

**Review Policy Committee and  
Program Leadership Committee  
Joint Working Group  
on the  
Resubmission of Applications**

**Extramural Program Management  
Committee**

**May 16, 2012**

# RPC-PLC Resubmission Working Group

- Glen Nuckolls (NIAMS, PLC)(co-chair)
- David Armstrong (NIMH, RPC)(co-chair)
- Diane Adger-Johnson (NIAID)
- Sy Garte (CSR, RPC)
- Jim Gnadt (NINDS)
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## Collaborators

- Robin Wagner (OD)
- Mathew Eblen (OD)
- Charles Wu (OD)

# Background

- **The success rate for RPG A1 applications is over three times higher than that for A0 applications (FY2011 data, RePORT)**
- **There are many factors that may influence the decision of whether to resubmit:**
  - **Feedback on the A0 review (scores, summary statement, PO guidance, etc.)**
  - **The applicant's determination and confidence in the project**
  - **Influence from the institution**
  - **Knowledge and perceptions regarding the peer review system**
- **According to Ginther et al., 2011 "...blacks (45%) and Hispanics (56%) were significantly less likely to resubmit an unfunded application compared with white investigators (64%,  $P < 0.001$ )"**

# Goals of the Working Group

Explore ways to:

- Understand factors considered by applicants in deciding whether to resubmit an application.
- Provide guidance that will help all applicants come to a well-reasoned decision about whether to resubmit their application, and provide tips on ways to improve the overall quality of resubmissions.
- Address resubmission disparities identified in Ginther et al., 2011.
- Encourage investigators to submit competitive A1 applications and discourage submission of uncompetitive A1s (capacity).

# Mining IMPAC II For Factors Associated With Resubmission Rates

## Characteristics of the application

- Impact/Priority Score
- Criterion Scores
- Type 1 vs. Type 2
- IC Assignment

## Characteristics of the PI

- Race/Ethnicity
- Gender
- Prior Review Experience
- Funding History
- Academic Degree
- Career Stage

## Characteristics of the Institution

- Type of Organization
- Funding Rank



# Resubmission Data Analysis

Presentation to Program Evaluation Special Interest Group  
June 12, 2013

Matthew Eblen, MPIA  
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Robin Wagner, PhD, MS

Office of Statistical Analysis and Reporting (OSAR)  
Office of Extramural Research (OER)





- **Research Questions**
- **Methods**
- **Results**
- **Summary**
- **Contact Information**



# Research Questions

- **What are the main factors that drive resubmission behavior?**
- **Are there certain groups that resubmit at a lower rate than others?**



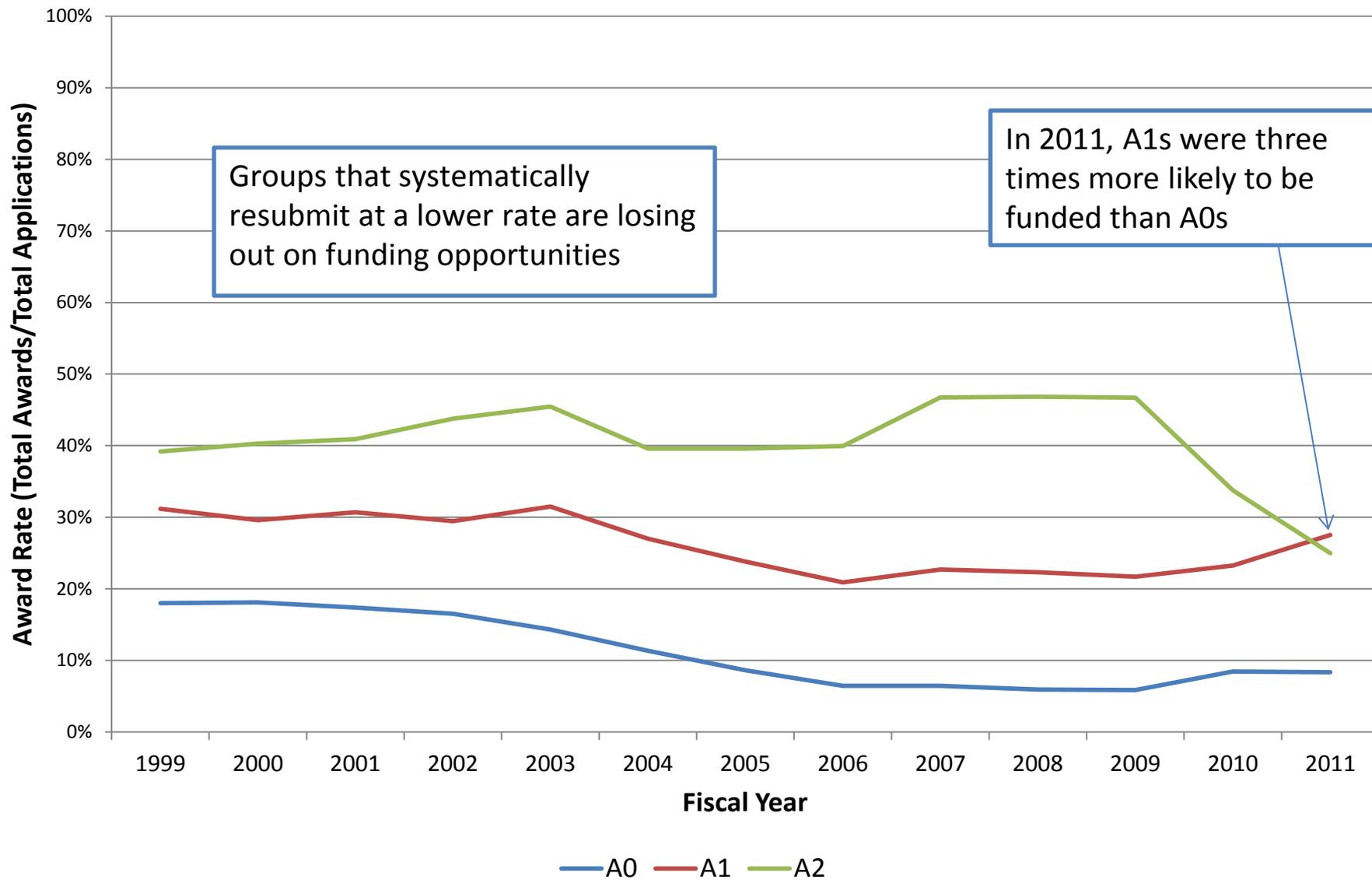
- **Population of Study**
  - **Unsuccessful Unsolicited A0 R01 Applications**
  - **Type 1 and Type 2**
  - **FY 1999 – 2011**
    - **Old Peer Review Scoring System: 1999 – 2009**
    - **New Peer Review Scoring System: 2010 – 2011**
  - **ARRA applications excluded**
- **Analysis**
  - **Descriptive statistics**
  - **Correlation analysis**
  - **Statistical modeling**
    - **Linear Probability Models**
    - **Model results represent the *residual* contribution individual factors make to overall resubmission probability, all else held constant**
- **Metrics**
  - **Award Rate = Total Awards/Total Applications**
  - **Resubmission Rate = #Resubmitted A1s/#Unsuccessful A0s**



# Descriptive Statistics

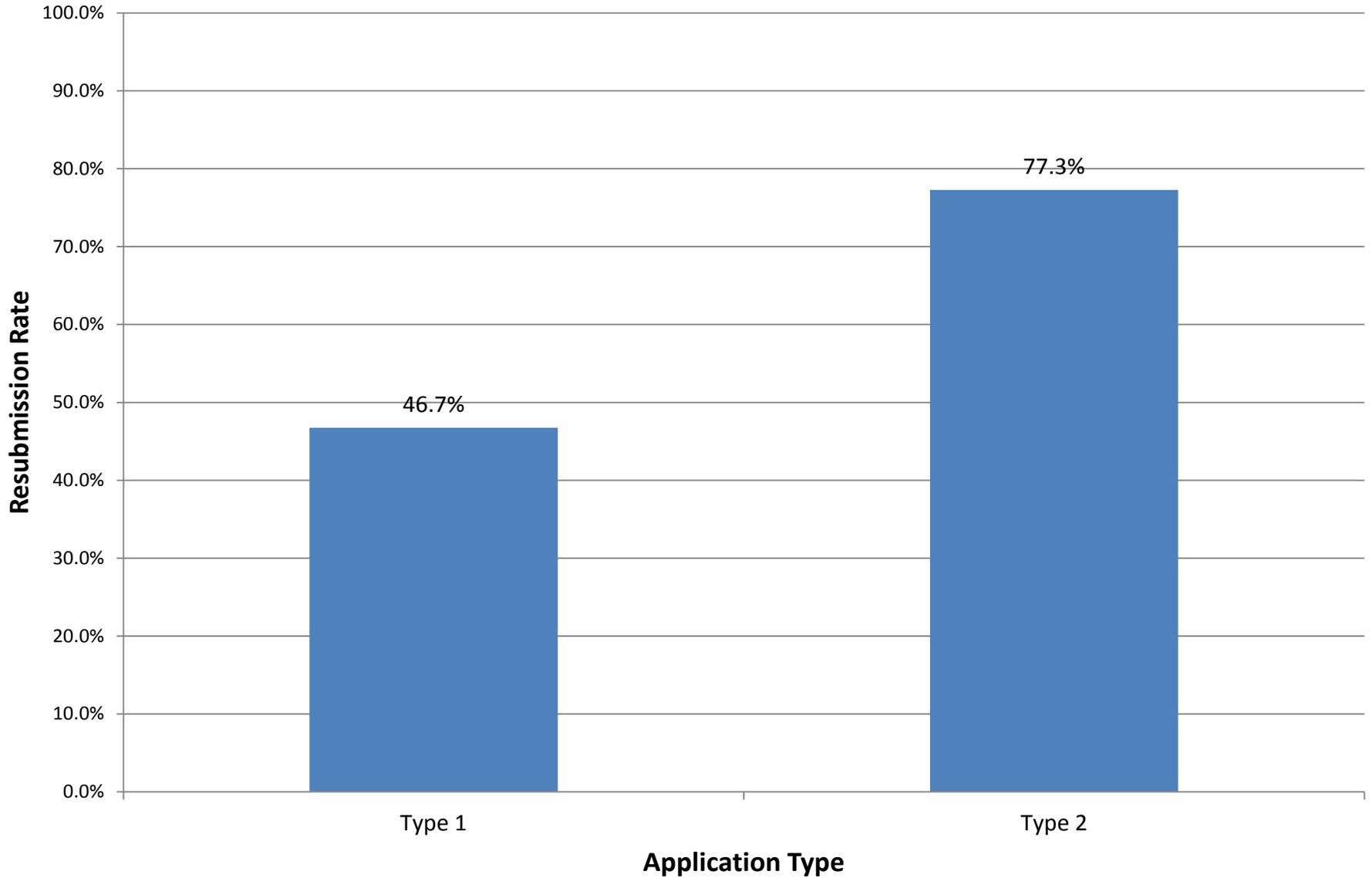


# Unsolicited R01 Award Rate by Resubmission Number Type 1 Applications



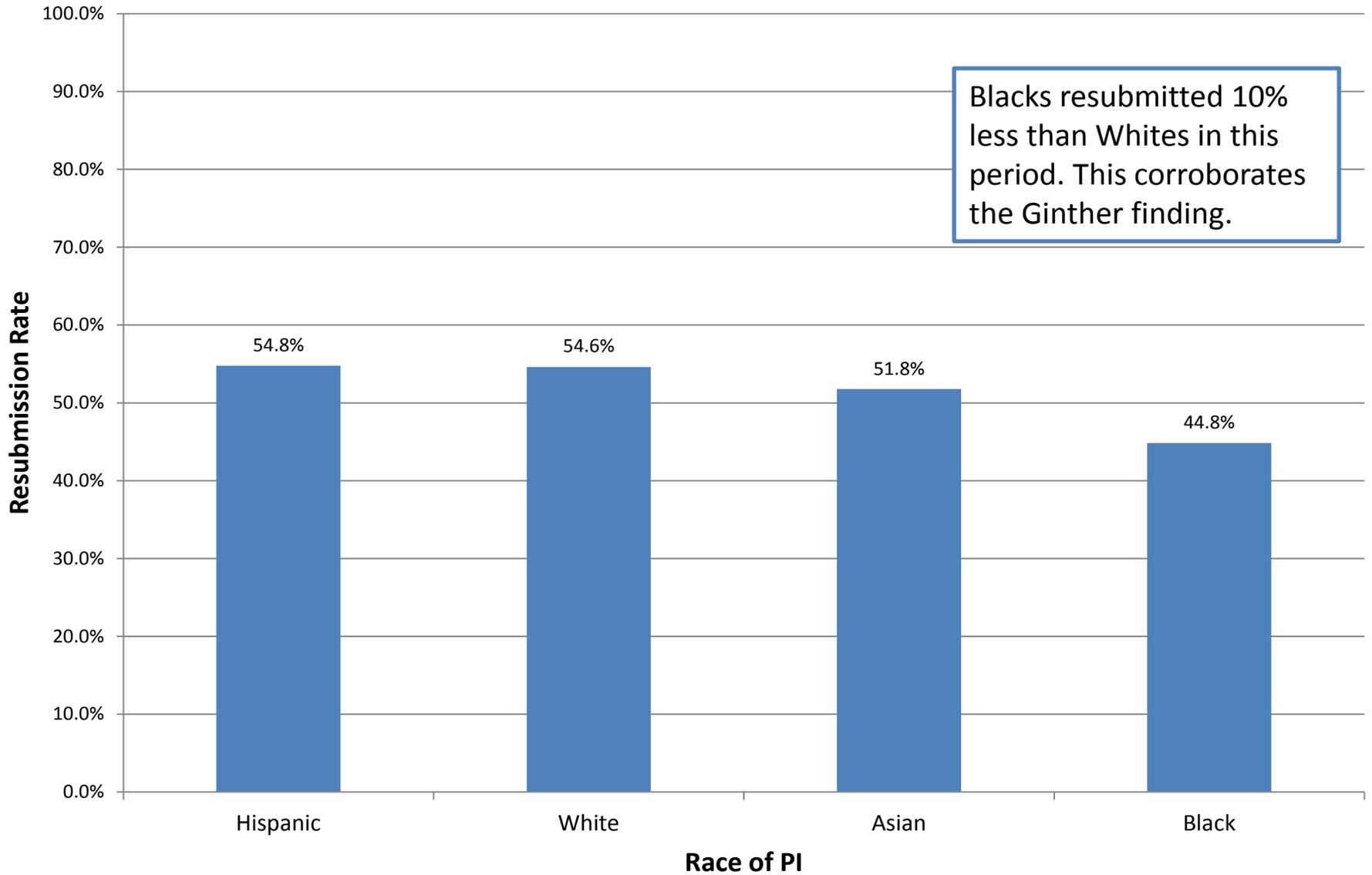
# Resubmission Rate by Application Type

## Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



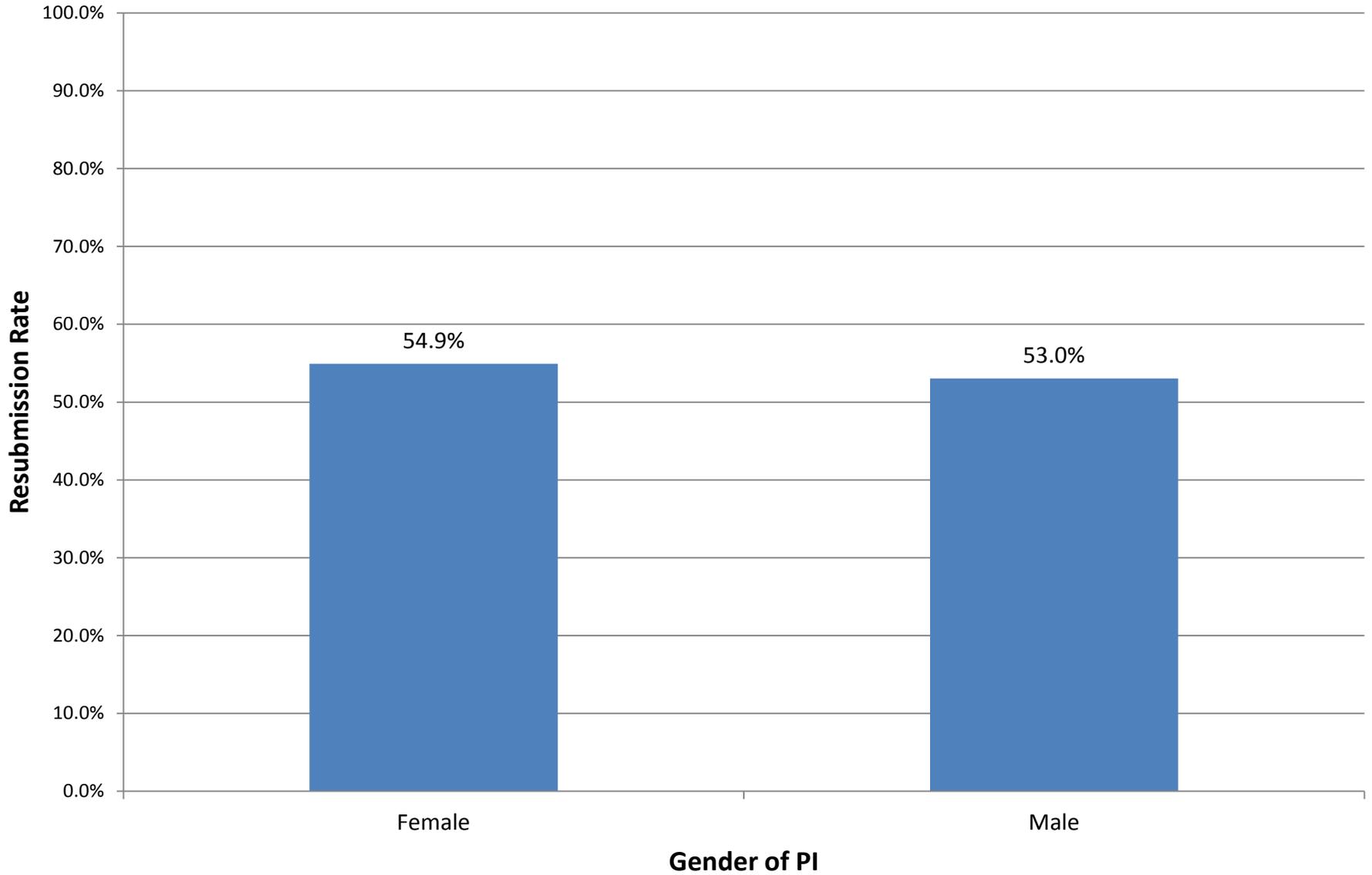
## Resubmission Rate by Race/Ethnicity

Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



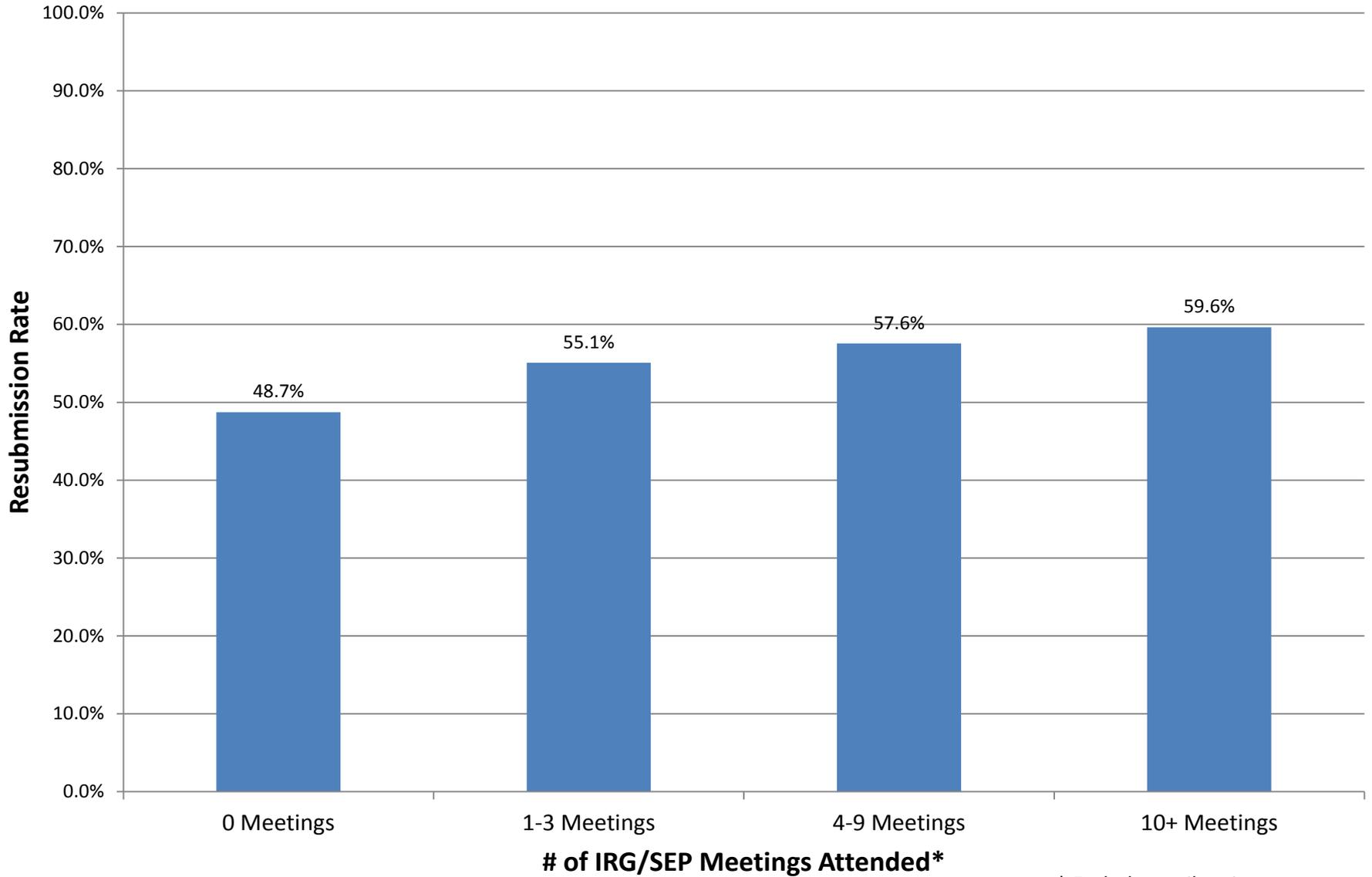
# Resubmission Rate by Gender of PI

## Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



# Resubmission Rate by Review Experience of PI

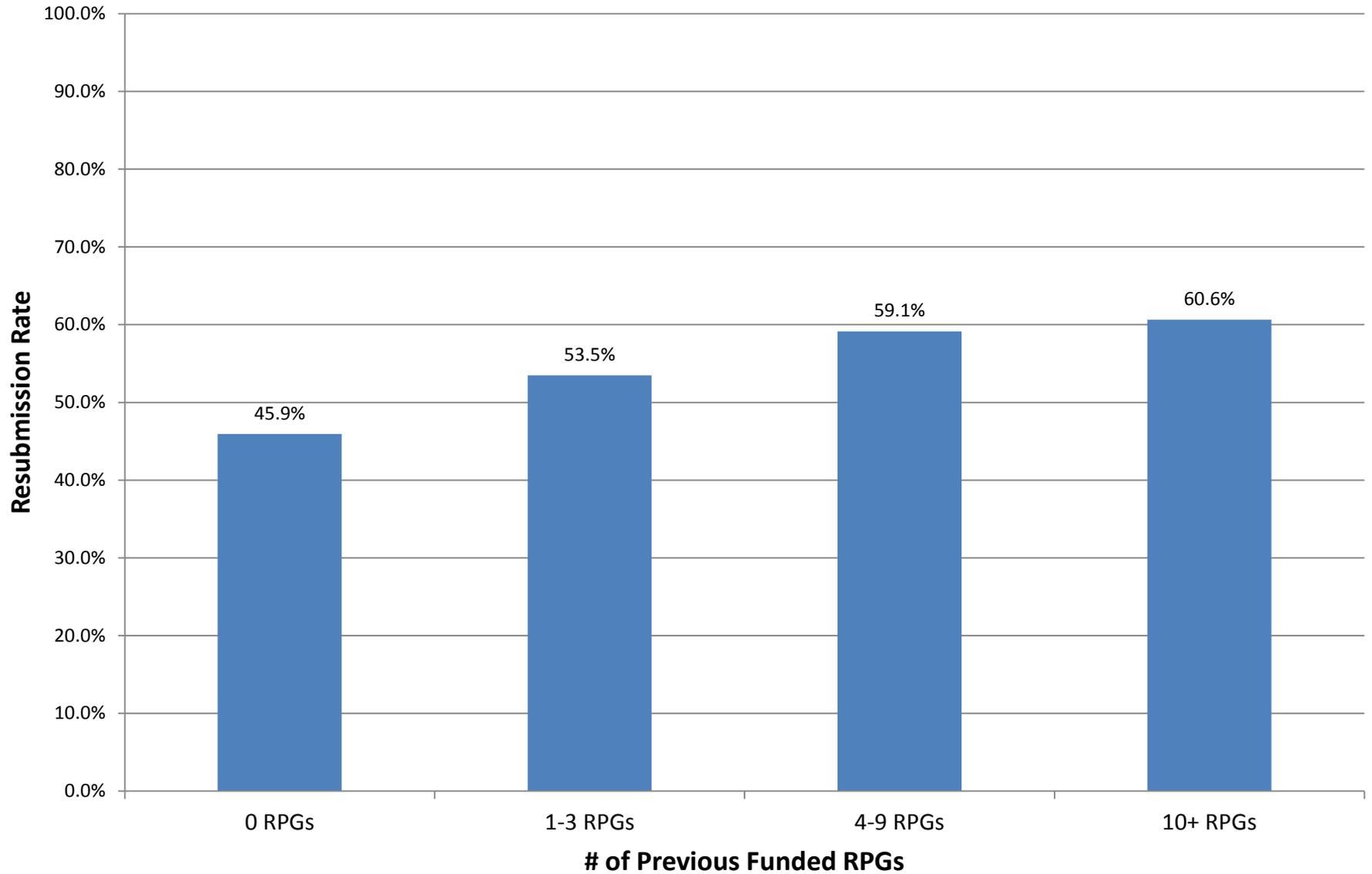
## Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



\* Excludes mail review

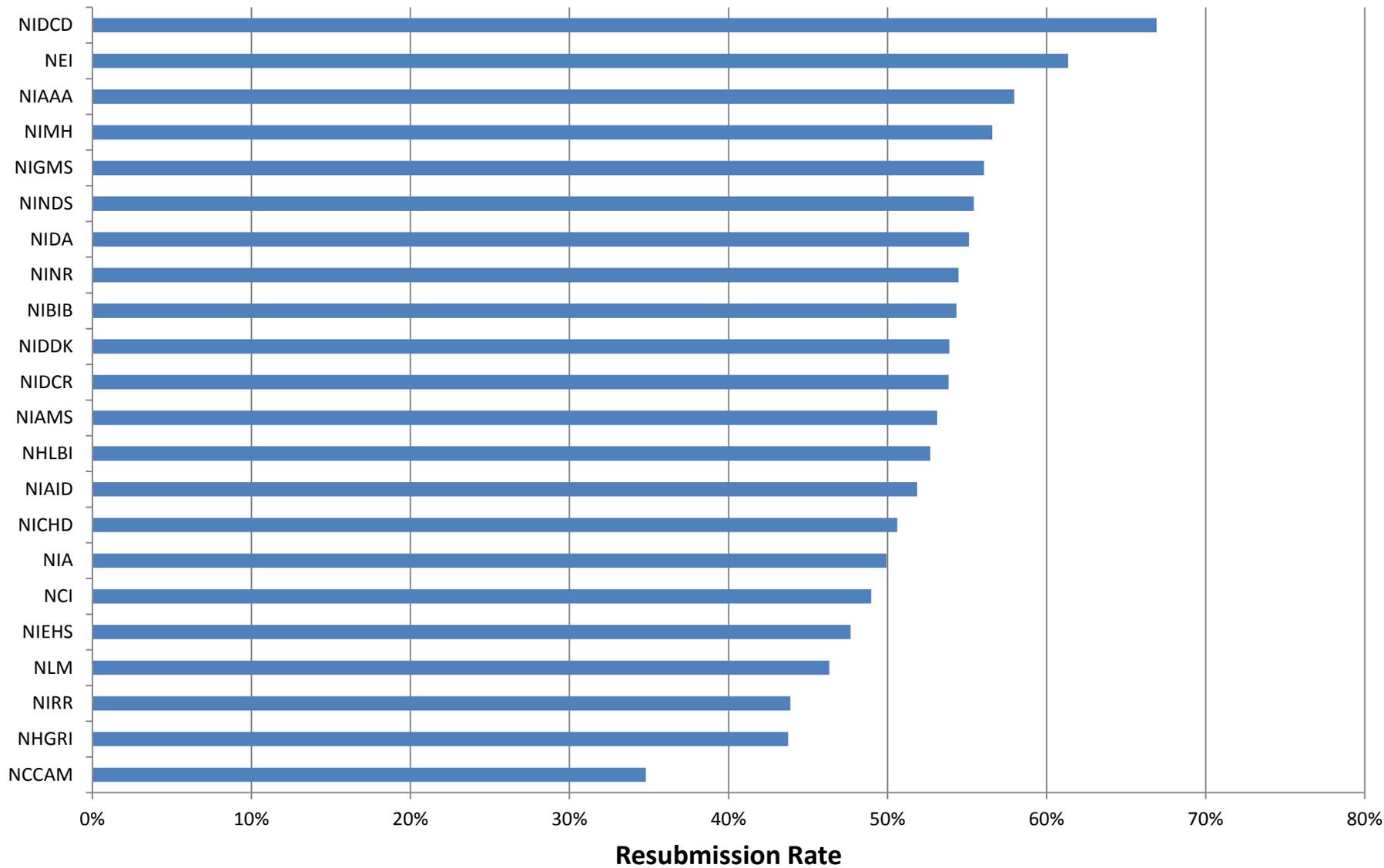
# Resubmission Rate by Funding History of PI

## Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



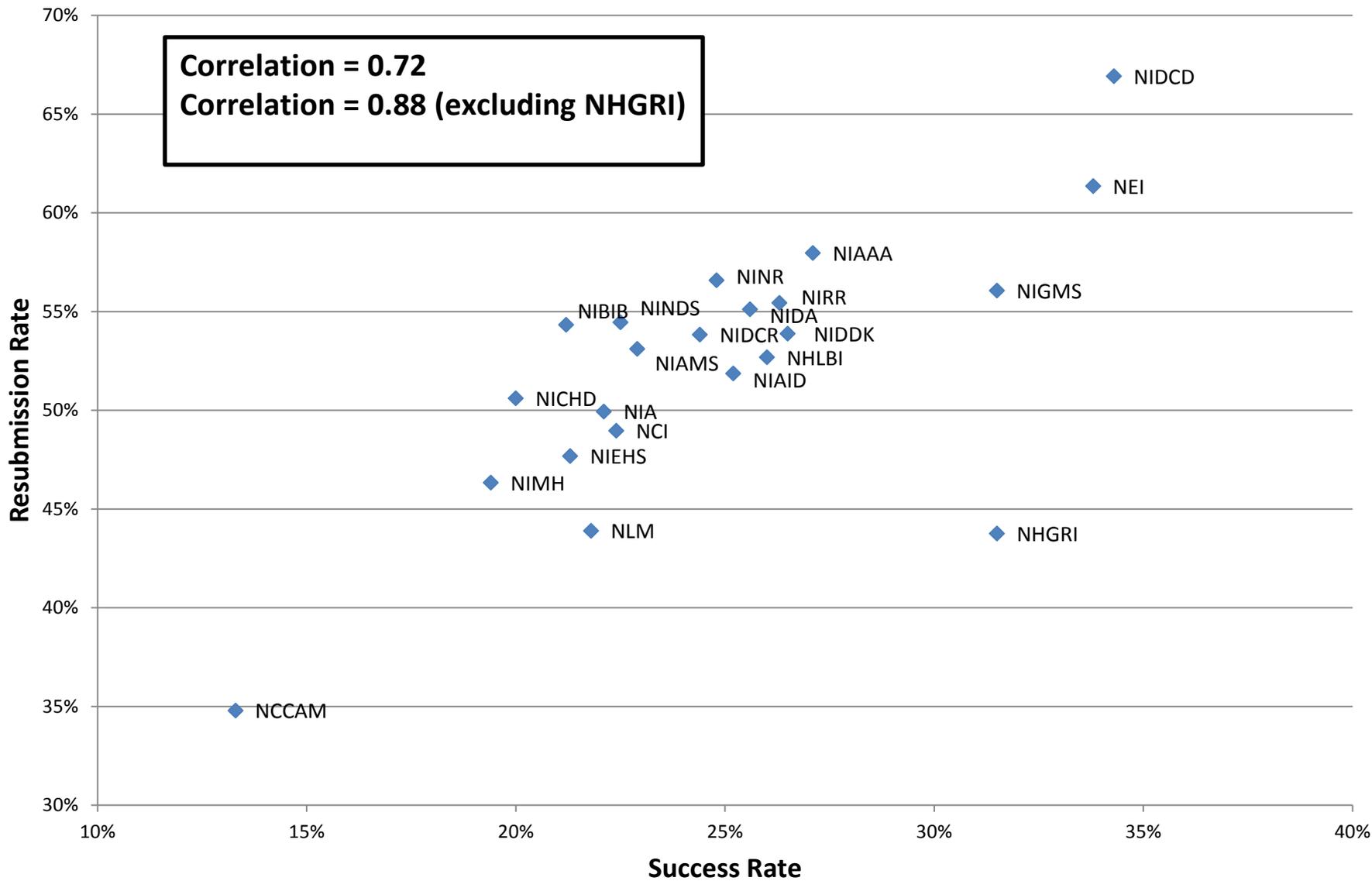
# Resubmission Rate by IC

## Unsuccessful Unsolicited R01 Applications, FY 1999 - 2011



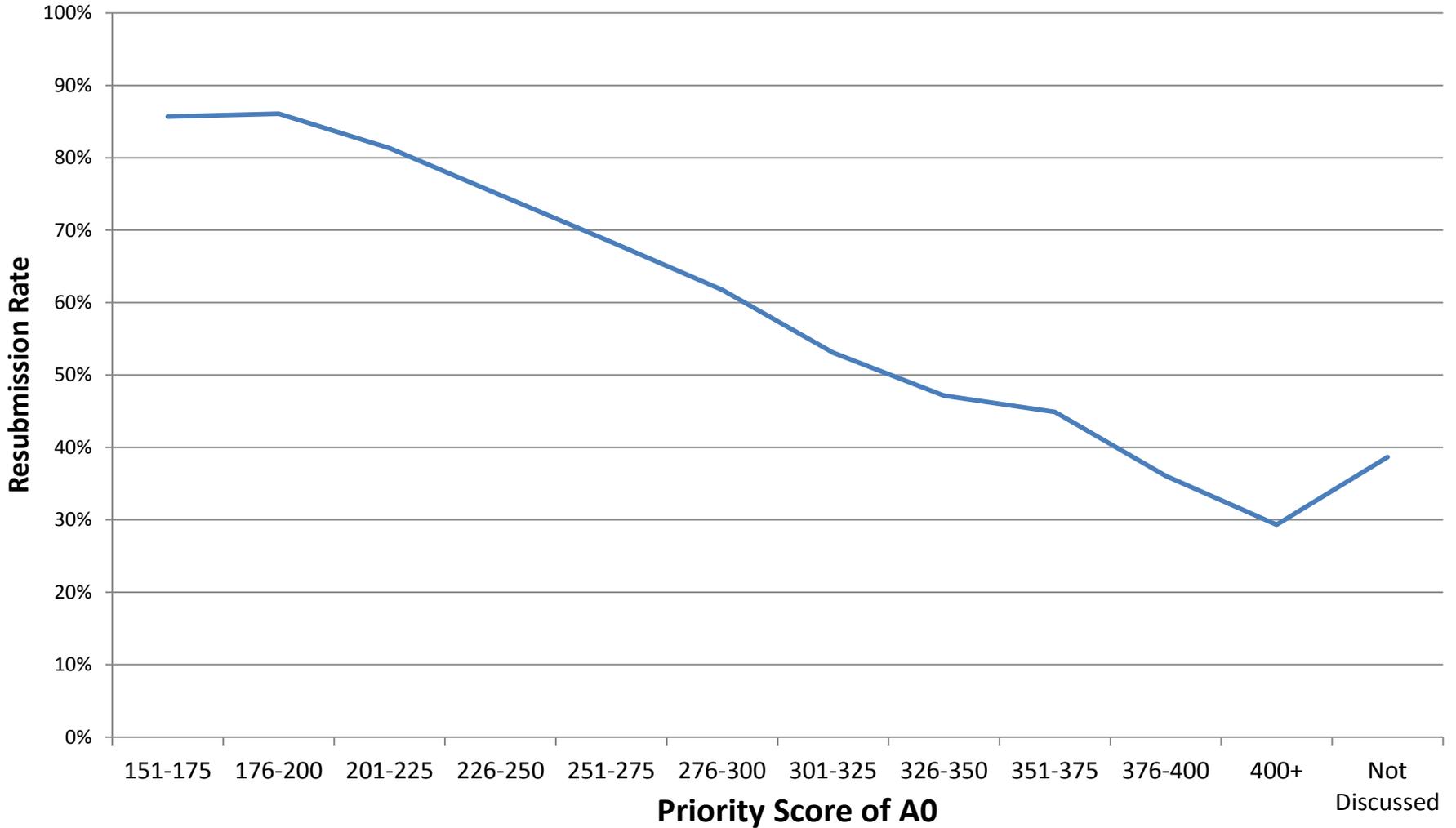
# IC Resubmission Rate is Highly Correlated with IC Success Rate

FY 1999 - 2011



# Resubmission Rate by Priority Score

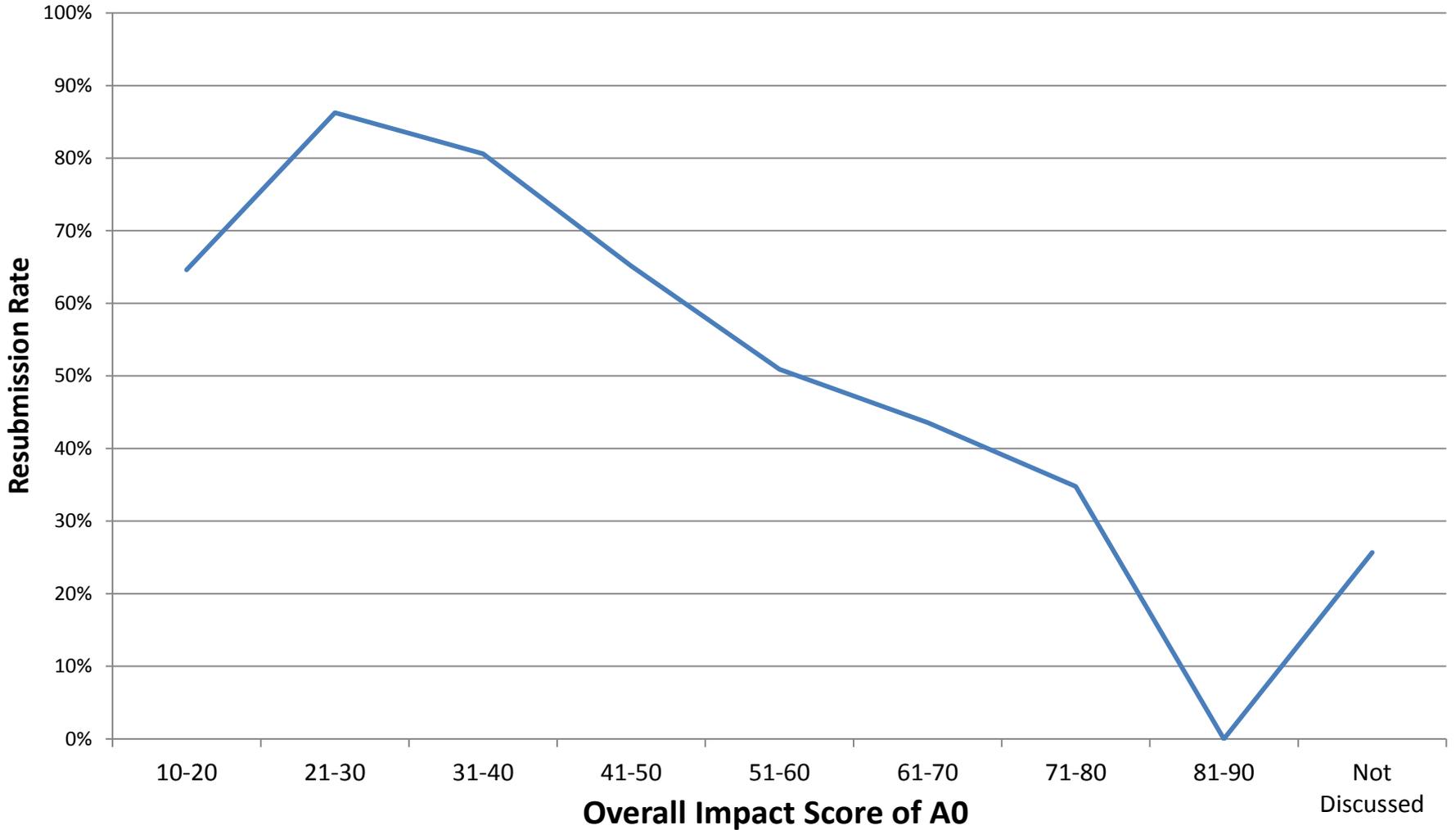
## Unsuccessful Unsolicited R01 A0 Applications, FY 1999 - 2009



**# Total Applications:** N=3674   N=10222   N=12263   N=11808   N=7442   N=4494   N=1614   N=838   N=343   N=183   N=133   N=67823

# Resubmission Rate by Impact Score

## Unsuccessful Unsolicited R01 A0 Applications, FY 2010 - 2011



**# Total Applications:**

10-20

N=65

21-30

N=1521

31-40

N=3790

41-50

N=3878

51-60

N=1843

61-70

N=583

71-80

N=115

81-90

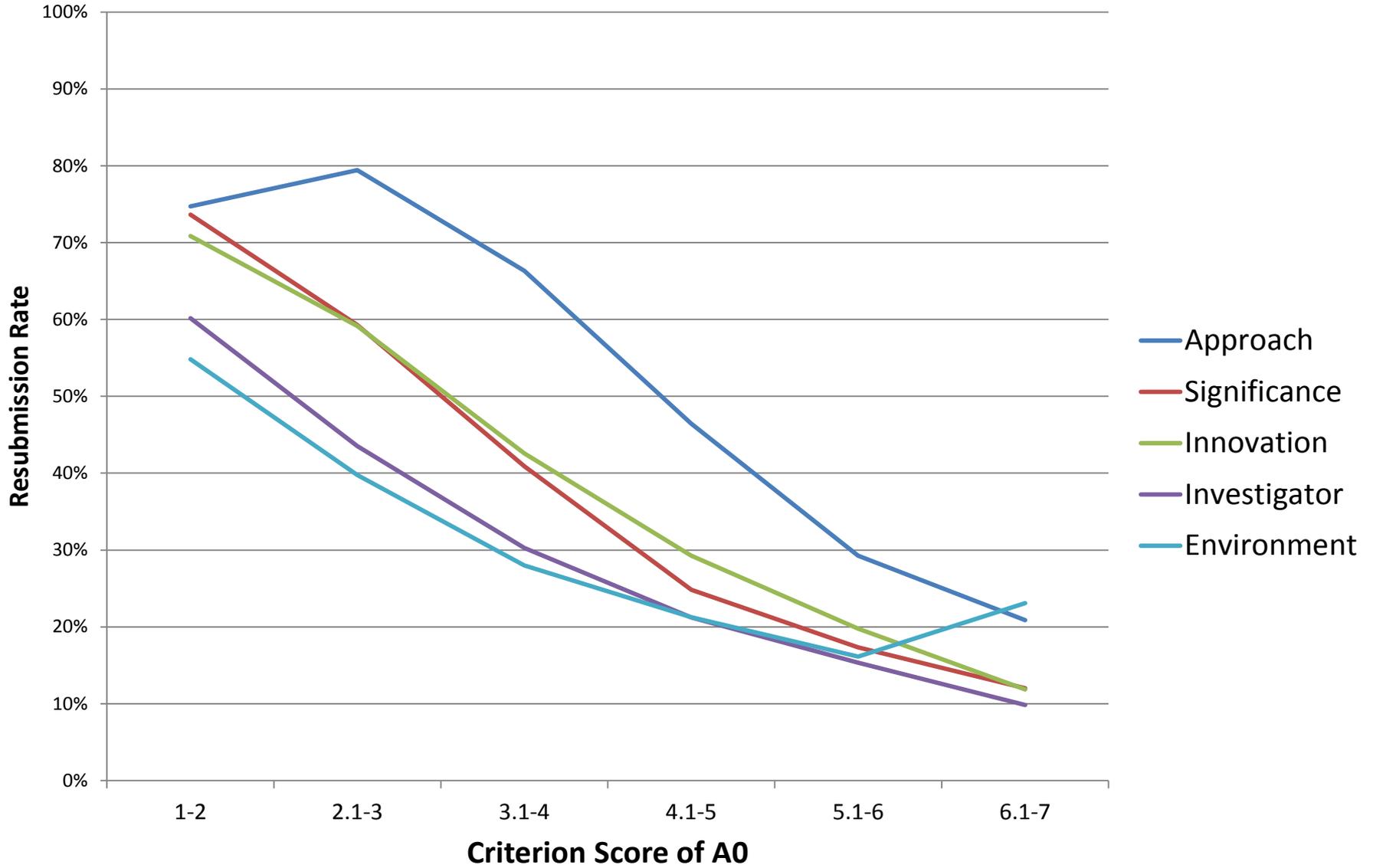
N=9

Not Discussed

N=15042

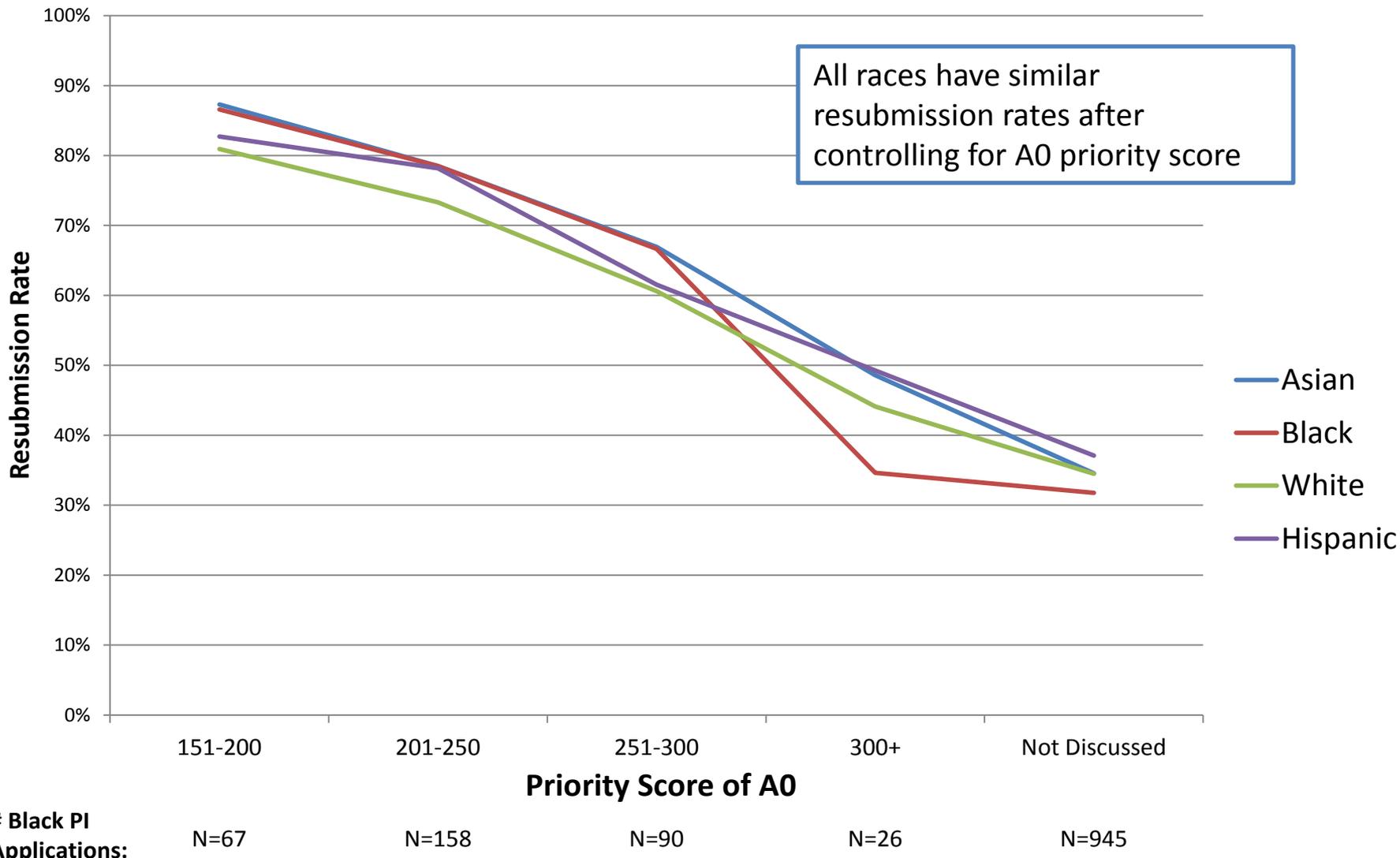
# Resubmission Rate by Criterion Scores

## Unsuccessful Unsolicited R01 A0 Applications, FY 2010 - 2011



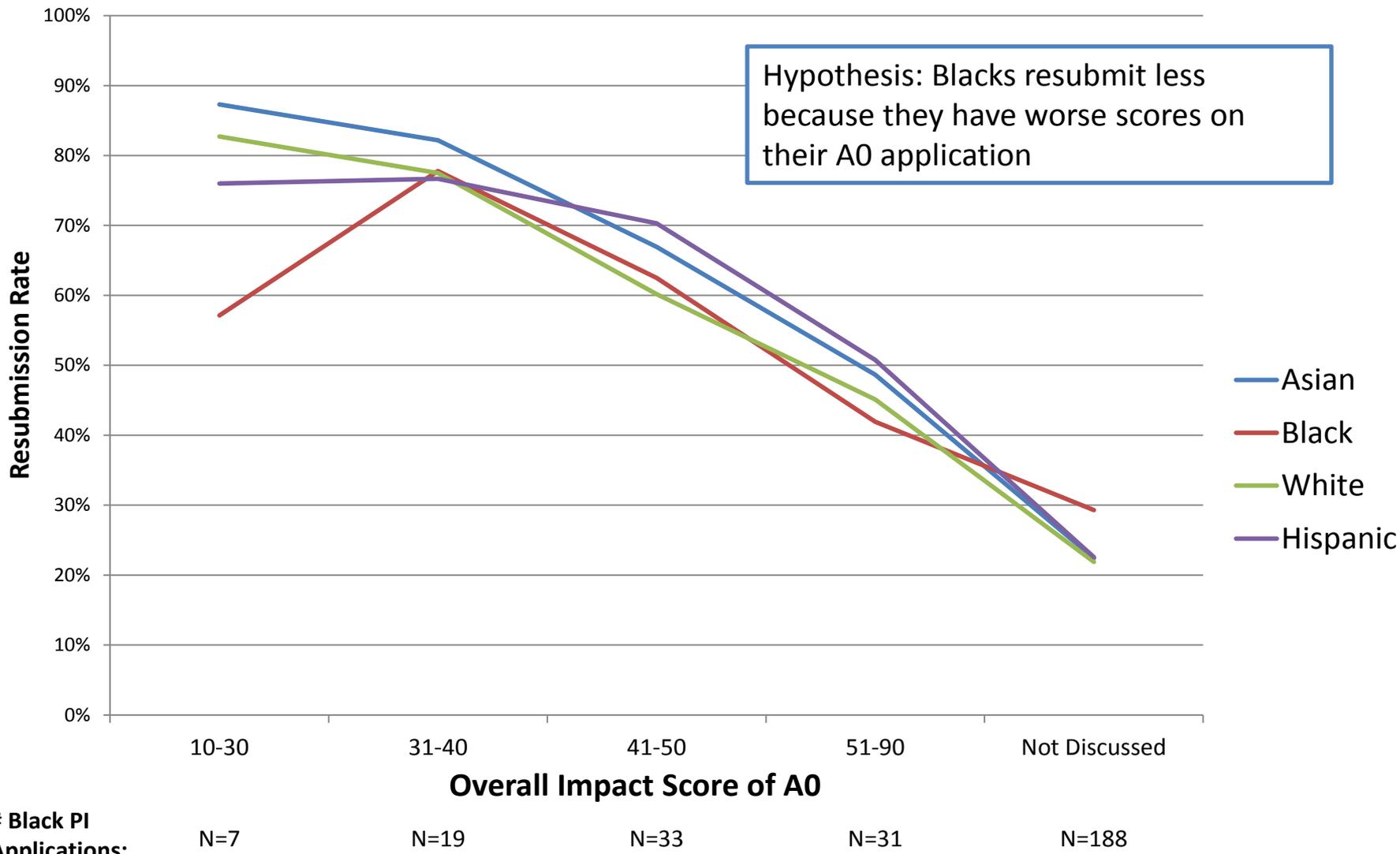
## Resubmission Rate by Priority Score and Race/Ethnicity

### Unsuccessful Unsolicited Type 1 R01 A0 Applications, FY 1999 - 2009



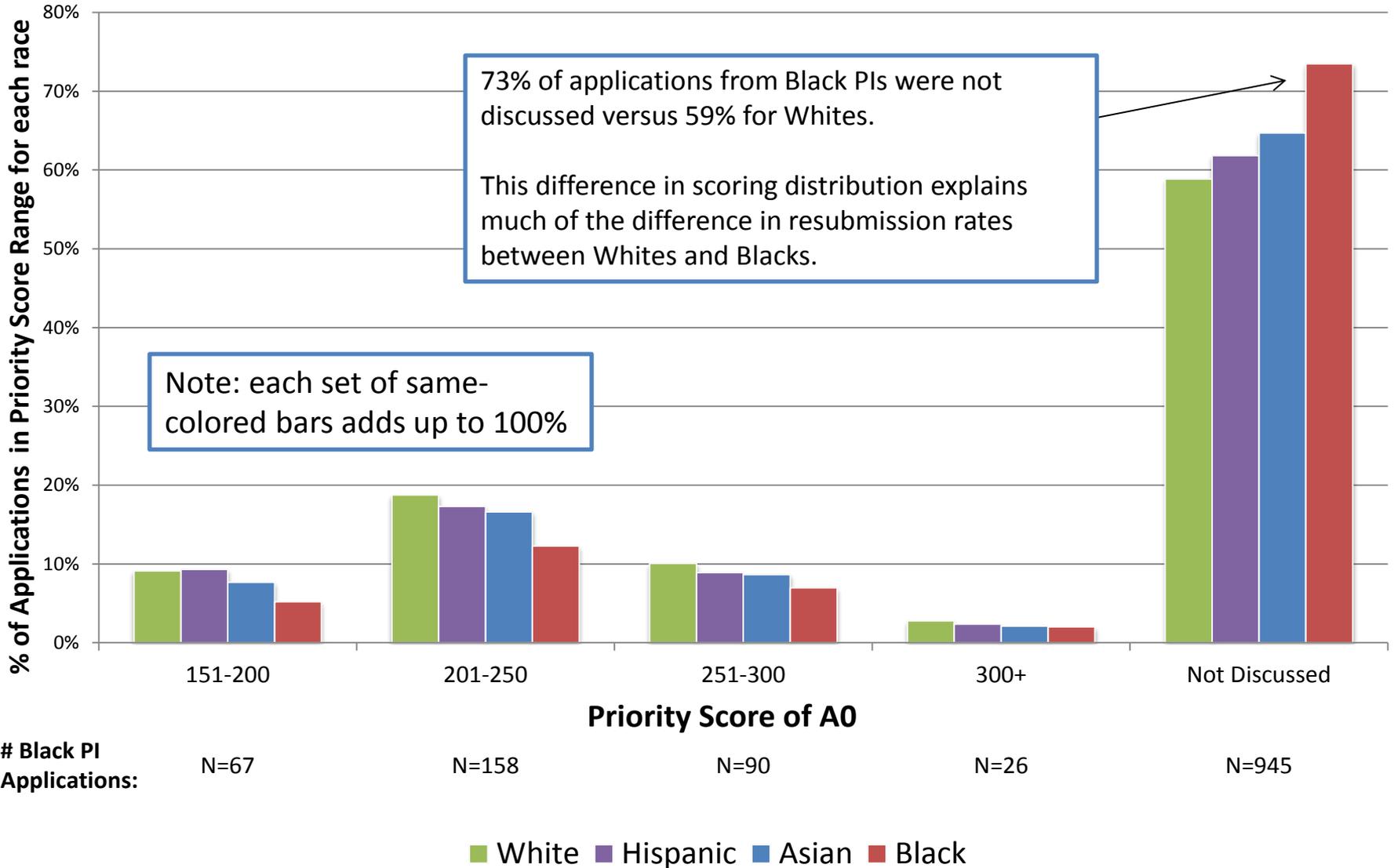
# Resubmission Rate by Overall Impact Score and Race/Ethnicity

## Unsuccessful Unsolicited Type 1 R01 A0 Applications, FY 2010 - 2011



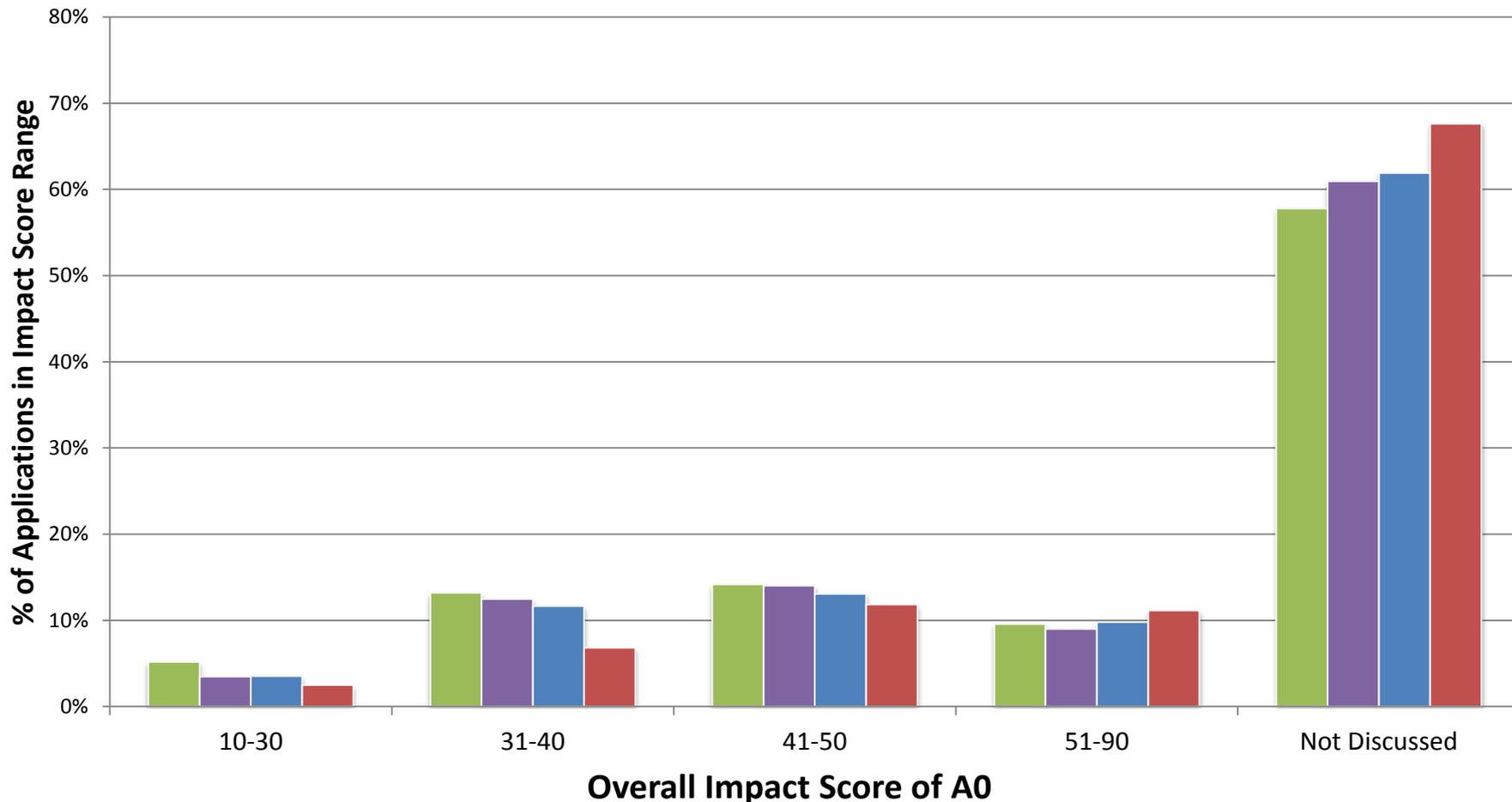
## Distribution of Priority Scores for each Race

### Unsuccessful Unsolicited Type 1 A0 R01s, FY 1999 - 2009



# Distribution of Applications by Race and Overall Impact Score

## Unsuccessful Unsolicited Type 1 A0 R01s, FY 2010-2011



# Black PI Applications:

N=7

N=19

N=33

N=31

N=188

■ White ■ Hispanic ■ Asian ■ Black



# Statistical Modeling



# Resubmission Regression Model Descriptions

Model Description	Model 1: Priority Score Model FY 1999 – 2009	Model 2: Impact Score Model FY 2010 - 2011	Model 3: Criterion Score Model FY 2010 - 2011
<b>Applications</b>	53,481	11,804	26,275*
<b>Outcome</b>	Probability of Resubmission (Range: 0-100%)		
<b>Main Predictors</b>	Priority Score Range: 100 – 500	Overall Impact Score Range: 10 - 90	5 Criterion Scores Range: 1 - 9
<b>Characteristics of the Application</b>	New vs. Renewal, Single PI vs. MPI, New Investigator Status, Requested Grant Term, Locus of Review, Standing SS vs. SEP, Admin IC		
<b>Characteristics of the Applicant</b>	Race/Ethnicity, Gender, Age, Prior Funding History, Review Experience, Academic Degree		
<b>Characteristics of the Institution</b>	Type of Organization, NIH Research Funding Rank (previous 5 years), Geographic Region		

\* Includes non-discussed applications 27

# Model Results

Priority/Impact	Change in Probability of Resubmission
Model 1	
Priority Score (Scale: 100-500)	-0.2%*
Model 2	
Overall Impact Score (Scale: 10-90)	-1.4%*

\* Denotes significance at the 99% confidence level

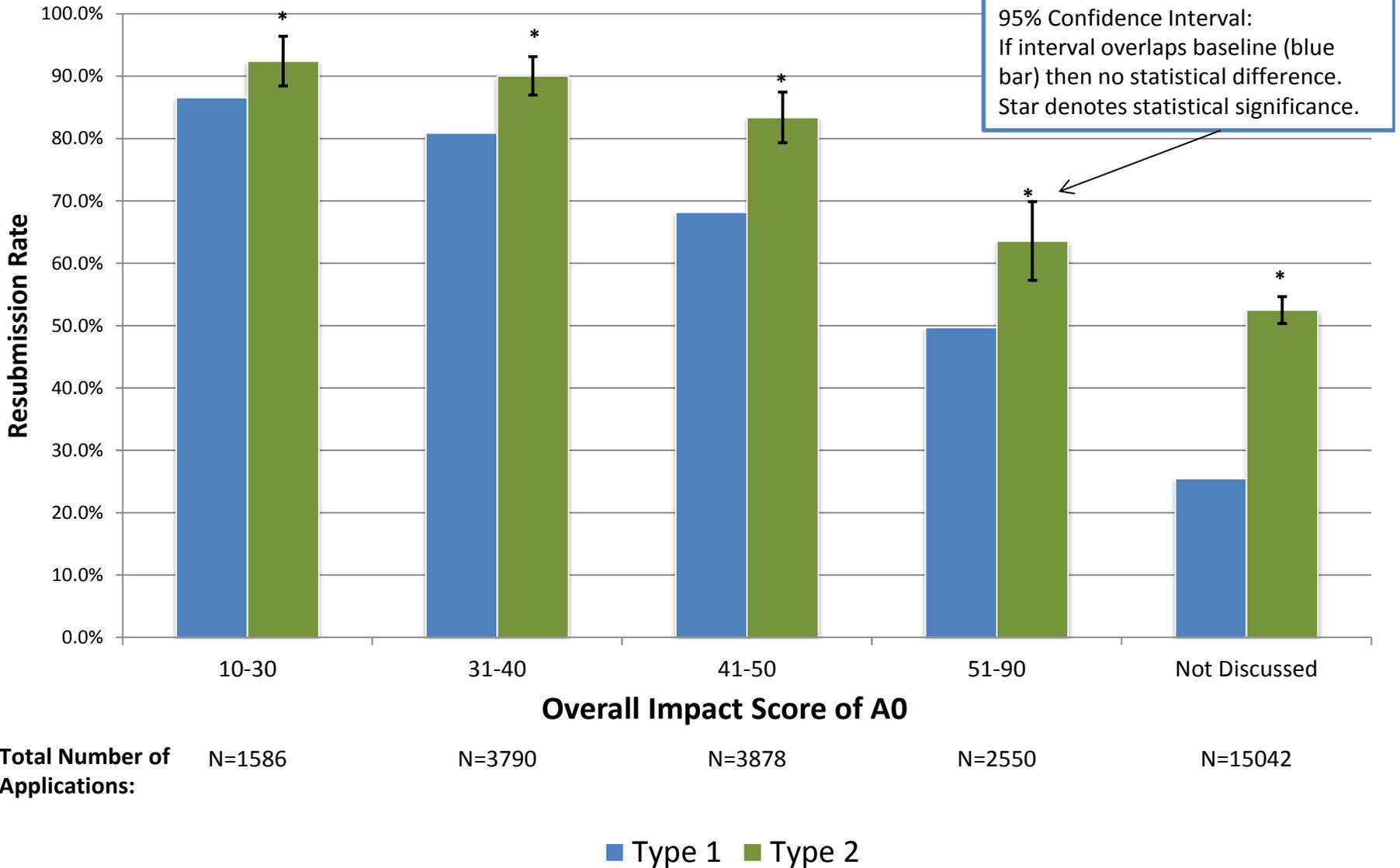
Criterion	Change in Probability of Resubmission
Model 3	
Approach (Scale: 1-9)	-9.1%*
Significance	-5.6%*
Investigator	-4.0%*
Innovation	-3.4%*
Environment	2.6%*

The results should be interpreted as the change in probability of resubmission given a one unit increase in priority/impact/criterion score of the A0 application, all else equal.

E.g., an A0 application with an overall Impact score of 50 is 14% less likely to be resubmitted than ***an otherwise identical*** A0 application with an Impact score of 40 (-1.4% X 10).

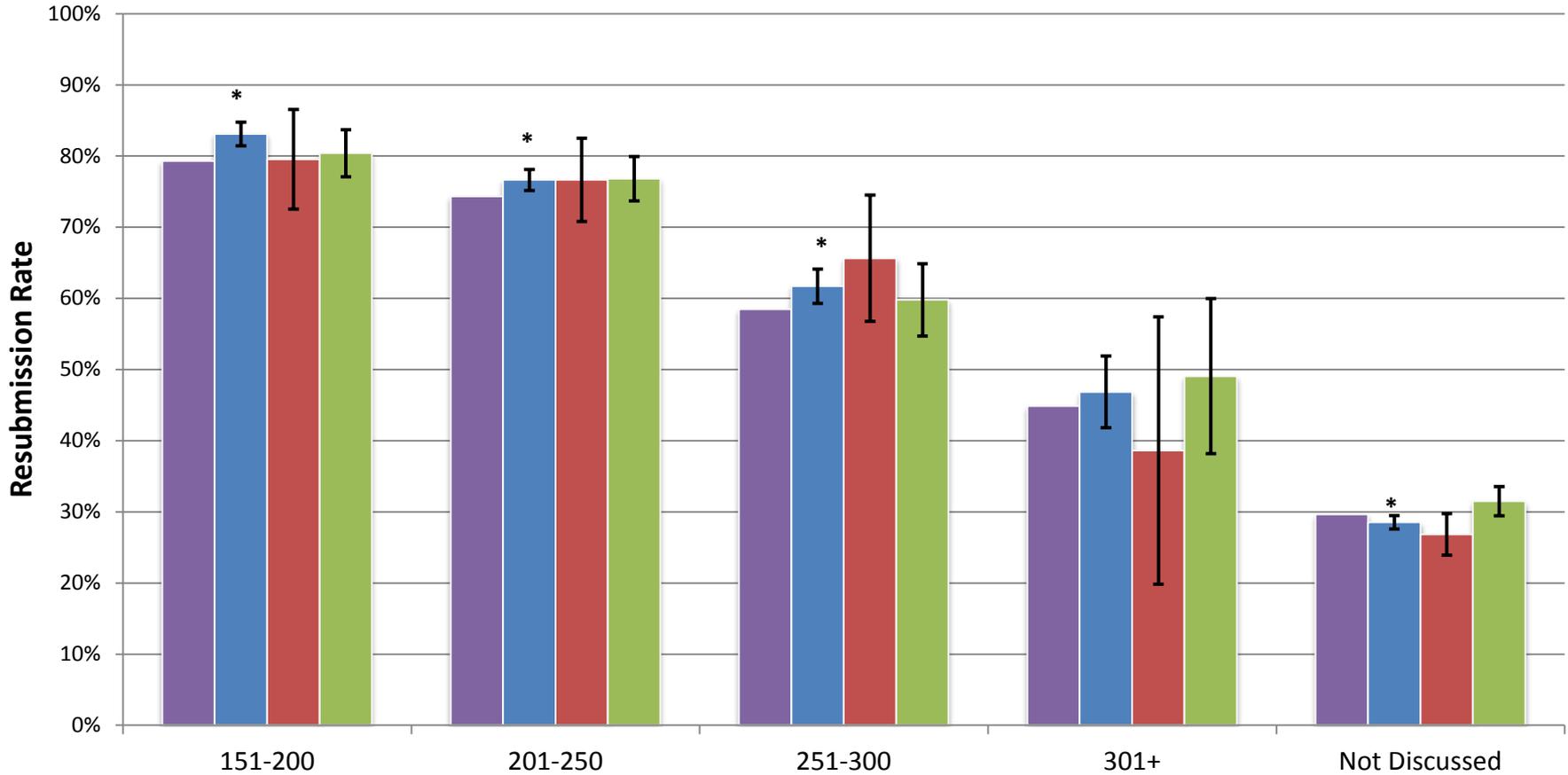
# Predicted Probability of Resubmission by Impact Score and Type

## Unsuccessful Unsolicited R01 A0 Applications, FY 2010 - 2011



## Predicted Probability of Resubmission by Priority Score and Race/Ethnicity

### Unsuccessful Unsolicited R01 A0 Applications, FY 1999 - 2009



# Black PI Applications

N=94 (Black)

N=192

N=109

N=28

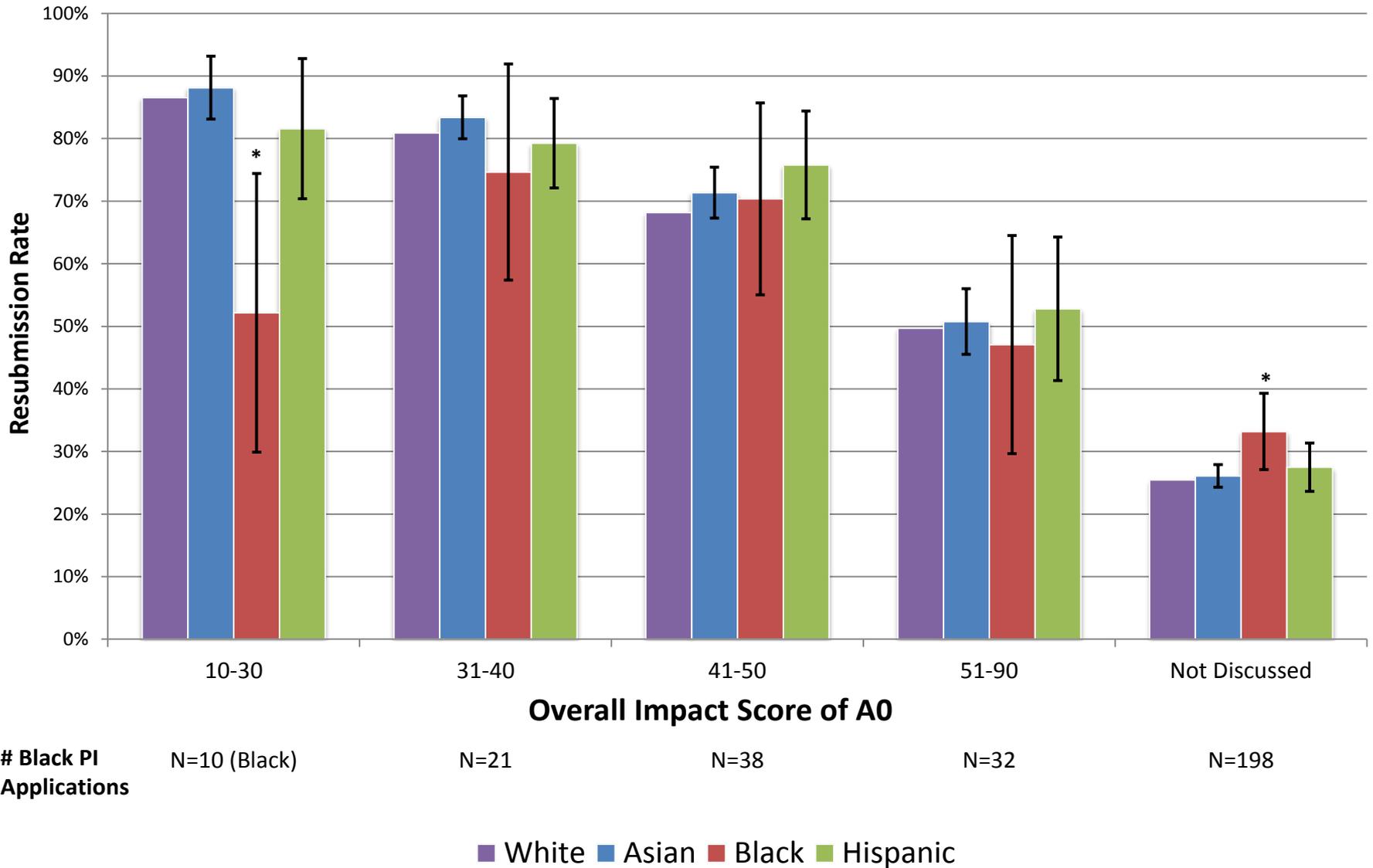
N=1023

■ White 
 ■ Asian 
 ■ Black 
 ■ Hispanic

N = # Black PI applications

## Predicted Probability of Resubmission by Impact Score and Race/Ethnicity

### Unsuccessful Unsolicited R01 A0 Applications, FY 2010 - 2011



- **Priority Score Model (Model 1)**
  - **Simple Model: Priority Score and Application Type correctly predicts 75.9% of resubmission outcomes**
  - **Adding ALL other characteristics improves correct prediction only 0.5% over Simple Model**
- **Criterion Score Model (Model 3)**
  - **Simple Model: Criterion Scores and Application Type correctly predicts 69.8% of resubmission outcomes**
  - **Adding ALL other characteristics improves correct prediction only 1.2% over Simple Model**



- **Before** controlling for priority/impact/criterion scores:
  - Differences in resubmission rates by type, race/ethnicity, review experience of PI, funding history of PI, administering IC
- **After** controlling for priority/impact/criterion scores and application type:
  - Differences in resubmission rates become small and/or statistically insignificant
- Differences in resubmission rates are due to differences in initial score of A0 applications and application type
- Of the five criterion scores, Approach is the biggest determinant of an applicant's decision to resubmit
- Differences in IC resubmission rates are largely explained by the success rates of ICs



# Contact Information

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**Office of Statistical Analysis and Reporting  
Office of Extramural Research  
Office of the Director  
NIH**



# Goals of the Working Group

Explore ways to:

- Understand factors considered by applicants in deciding whether to resubmit an application.
- Provide guidance that will help all applicants come to a well-reasoned decision about whether to resubmit their application, and provide tips on ways to improve the overall quality of resubmissions.
- Address resubmission disparities identified in Ginther et al., 2011.
- Encourage investigators to submit competitive A1 applications and discourage submission of uncompetitive A1s (capacity).

# Guidance For Applicants On Summary Statements Prior to October Council 2013

*“Each applicant should read the written critiques carefully and, if there are questions about the review or future options for the project, discuss them with the Program Contact listed above. See*

*\*[http://grants.nih.gov/grants/peer\\_review\\_process.htm](http://grants.nih.gov/grants/peer_review_process.htm).”*

***This statement appeared only on summary statements of applications that were not discussed at the review meetings.***

**\*This website on the peer review process also provided a couple of sentences on “Post-Review: What Next?”**

[http://grants.nih.gov/grants/next\\_steps.htm](http://grants.nih.gov/grants/next_steps.htm)



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# Grants & Funding



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[Electronic Research Administration \(eRA\)](#)

## Applicant Guidance: Next Steps "Your application was reviewed; what to do next..."

Information is available online to help you better understand the review process. The results of the review of your application will be available through your Commons account. The current site provides guidance on what to do after your application has been reviewed.

**Step 1:** Wait for the summary statement to be available through your Commons account, which will include the reviewers' critiques of your application and numerical scores for each of (at least) five review criteria. Even an application that was Not Discussed at the review meeting will receive a summary statement with critiques and criterion scores from each of the assigned reviewers.

The summary statement is usually available in your eRA Commons account within 30 days of the review of the application. If a month has passed since the review meeting and your summary statement is not available in your account, you may contact the Scientific Review Officer (SRO) listed for the application under the "Status" tab of your Commons account.

**Step 2:** After reading the summary statement, you may want to discuss the critiques and your options with the Program Officer (PO) assigned to your application.

## Related Resources

- [The NIH Peer Review Process](#)
- [NIH Scoring System and Procedure](#)
- [How Percentile Scores are Calculated](#)
- [The NIH Grants Calendar](#)
- [Evaluation of Unallowable Resubmission and Overlapping Applications](#)
- [Funding Strategies of the NIH ICs](#)
- [Referral Guidelines for the NIH ICs](#)
- [CSR Study Sections](#)
- [NIH Policy on Late Submission of Grant](#)

# Contents of the “Next Steps” website

- **Description of the types of guidance available from your Program Officer**
- **Frequently Asked Questions:**
  - **Interpreting the Scores of the application**
  - **How Funding Decisions are made**
  - **When and How to Resubmit**
  - **What should be in your Resubmission Application**

# New Guidance on Summary Statements After August 23, 2012

**PROGRAM CONTACT:**

[Redacted]

**SUMMARY STATEMENT**  
( Privileged Communication )

*Release Date:* 09/12/2012

*Application Number:*

[Redacted]

**Principal Investigator**

[Redacted]

**Applicant Organization:**

[Redacted]

*Review Group:*

[Redacted]

*Meeting Date:* 08/24/2012

*RFA/PA:*

[Redacted]

*Council:* OCT 2012

*PCC:*

*Requested Start:* 12/01/2012

*Project Title:*

[Redacted]

*SRG Action:*

[Redacted]

*Next Steps:* Visit [http://grants.nih.gov/grants/next\\_steps.htm](http://grants.nih.gov/grants/next_steps.htm)



**Human Subjects:** 30-Human subjects involved - Certified, no SRG concerns

**Animal Subjects:** 10-No live vertebrate animals involved for competing appl.

## Rock Talk

*Helping connect you with the NIH perspective*

Posted on [September 21, 2012](#) by [Sally Rockey](#)

### What's Next?—Reviewing Your Summary Statement and Thinking About Resubmitting

So you're wearing your lucky shoes and are ready to take a first look at the results of your grant review. Whether you are anticipating doing a victory dance or getting ready to head out to the nearest kickboxing class, it's a good time to think about what comes next.

Some of you have noticed that the summary statements now include a link to a new online resource to address just this question. Especially if you are new to NIH funding, I encourage you to check out this "[Next Steps](#)" page, which was put together to help NIH grant applicants with the "What's next?" questions following receipt of the summary statement.

If you aren't in the position to be preparing Just-in-Time information for an award, but instead are considering resubmission, you may want to consider some of the data that have appeared in my previous blog posts, in addition to the resources available on [grants.nih.gov](#). For example, in the post "[Correlation Between Overall Impact Scores and Criterion Scores](#)", I show how approach, innovation, and significance factor heavily into the overall impact scores. As you look at your summary statement, talk to your NIH program official, and discuss your ideas with colleagues, it might be useful to keep this in mind.

Additionally our podcast series, [All About Grants](#), includes conversations with NIH staff to help you understand how your grant is reviewed, such as these two episodes on [summary statement basics](#) and [resubmission advice](#).

Whether you're new to the grant application process or an experienced applicant, we hope you find these resources useful.



Dr. Sally Rockey is NIH's Deputy Director for Extramural Research, serving as the principal scientific leader and advisor to the NIH Director on the NIH extramural research program.

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# Total page views of the “Next Steps” website



**65,328 page views as of May 31**

**4 minutes and 21 seconds average time on the page**

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**4682 hours of viewing**

## Potential impact of the Next Steps guidance

- Applicants making more informed decisions about whether, when and how to resubmit their applications.
- Fewer hours spent by program officers providing basic information.
- Reduced workload of reviewers and review officers by reducing the number of applications.