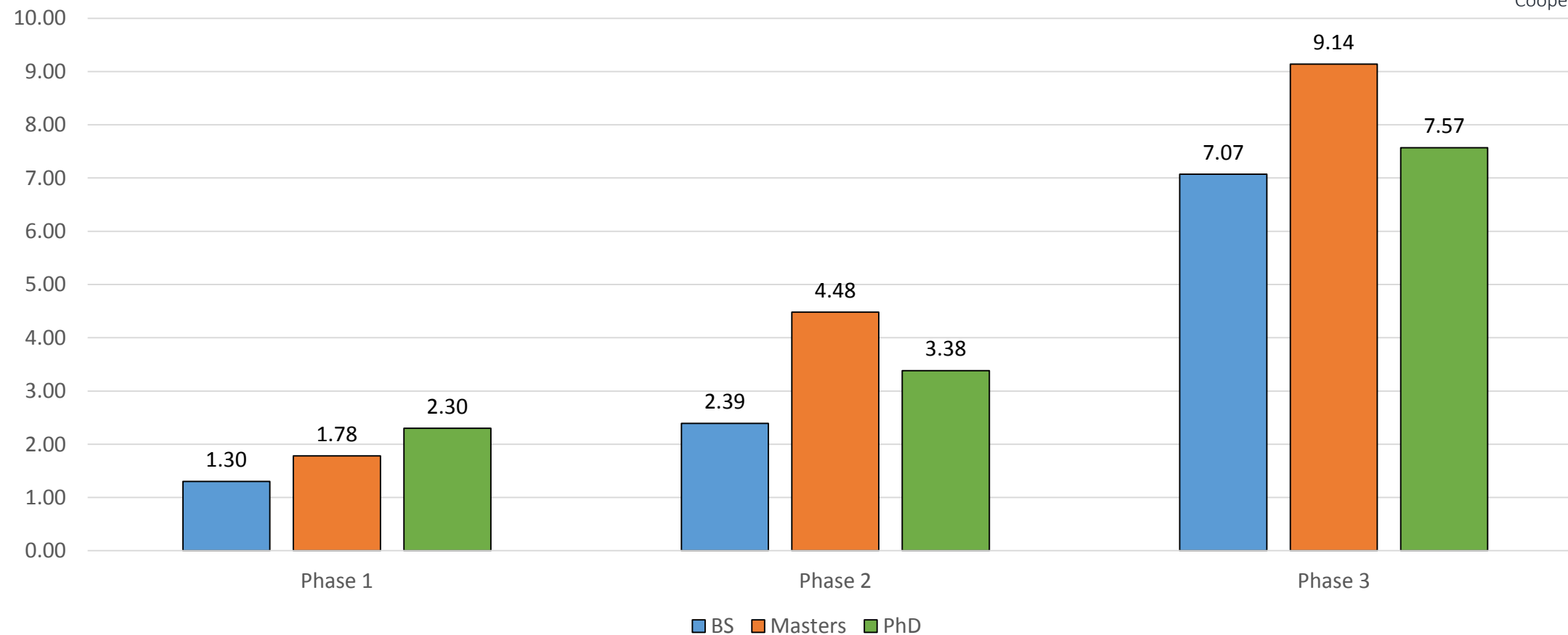
Average Number of Intellectual Property & Commercialization Events





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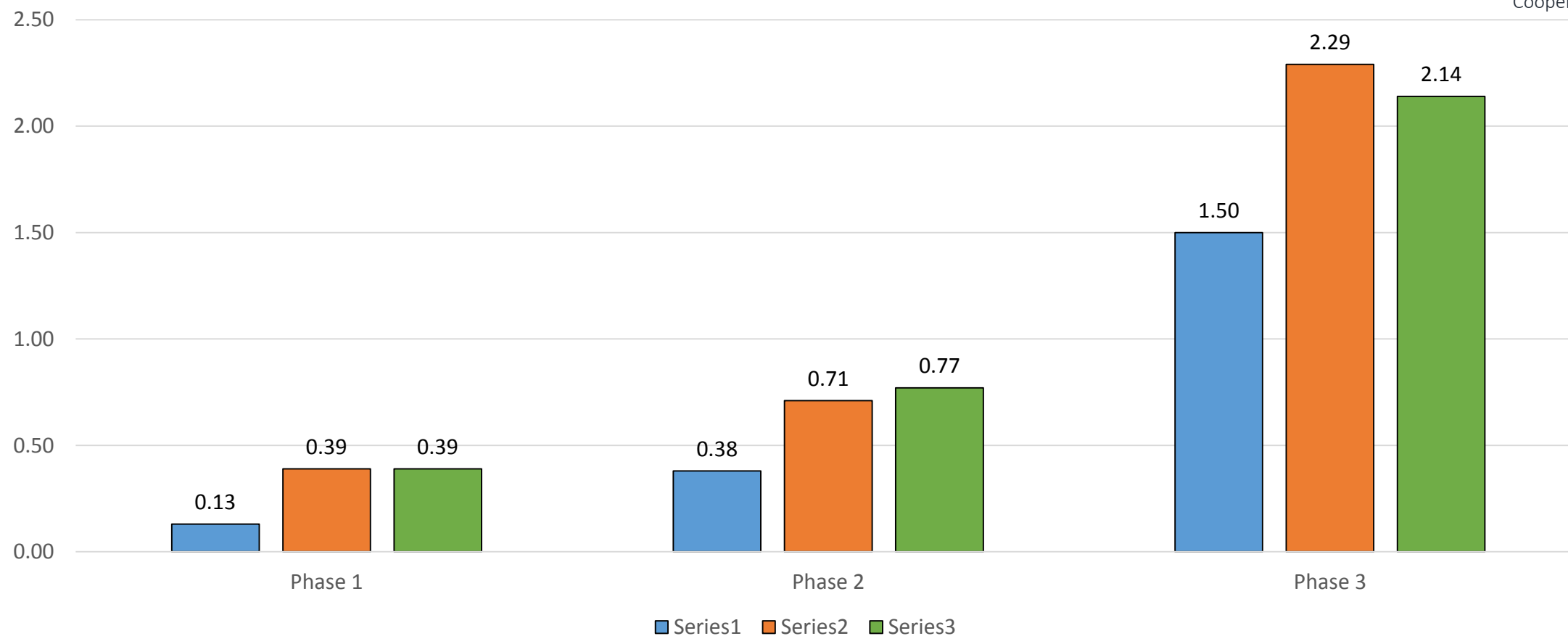
Average Students Graduated





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Average Students Hired by Members





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Questions?

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