A Closer Look at the NCI Budget and RPG Pool

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Joint Meeting of the National Cancer Advisory Board and
Board of Scientific Advisors
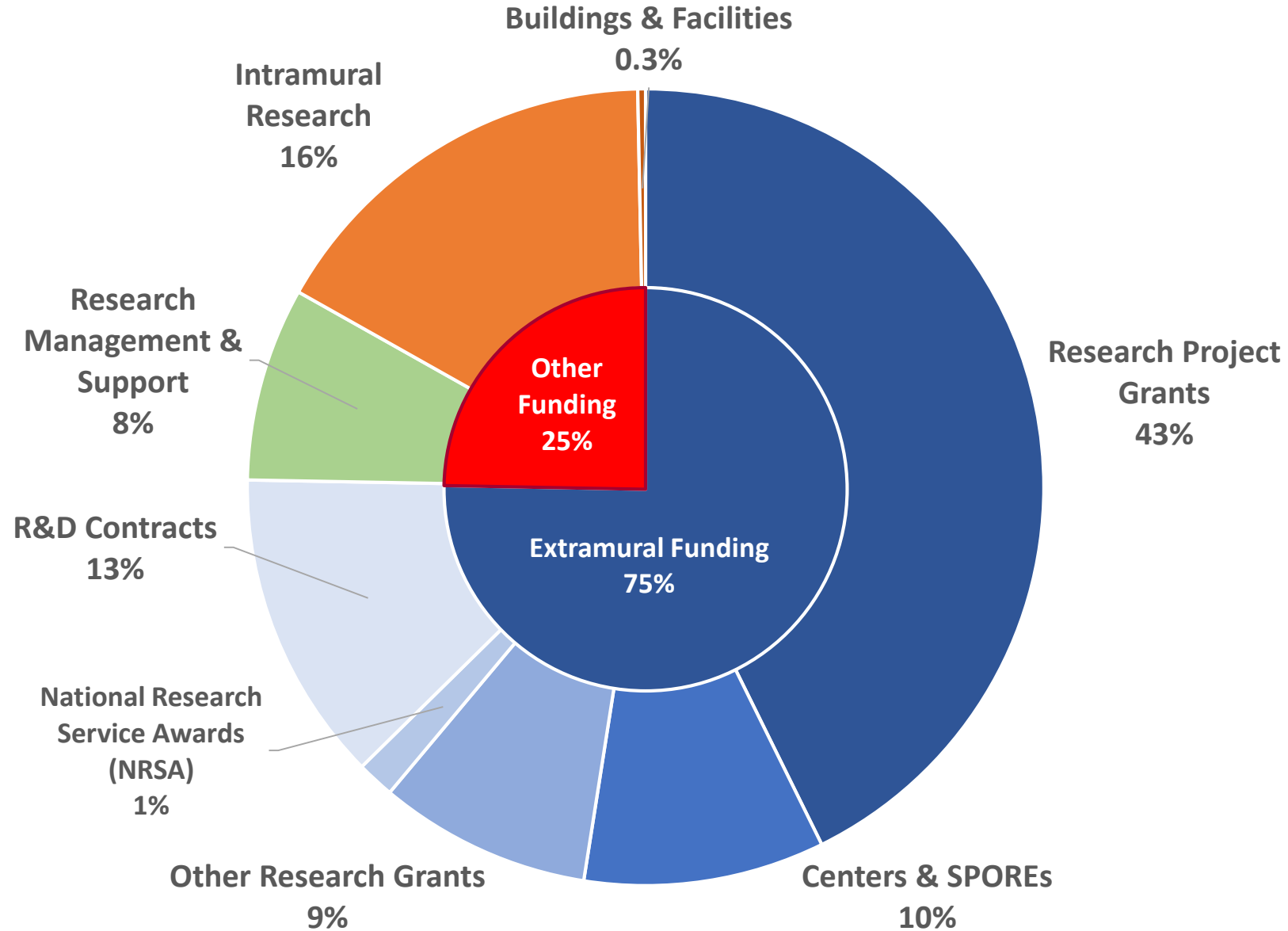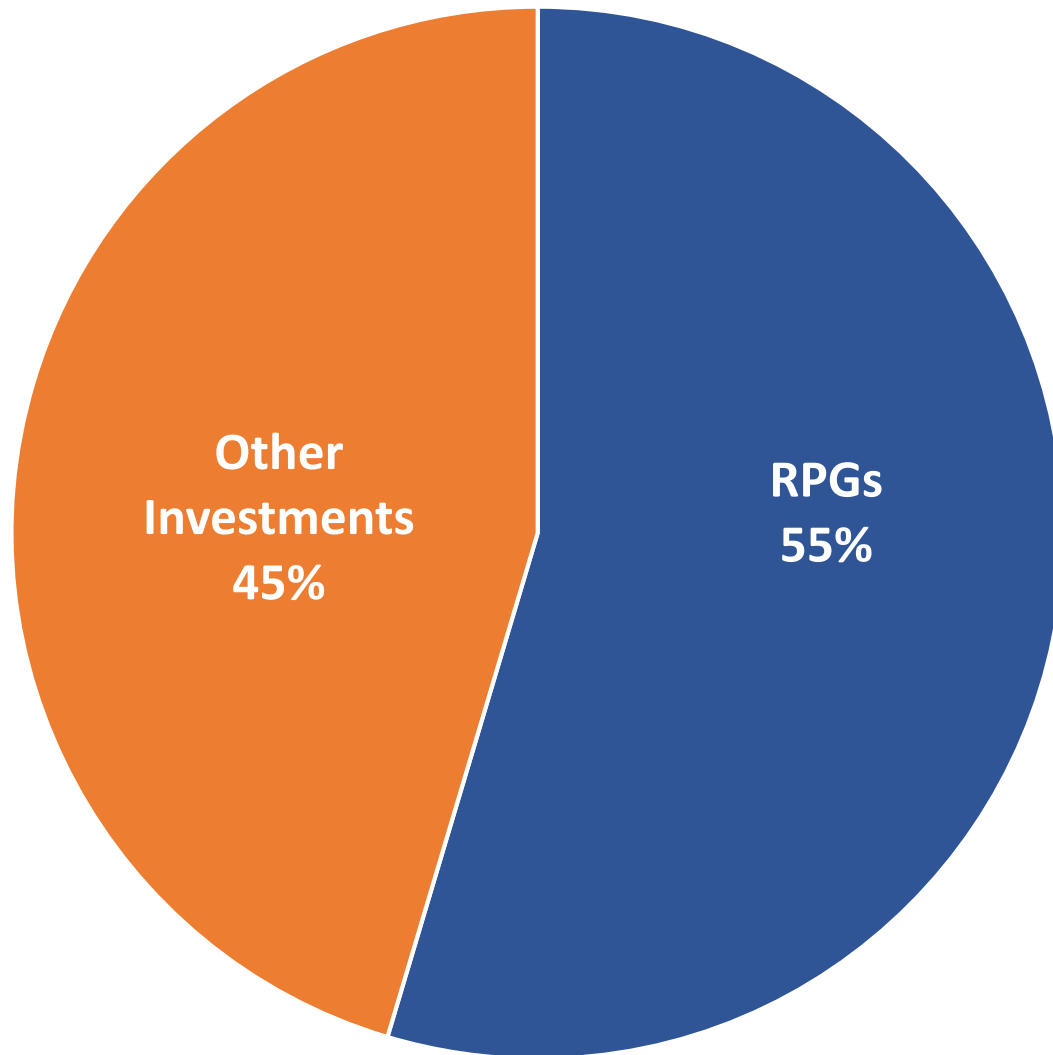
December 3, 2019

@theNCI
@NCIDrDougLowy

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? **How does NCI spend its appropriation?**

? **What has driven the increase in NCI's grant applications?**

How does NCI spend its money?

Buildings & Facilities 0.3%

Intramural Research 16%

Research Management & Support 8%

R&D Contracts 13%

National Research Service Awards (NRSA) 1%

Other Research Grants 9%

Other Funding 25%

Extramural Funding 75%

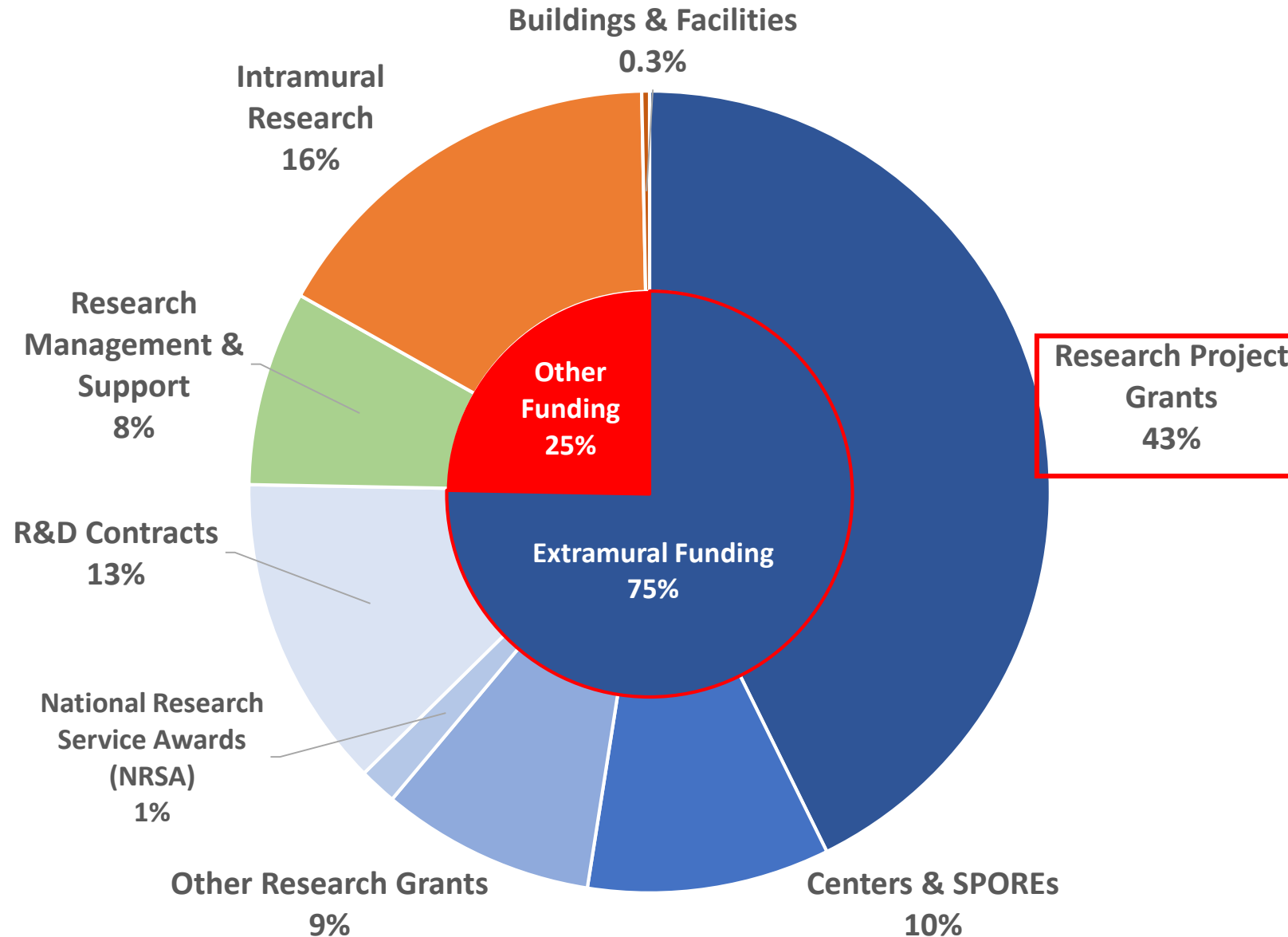Research Project Grants 43%

Centers & SPOREs 10%

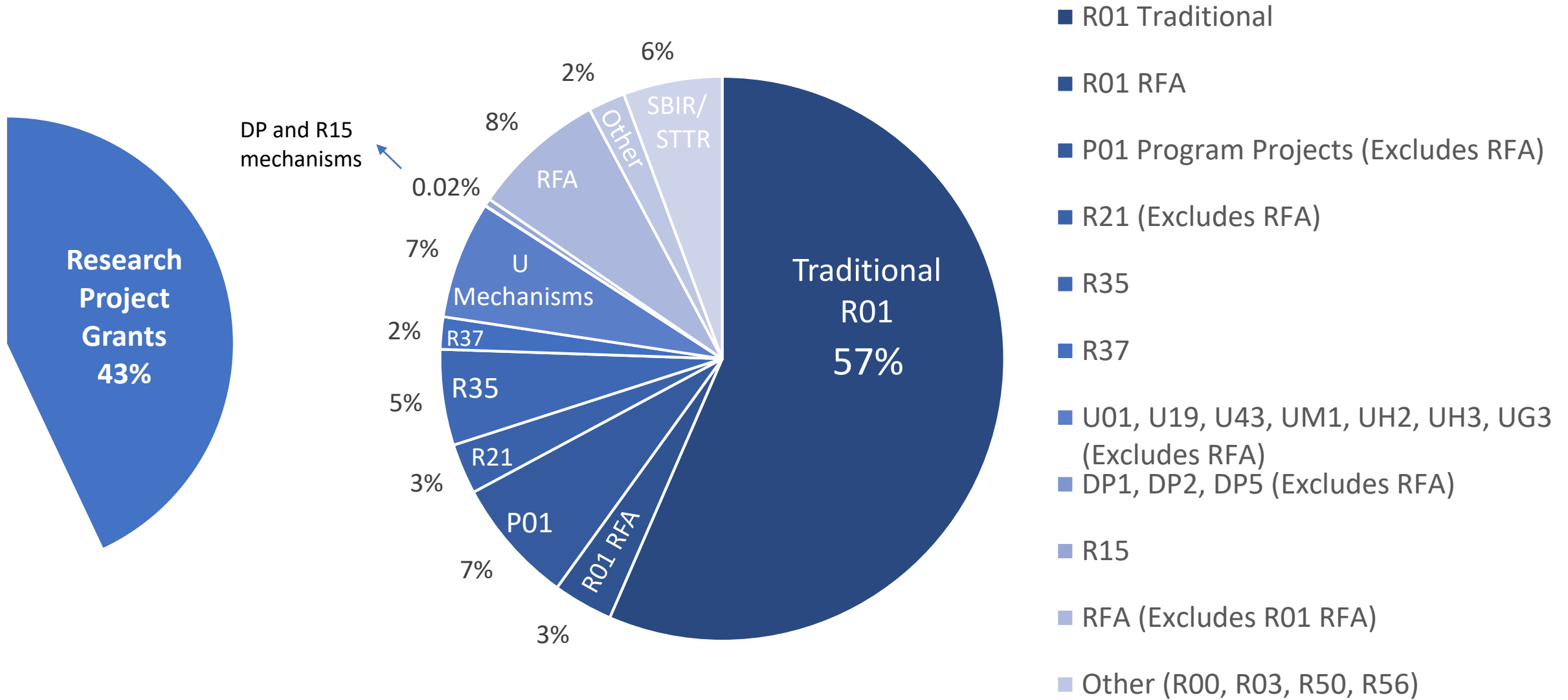# How has NCI spent the increases since 2014 ~$789M?

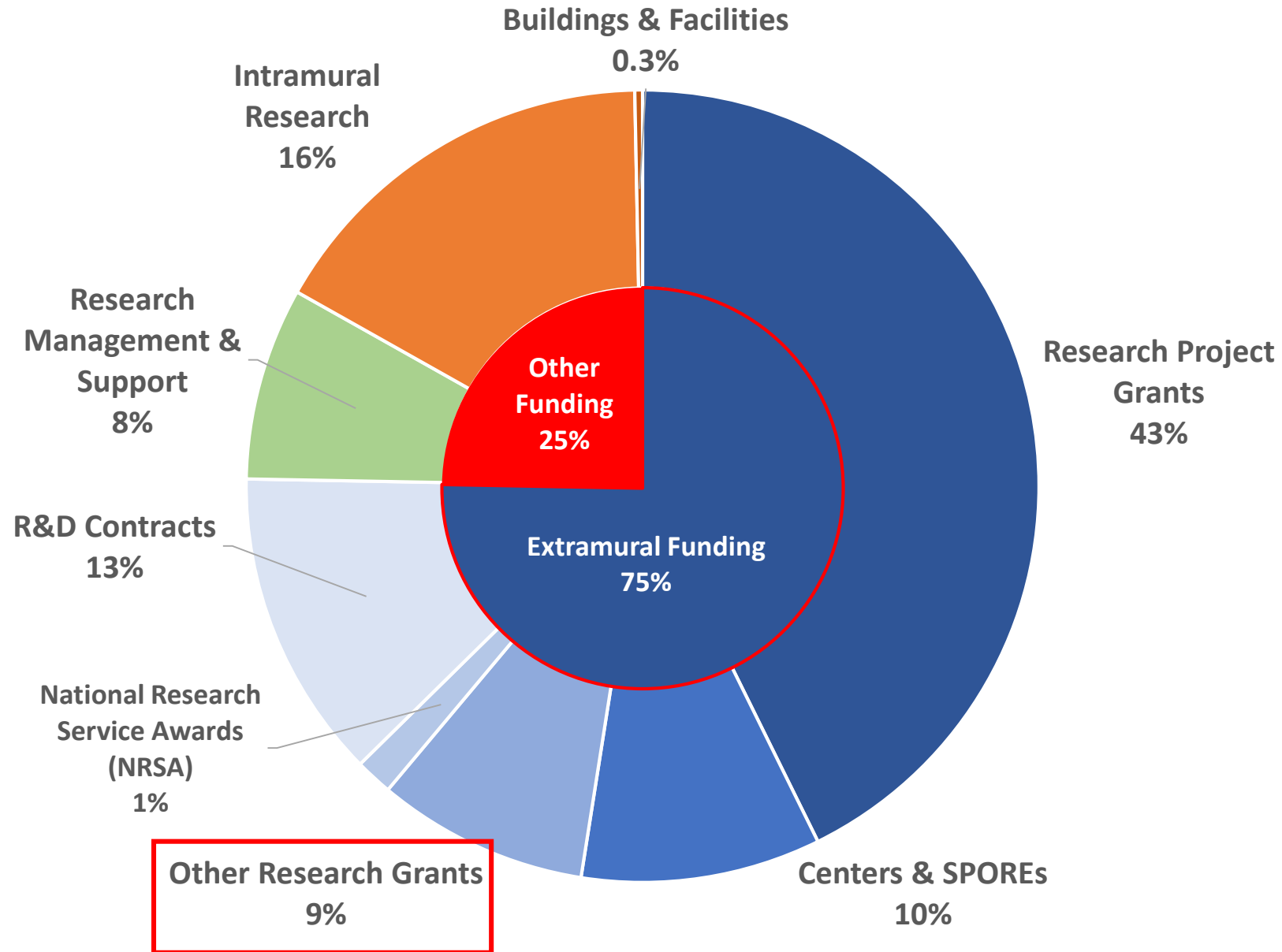The RPG portion of NCI's total budget increased from ~41% to ~43% between 2014 and 2019

How does NCI spend its money?

FY 2019 Research Project Grants

Research Project Grants 43%

DP and R15 mechanisms

Pie chart:
- Traditional R01 57%
- R01 RFA 3%
- P01 7%
- R21 3%
- R35 5%
- R37 2%
- U Mechanisms 7%
- 0.02%
- RFA 8%
- Other 2%
- SBIR/STTR 6%

Legend:
- R01 Traditional
- R01 RFA
- P01 Program Projects (Excludes RFA)
- R21 (Excludes RFA)
- R35
- R37
- U01, U19, U43, UM1, UH2, UH3, UG3 (Excludes RFA)
- DP1, DP2, DP5 (Excludes RFA)
- R15
- RFA (Excludes R01 RFA)
- Other (R00, R03, R50, R56)

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Based on FY 2019 estimates for FY 2019 and excludes Cancer Moonshot funding

What are Other Research Grants?

Based on FY 2019 estimates for FY 2019 and excludes Cancer Moonshot funding

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Centers & SPORES

CENTERS & SPORES 10%

SPORES 20%

Specialized Centers (U54) 21%

Cancer Center Support, Planning, & Admin Supplement Grants 59%

Based on FY 2019 estimates for FY 2019 and excludes Cancer Moonshot funding

Non-Intramural Frederick National Lab for Cancer Research Activities

Indirect Support, ~ 41%

Direct Support to the NCI Extramural Research Program, ~ 59%
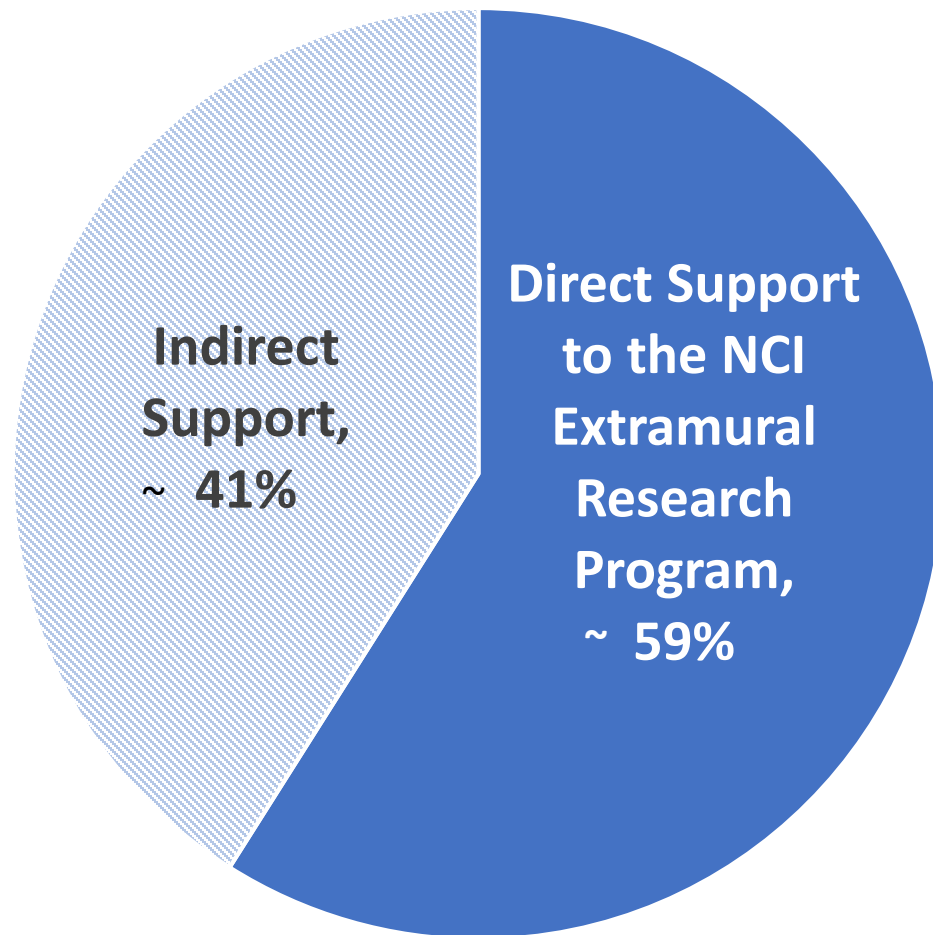
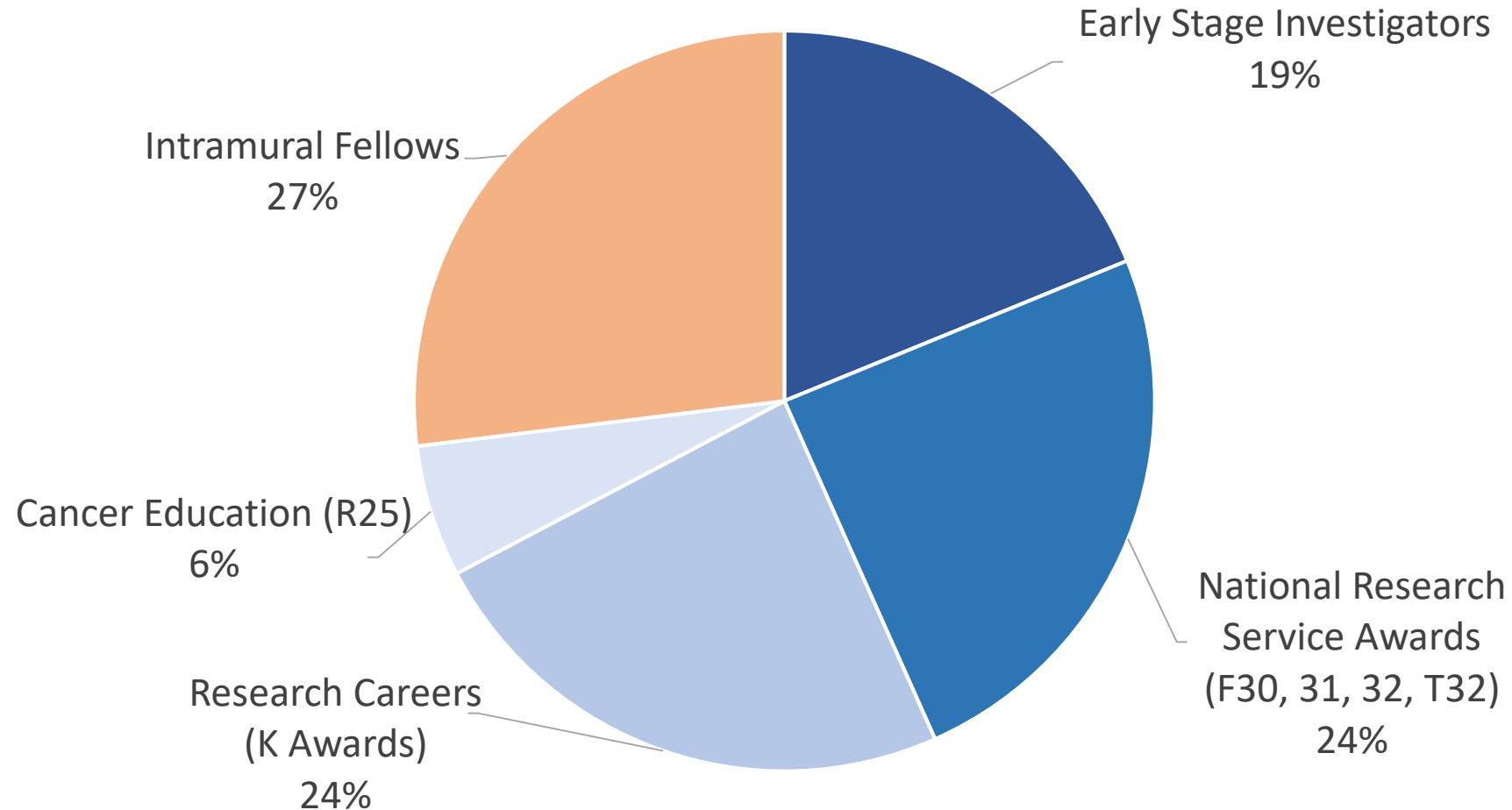**Examples of Direct Support Include:**
- NCI Experimental Therapeutics (NExT)
- NCI Patient-Derived Models Repository
- Genomic Data Commons

Examples of Indirect Support Include:
- RAS Initiative
- Nanotechnology Characterization Lab
- Antibody Characterization Lab
- AIDS and Cancer Virology Program
- Laboratory Directed Exploratory Research
- Cryo-Electron Microscopy
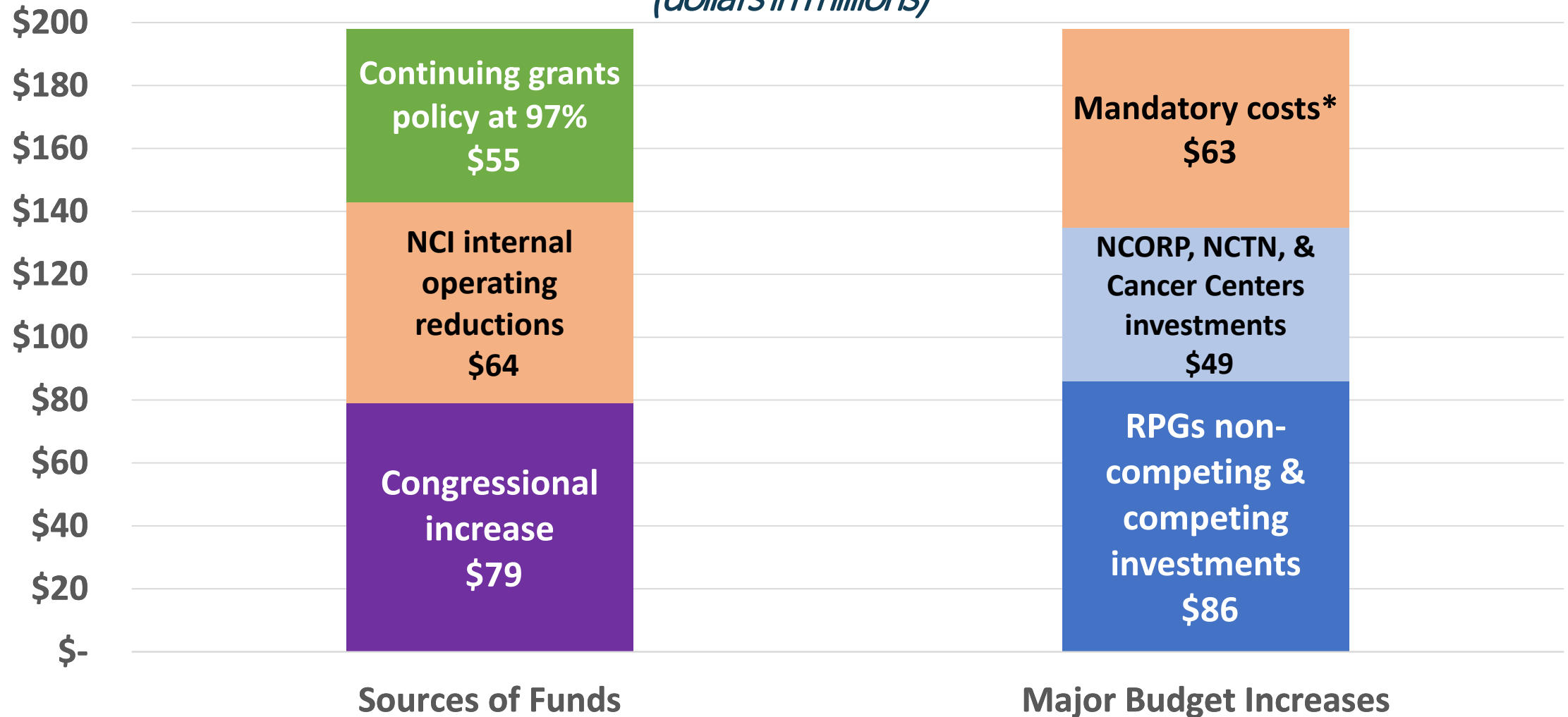- Laboratory Animal Science Program

* NCI also spends about 5% of its intramural budget at the Frederick National Lab for Cancer Research

NCI spends ~ $260M to train and develop a strong workforce of cancer researchers*

- Early Stage Investigators 19%
- National Research Service Awards (F30, 31, 32, T32) 24%
- Research Careers (K Awards) 24%
- Cancer Education (R25) 6%
- Intramural Fellows 27%

Excludes funding in the RPG Pool that supports graduate students, post-graduate fellows, and early stage investigators working within funded grant teams

Based on FY 2019 estimates for FY 2019 and excludes Cancer Moonshot funding

How did NCI manage increased costs in FY 2019?
(dollars in millions)

Sources of Funds:
- Continuing grants policy at 97% $55
- NCI internal operating reductions $64
- Congressional increase $79

Major Budget Increases:
- Mandatory costs* $63
- NCORP, NCTN, & Cancer Centers investments $49
- RPGs non-competing & competing investments $86

Mandatory costs include HHS/NIH assessments, Secretary's & AIDS transfers, required pay and NRSA stipend increases, and additional SBIR requirements
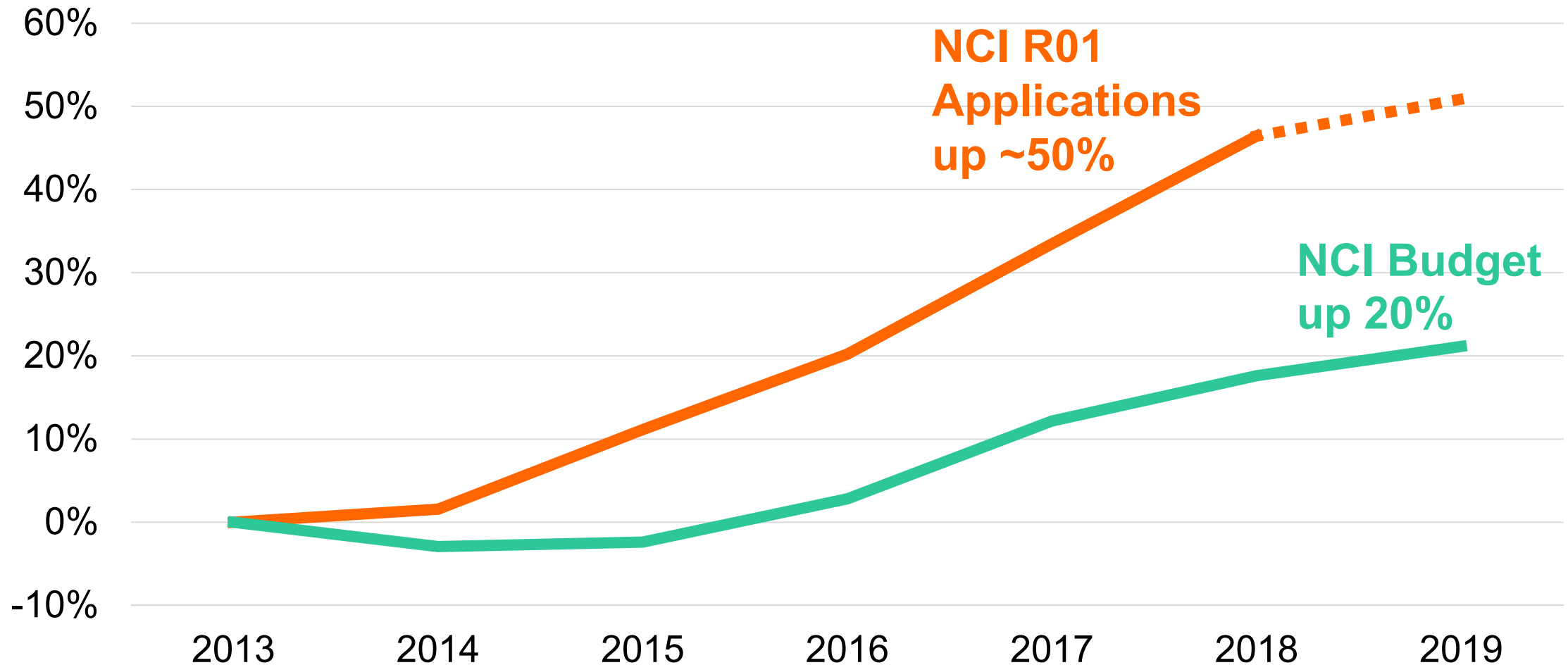
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Based on FY 2019 estimates for FY 2019 and excludes Cancer Moonshot funding 13

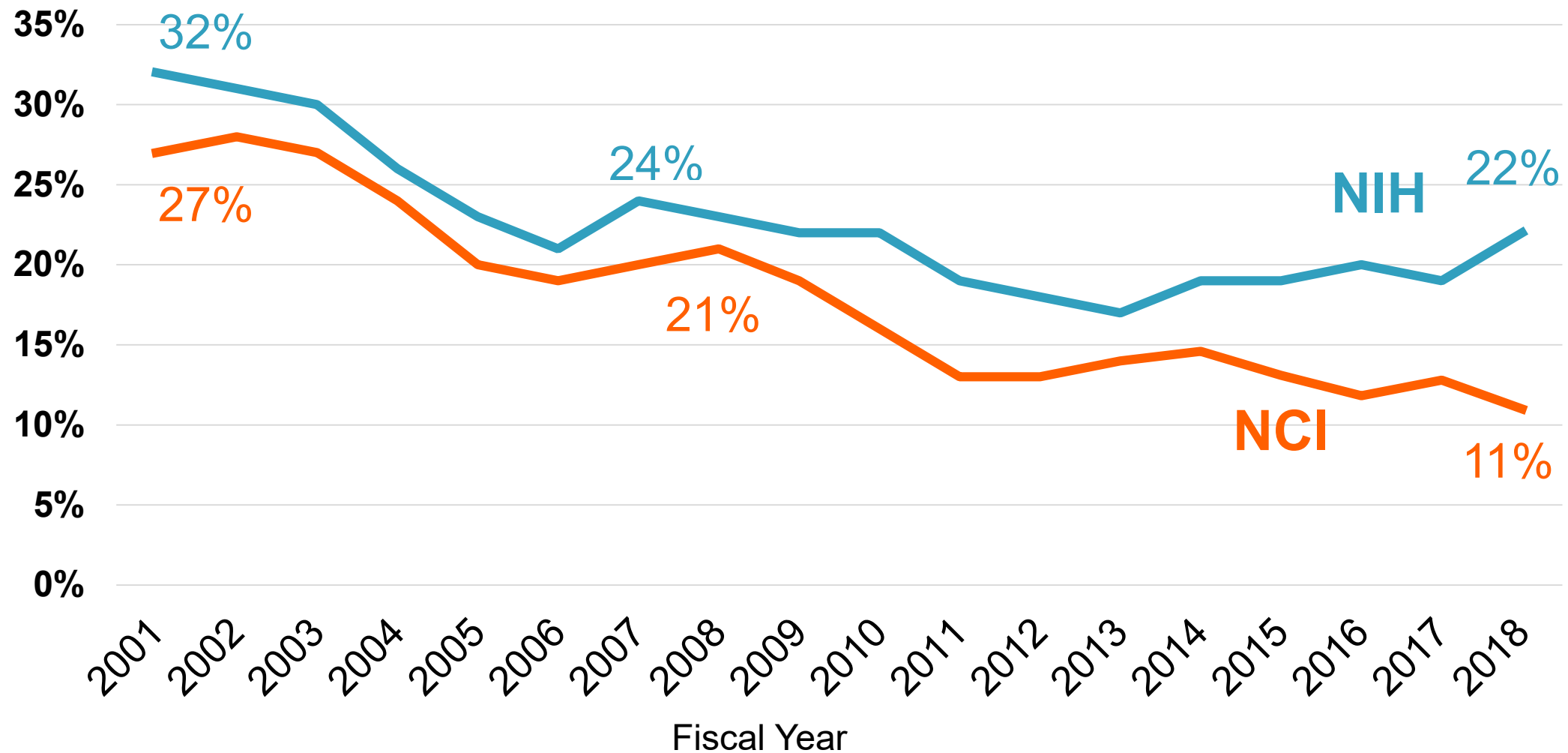**?** **How does NCI spend its appropriation?**

? **What has driven the increase in NCI's grant applications?**

Competing R01 applications vs. budgets for NCI & RPGs: Percent change since FY 2013

NCI R01 Applications up ~50%

NCI Budget up 20%

R01 Applications source: NIH RePORTER. 2019 applications estimated.
NCI budget shown here is the base appropriation; does not include Cancer Moonshot.

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Success Rates for NIH & NCI Grant Applications
Data include all RPGs, including SBIR/STTR

The number of *unique NCI R01/R37 applicants* has increased by 48% between FY 2013 and FY 2019.

FY	NIH	Other IC	NCI
2013	25,329	22,162	4,105
2014	25,423	22,128	4,288
2015	25,959	22,473	4,524
2016	27,002	23,261	4,826
2017	27,630	23,486	5,334
2018	28,244	23,780	5,831
2019	28,839	24,156	6,090
Percent change 2013-2019	**14%**	**9%**	**48%**

Percent Increase in Number of Unique R01 Applicants
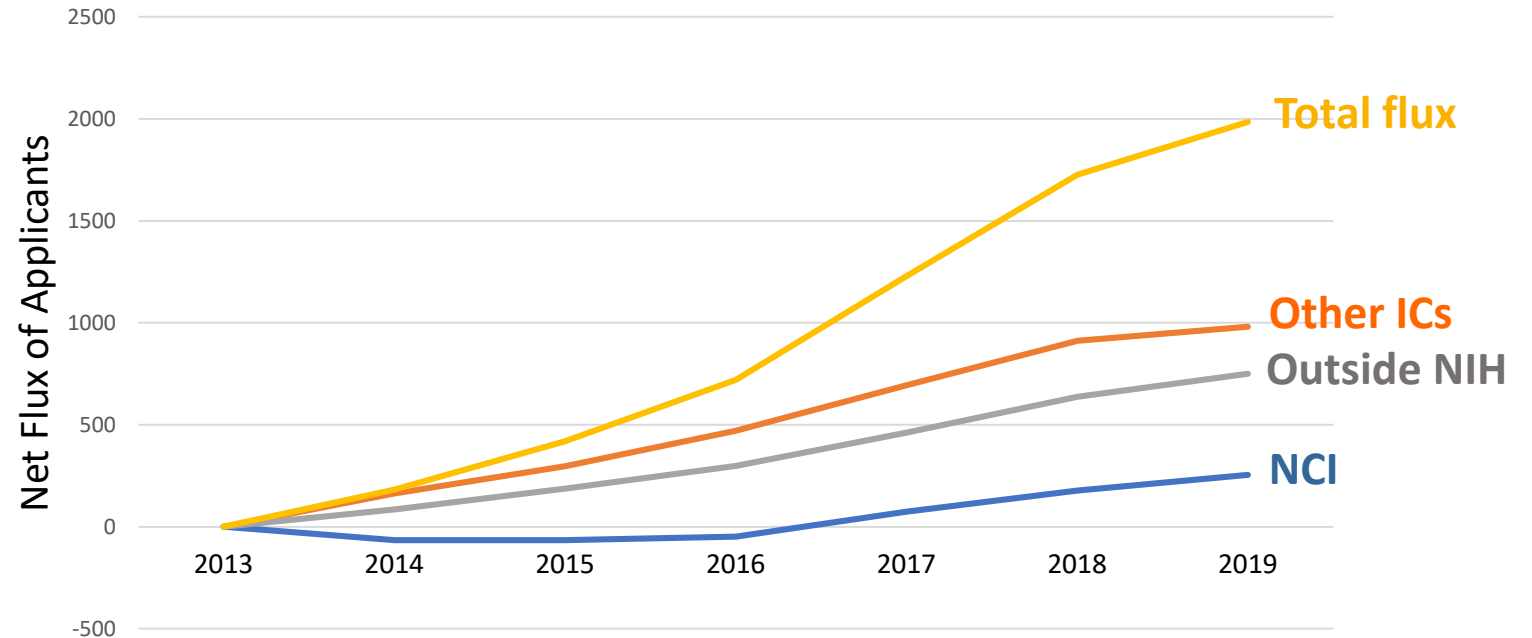

NCI: 48%
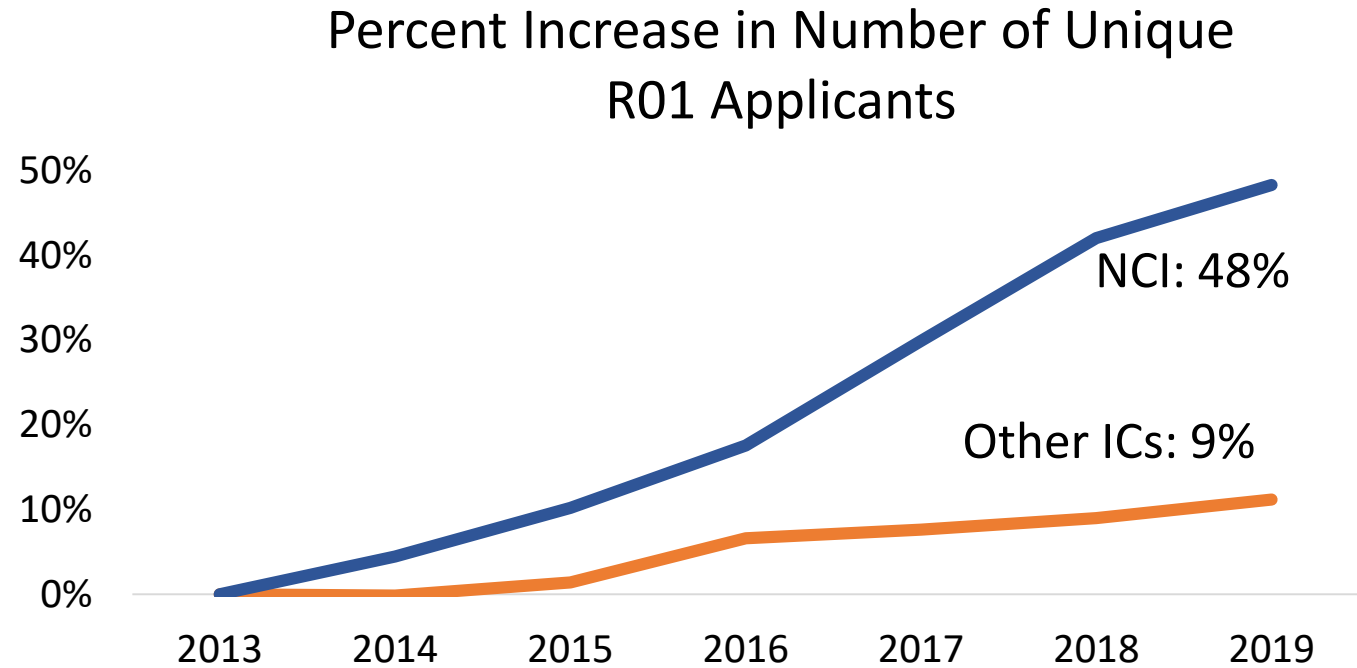
Other ICs: 9%

Influx of PIs to the NCI R01 Applicant Pool: Mainly From other NIH ICs and outside NIH

Net Movement into the NCI R01 Pool

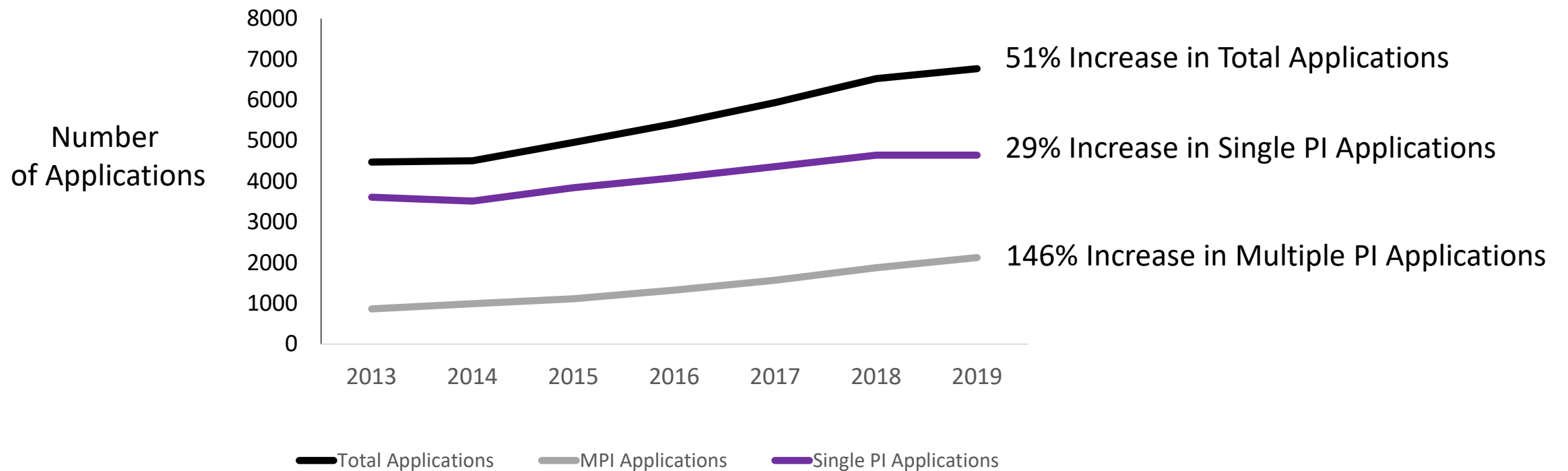|	NCI	Only Other IC	Outside NIH	Total Flux
2013	0	0	0	0
2014	-65	163	85	183
2015	-65	297	187	419
2016	-48	471	298	721
2017	74	694	461	1229
2018	177	912	637	1726
2019	**254**	**981**	**750**	**1985**

Cumulative Flux

Multiple-PI applications have increased faster than single-PI applications: FY 2013 - FY 2019

NCI R01/R37 Applications

51% Increase in Total Applications

29% Increase in Single PI Applications

146% Increase in Multiple PI Applications

Y-axis: Number of Applications — 0, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000

X-axis: 2013, 2014, 2015, 2016, 2017, 2018, 2019

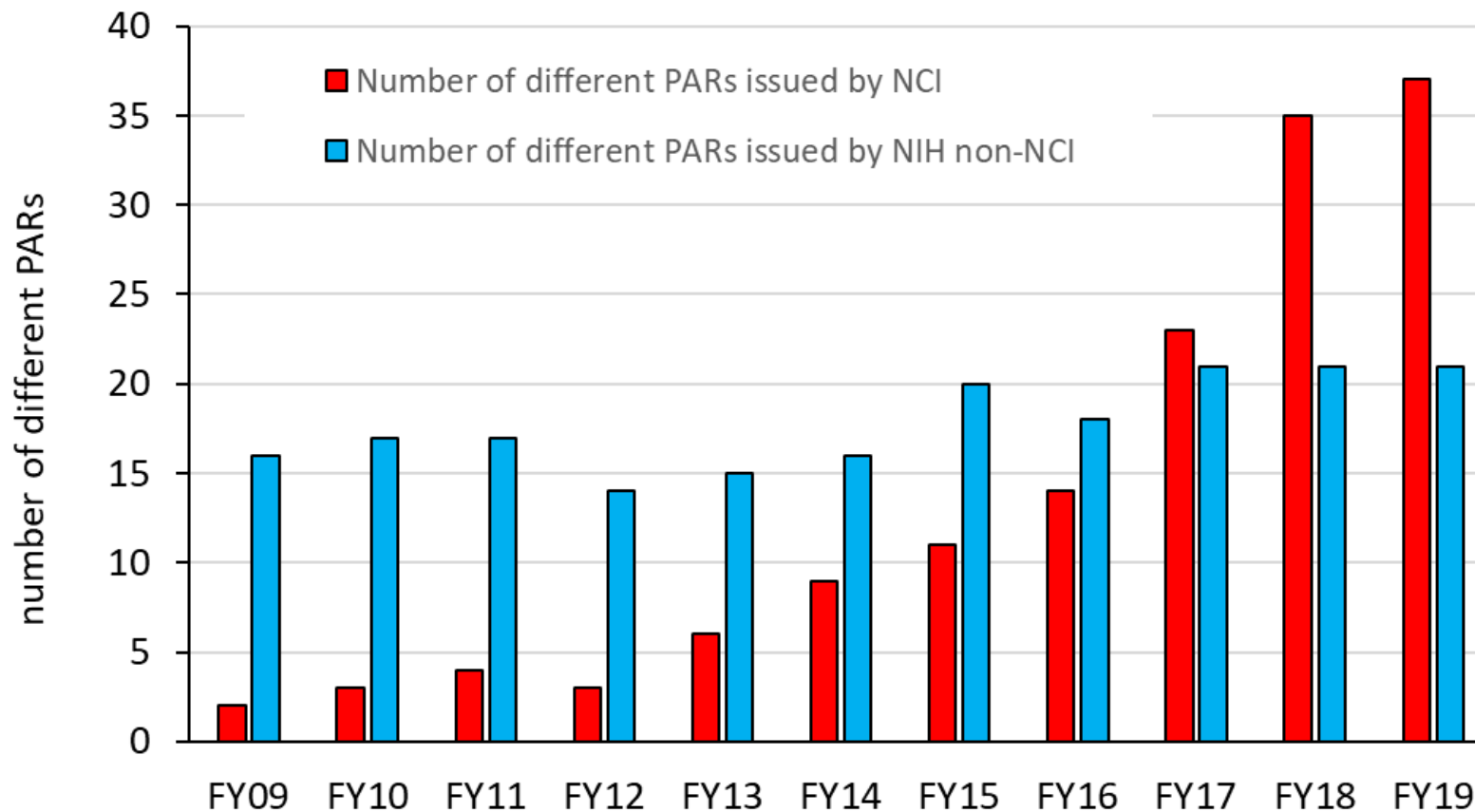Legend: Total Applications — MPI Applications — Single PI Applications

NCI R01/R37 applications to PARs increased substantially
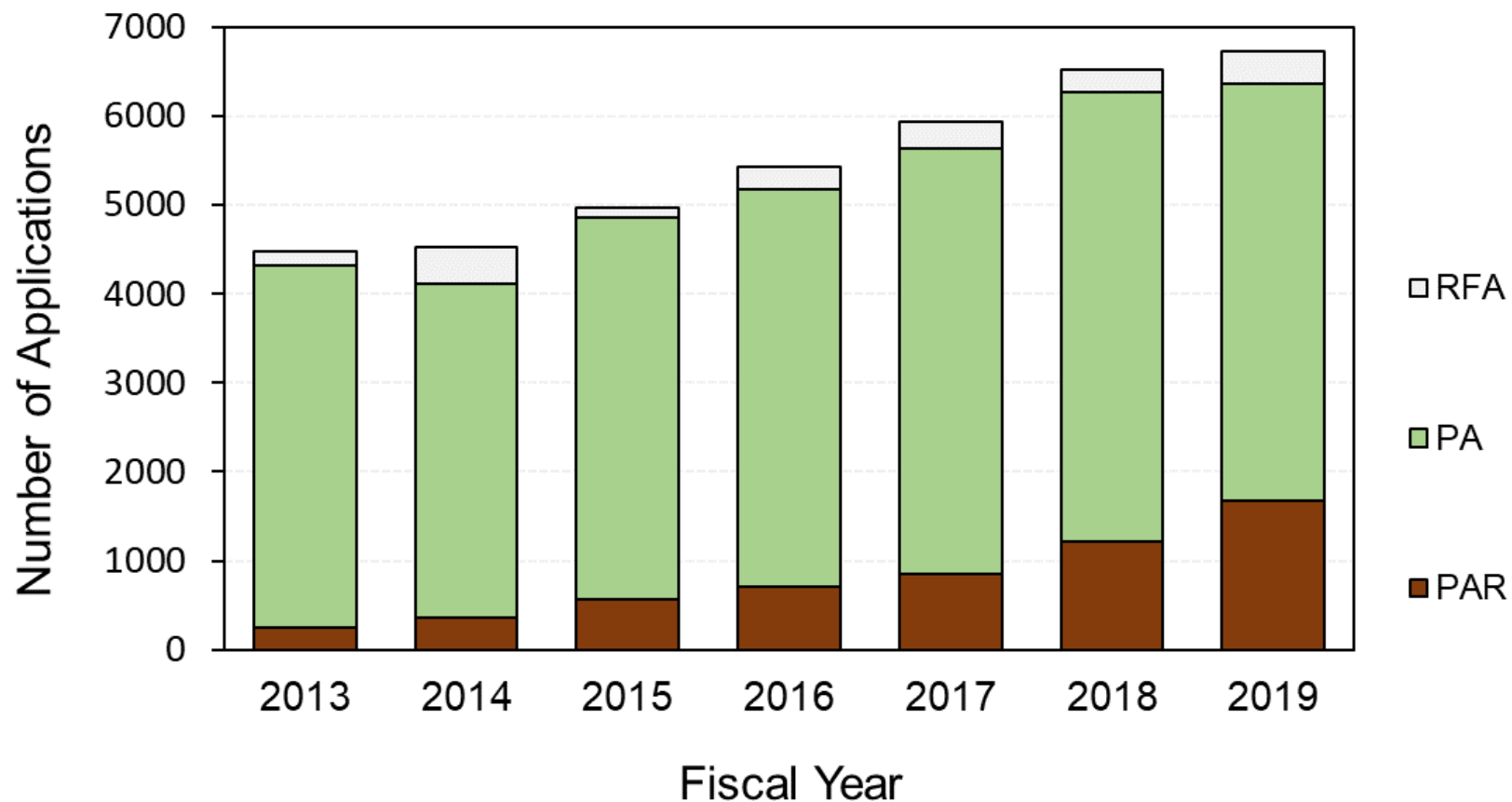
Unit of Analysis: *R01/R37 Applications*

Increases in number of distinct NCI-issued **PARs to which PIs have applied**: FY09 - FY19

Conclusions / Summary

- **Major driver**: Increase in ***unique applicants***
  - Many applicants coming to NCI were previously funded by other NIH ICs; others had never applied to NIH.

- **Secondary drivers**:
  - Increase in Multiple-PI applications
  - Increase in PARs & applications to PARs
  - More applications per PI (13% increase 2013-2019)

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