Mentored Career Development Application (K) Funding Rates by Race-Ethnicity FY2010-FY2022

Michael Lauer, National Institutes of Health (NIH) Office of the Director (OD)
Xuemin Zhang, NIH Office of Extramural Research (OER)
Deepshikha Roychowdhury, NIH Office of Extramural Research (OER)

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Introduction

This is an analysis of funding rates for FY2010 to FY2022 mentored career development award (K) applicants according to the race-ethnicity of designated Principal Investigators (PIs).

Methods

Data Sources

We used data from frozen, official, NIH success rate files. We focus on applicants for K01, K08, K23, K25,and K99 direct budget authority awards.

We obtained data on the race and ethnicity of PIs from their entries into the eRA Commons Personal Profile. As noted by NIH, PIs provide these data on a strictly voluntary basis, and these data are not used for making funding decisions. If individuals described themselves as Hispanic in the ethnicity field and not Black in the race field, then race-ethnicity was considered to be Hispanic; otherwise the individual's race-ethnicity was based on their entry in the race field. Race-ethnicity groups with small cell sizes are removed from the report.

Grant Outcome Metrics

As a reminder, NIH publishes three main kinds of grant outcome metrics, namely award rates, success rates, and funding rates. Award and success rates are *application-based* metrics, while funding rates are *person-based*.

The funding rate, as a person-based measure, is calculated as

$$F_{FY} = \frac{\sum_{j=1}^{P} a}{P} \tag{1}$$

where P is the number of *unique* persons (designated-PI applicants) who submitted at least one proposal in a given fiscal year and a is an indicator of whether person (designated-PI applicant) j

successfully obtained funding for at least one of those proposals (1 if yes, 0 if no). A data frame that calculates funding rate will have only *one* observation per person per year.

Throughout the report we refer for convenience to Principal Investigators ("PIs") as applicants or awardees. In point of fact, applicants and awardees are institutions who in turn designate PIs; PIs are typically employees of the applicants and awardees.

Results and Findings

Tables 1 and 2 show characteristics according to race-ethnicity of scientists who were designated as a PI on at least one K application submitted in FY2012 (the year the Ginther paper was published) and in FY2022. Compared to white applicants, FY2022 Black applicants were more likely to submit a K01 application and less likely to submit K08 or K23 applications. The K01 mechanism is used by some IC's to enhance workforce diversity. Black applicants were more likely to submit proposals including human subjects and less likely to submit proposals including animal models.

Funding Rates

Figure 1 shows the number of unique K applicants each fiscal year according to race-ethnicity. Figure 2 shows increasing numbers of unique Black K applicants and awardees, while Figure 3 shows corresponding values for Hispanic applicants and awardees. Figure 4 shows K funding rates according to race-ethnicity.

Of note, in FY2022 there were 195 Black applicants; of these 54 were K99 applicants, including 24 who were MOSAIC applicants. There were 88 Black awardees; of these 28 were K99 awardees, including 16 who were MOSAIC awardees. There were 284 Hispanic applicants; of these 133 were K99 applicants, including 38 who were MOSAIC applicants. There were 104 Hispanic awardees; of these 46 were K99 awardees, including 18 who were MOSAIC awardees.

Summary

In this analysis of K applicants and awardees, we find that:

- The numbers of Black and Hispanic applicants and awardees have steadily increased over time.
- Funding rates for Black applicants have increased over the past 3 years.
- However, the total number of Black and Hispanic applicants remains quite low.

Table 1: Characteristics according to race-ethnicity of scientists who were designated as a Principal Investigator on at least one K application in FY2012. ND = not displayed due to small cell size.

Characteristic		White	Asian	Unknown	Hispanic	Black
Total N (%)		1255 (52.0)	587 (24.3)	280 (11.6)	153 (6.3)	94 (3.9)
Female		583 (46.5)	251 (42.8)	119 (42.5)	84 (54.9)	71 (75.5)
Age (years)	Median (IQR)	36.0 (33.0 to 39.0)	37.0 (34.0 to 40.0)	35.0 (33.0 to 38.0)	37.0 (35.0 to 40.0)	36.5 (34.0 to 40.0)
Degree	MD	294 (23.4)	145 (24.7)	37 (13.2)	36 (23.5)	24 (25.5)
	MD-PhD	128 (10.2)	82 (14.0)	22 (7.9)	19 (12.4)	ND
	Other	29 (2.3)	19 (3.2)	91 (32.5)	ND	ND
	PhD	804 (64.1)	341 (58.1)	130 (46.4)	93 (60.8)	65 (69.1)
Submitted a K01 application		277 (22.1)	94 (16.0)	41 (14.6)	51 (33.3)	47 (50.0)
Submitted a K08 application		198 (15.8)	101 (17.2)	36 (12.9)	19 (12.4)	ND
Submitted a K23 application		302 (24.1)	116 (19.8)	56 (20.0)	40 (26.1)	23 (24.5)
Submitted a K25 application		37 (2.9)	24 (4.1)	ND	ND	ND
Submitted a K99 application		444 (35.4)	252 (42.9)	138 (49.3)	41 (26.8)	15 (16.0)
Submitted a K animal research application		499 (39.8)	298 (50.8)	141 (50.4)	71 (46.4)	27 (28.7)
Submitted a K human research application		675 (53.8)	245 (41.7)	119 (42.5)	77 (50.3)	60 (63.8)

Table 2: Characteristics according to race-ethnicity of scientists who were designated as a Principal Investigator on at least one K application in FY2022. ND = not displayed due to small cell size.

Characteristic		White	Asian	Unknown	Hispanic	Black
Total N (%)		1859 (51.2)	907 (25.0)	296 (8.2)	284 (7.8)	195 (5.4)
Female		1045 (56.2)	419 (46.2)	77 (26.0)	169 (59.5)	133 (68.2)
Age (years)	Median (IQR)	36.0 (34.0 to 39.0)	36.0 (34.0 to 39.0)	36.0 (34.0 to 39.0)	37.0 (34.0 to 40.0)	38.0 (35.0 to 42.0)
Degree	MD	351 (18.9)	176 (19.4)	49 (16.6)	41 (14.4)	43 (22.1)
	MD-PhD	182 (9.8)	105 (11.6)	29 (9.8)	18 (6.3)	14 (7.2)
	Other	179 (9.6)	93 (10.3)	95 (32.1)	27 (9.5)	17 (8.7)
	PhD	1147 (61.7)	533 (58.8)	123 (41.6)	198 (69.7)	121 (62.1)
Submitted a K01 application		370 (19.9)	115 (12.7)	43 (14.5)	66 (23.2)	73 (37.4)
Submitted a K08 application		314 (16.9)	138 (15.2)	62 (20.9)	35 (12.3)	20 (10.3)
Submitted a K23 application		463 (24.9)	163 (18.0)	56 (18.9)	49 (17.3)	47 (24.1)
Submitted a K25 application		23 (1.2)	13 (1.4)	ND	ND	ND
Submitted a K99 application		692 (37.2)	481 (53.0)	133 (44.9)	133 (46.8)	54 (27.7)
Submitted a K animal research application		594 (32.0)	402 (44.3)	118 (39.9)	115 (40.5)	48 (24.6)
Submitted a K human research application		1121 (60.3)	415 (45.8)	147 (49.7)	149 (52.5)	137 (70.3)
Submitted a MOSAIC research application		16 (0.9)	ND	ND	38 (13.4)	24 (12.3)

A: K Applicants
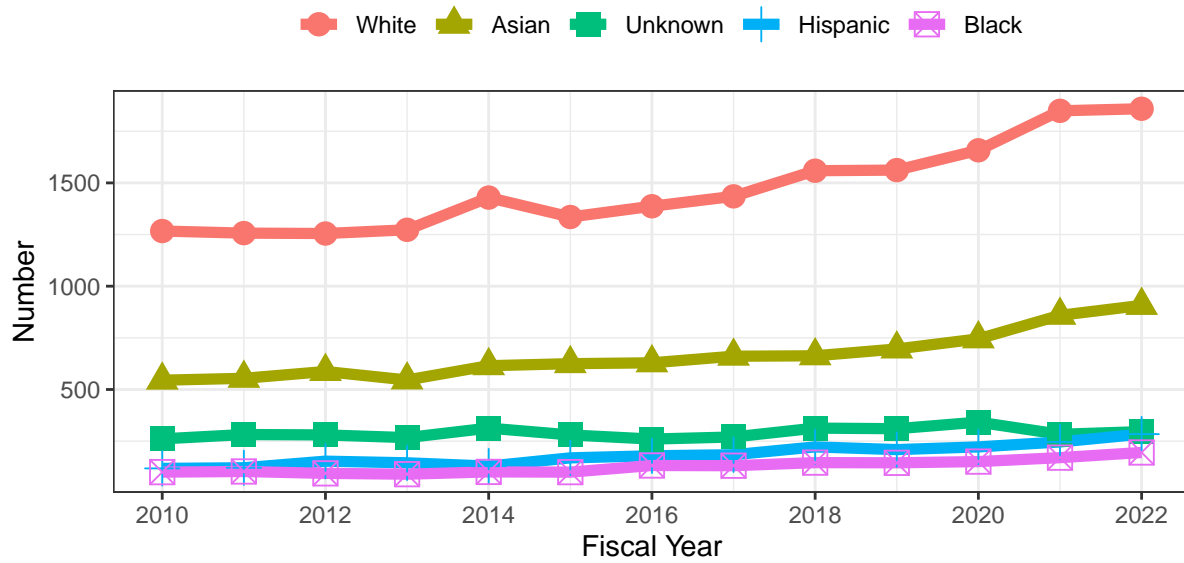
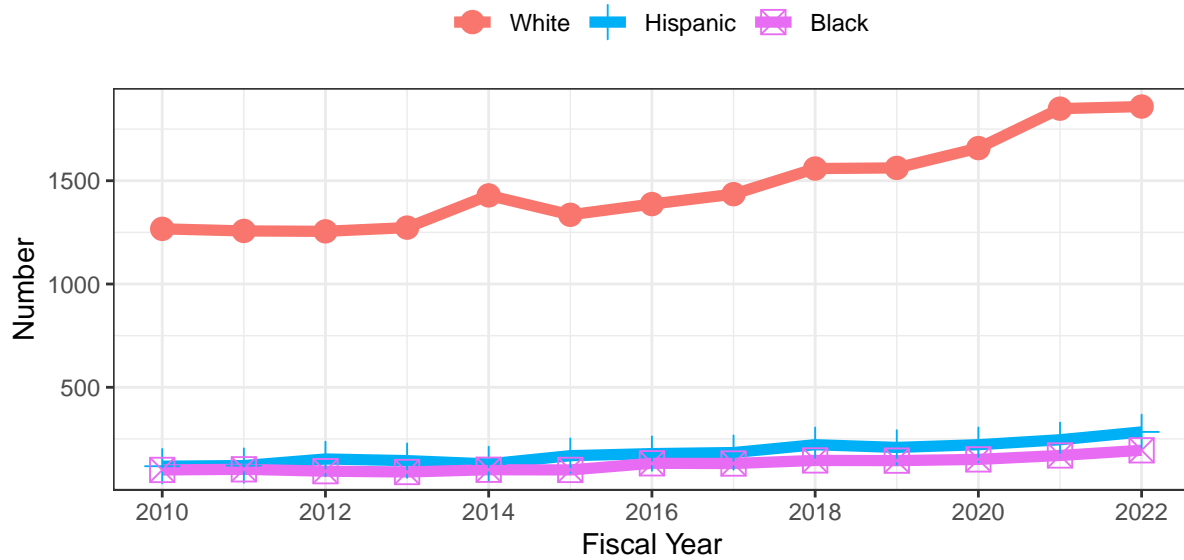## B: White, Hispanic, and Black K Applicants

Figure 1: Number of K applicants according to race-ethnicity by fiscal year. Panel A shows data for all groups, while Panel B shows the same data but for White, Hispanic, and Black applicants only.
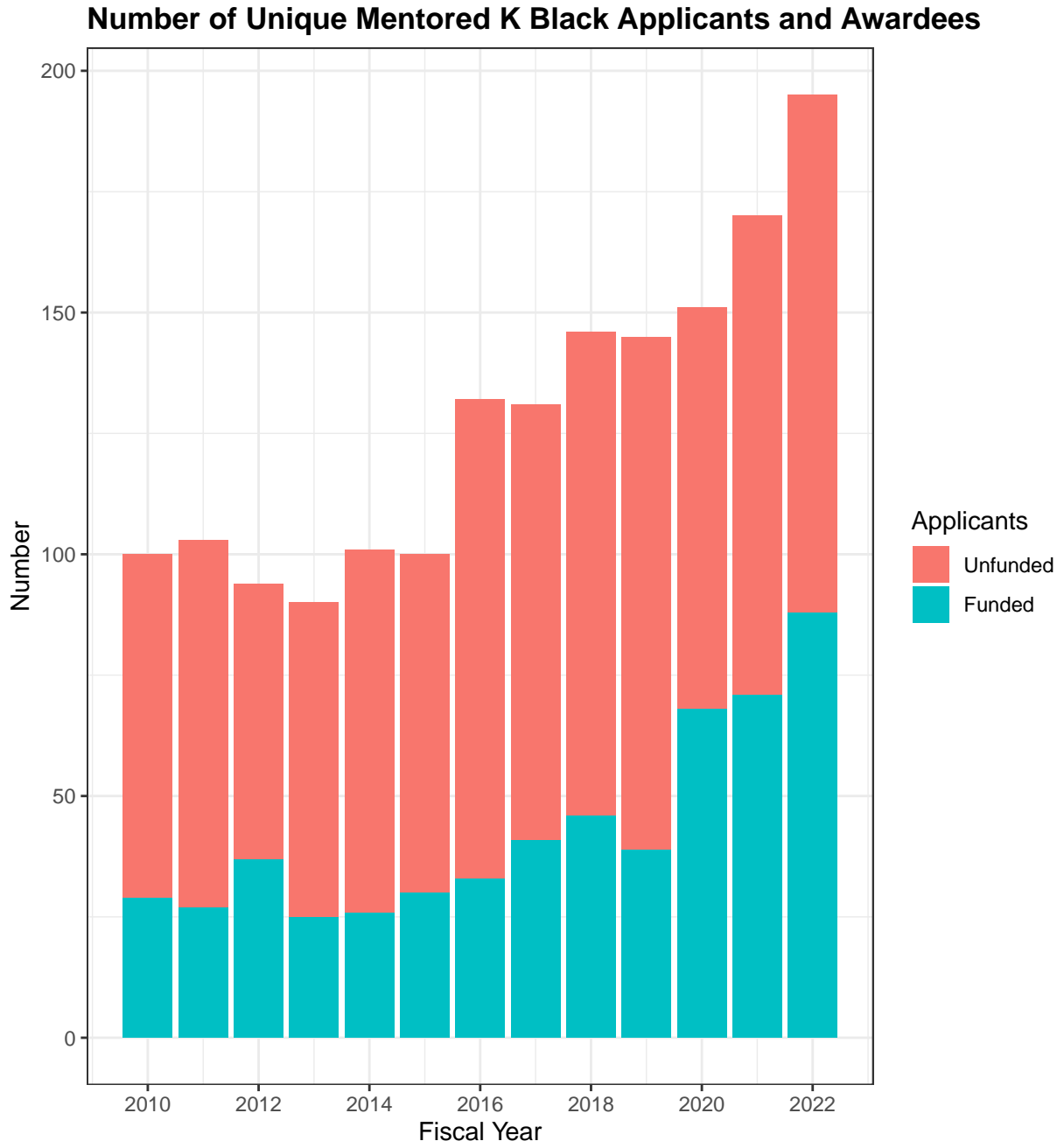
Number of Unique Mentored K Black Applicants and Awardees

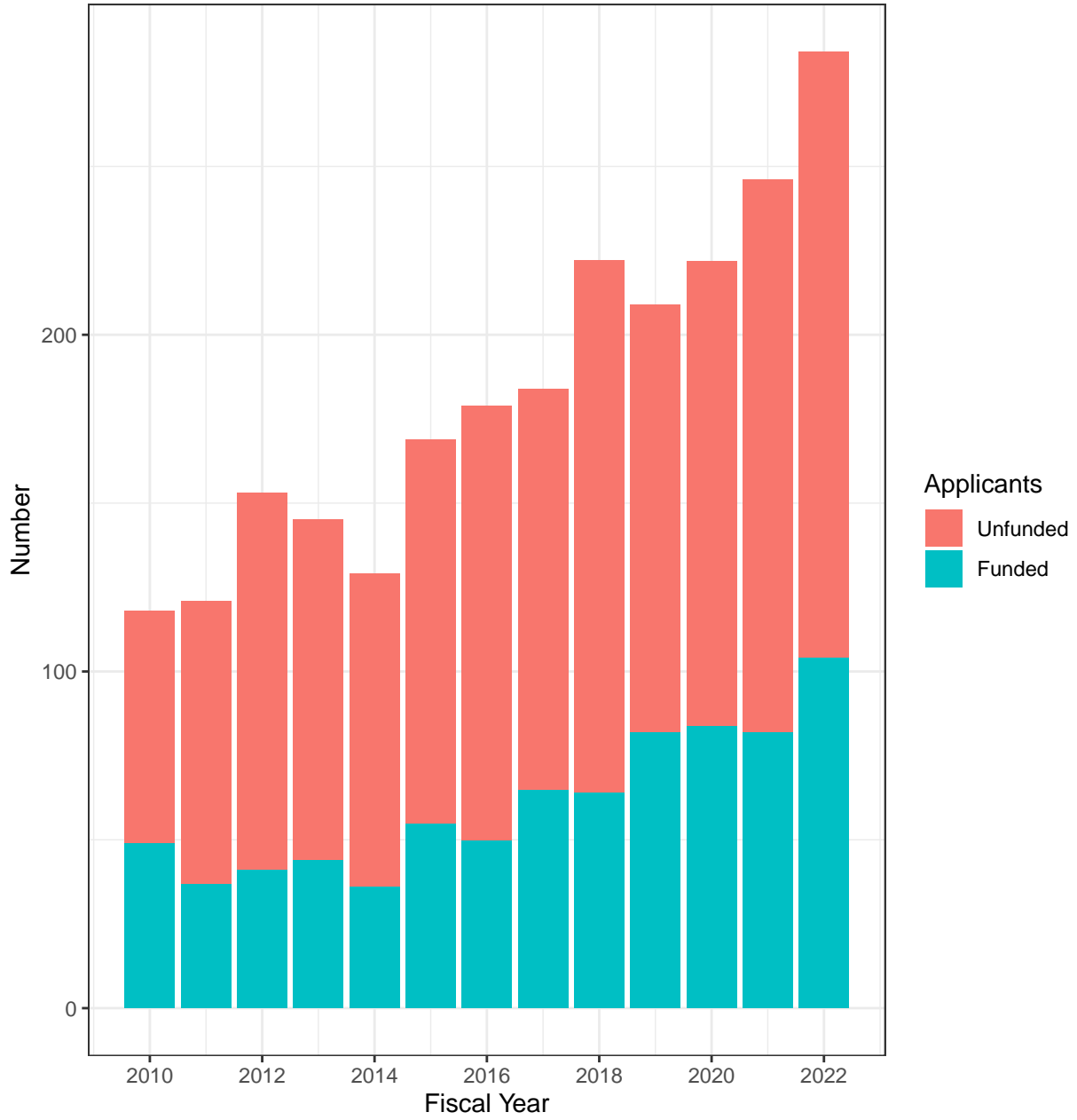Figure 2: Number of unique mentored K Black applicants and awardees by fiscal year
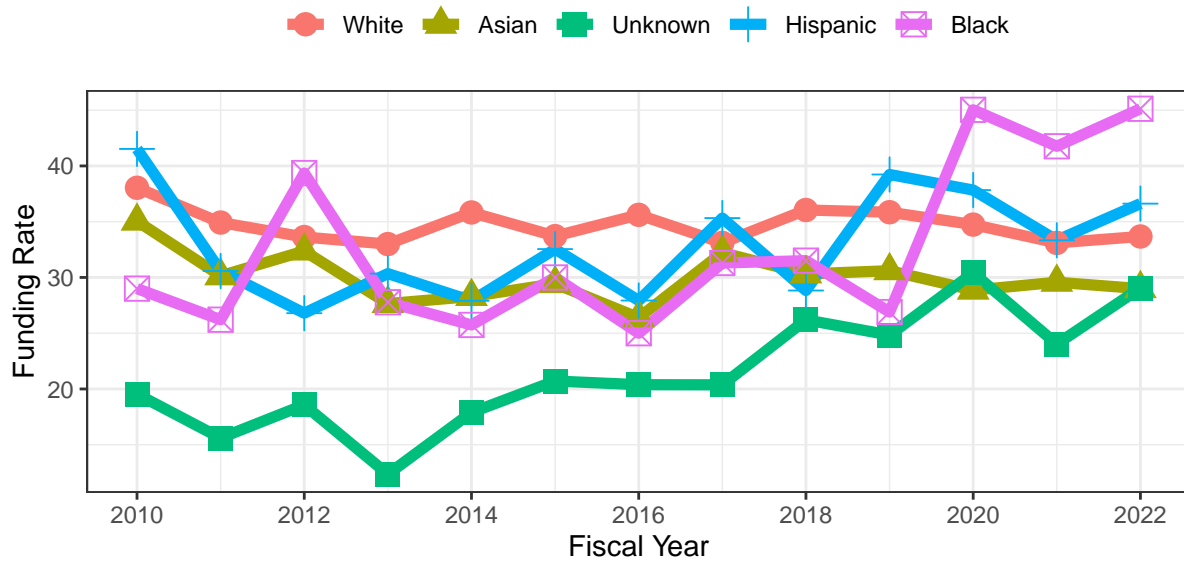
Figure 3: Number of unique mentored K Hispanic applicants and awardees by fiscal year

A: K Applicants

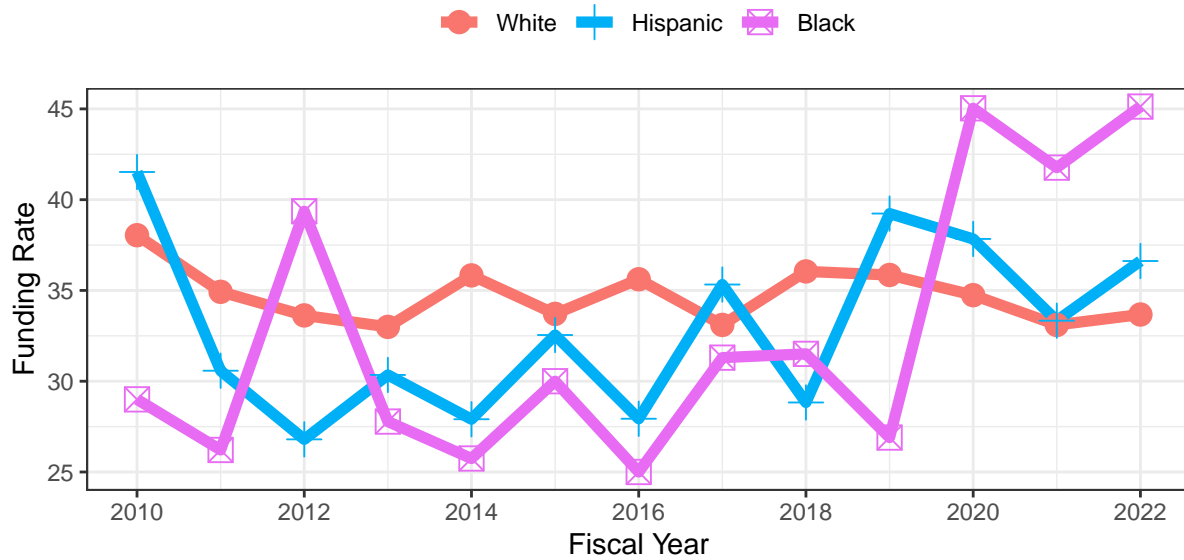## B: White, Hispanic, and Black K Applicants

Figure 4: Funding rates for K applicants according to race-ethnicity by fiscal year. Panel A shows data for all groups, while Panel B shows the same data but for White, Hispanic, and Black applicants only.