Effects of Financial Aid on Bronco Promise Eligible Retention (2017-2023)

Will Stutz

April 8, 2025

What is the Bronco Promise?

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From the Empowering Futures website:

> Tuition, fees, housing—it all adds up. And for some, **the gaps** can be the deciding factor in earning a college degree or not. In the spirit of our motto, “So all may learn,” **the Empowering Futures Gift sponsors several scholarships for students in need**, with particular focus on those who are first-generation college students or identify as part of a historically marginalized community.

Who is eligible for the Bronco Promise?

The Bronco Promise offers free tuition and fees for up to five years for Michigan residents in need, defined by eligibility criteria below:

- Full-time, incoming first-year students
- Residents of Michigan as determined upon admission
- Have a household Adjusted Gross Income (AGI) of $50,000 or less and household net assets under $50,000

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Eligible students make up 15-20% of an entire FTIAC cohort.

When did WMU start offering Bronco Promise scholarships?

- First cohort of students to receive Bronco Promise scholarships was in **Fall 2022**.
- We currently have two cohorts (2022 and 2023) who have attended for a full academic year.
- We have one cohort in the middle of their first year (2024) and another on the way (2025)

How many eligible students have received the Bronco Promise?

Cohort	Eligible	Bronco Promise	% Promise
Fall 2023	437	352	80.5%
Fall 2022	451	399	88.5%
Fall 2021	342	-	-
Fall 2020	444	-	-
Fall 2019	485	-	-
Fall 2018	597	-	-
Fall 2017	776	-	-

How much financial aid have Promise-eligible students received?

				Overall Gift Aid	
Cohort	Eligible	Bronco Promise	% Promise	Average	Change
Fall 2023	437	352	80.5%	$24,688	+$4,297
Fall 2022	451	399	88.5%	$20,390	+$4,847
Fall 2021	342	-	-	$15,543	+$1,567
Fall 2020	444	-	-	$13,976	+$50
Fall 2019	485	-	-	$13,925	+$1,081
Fall 2018	597	-	-	$12,845	+$1,040
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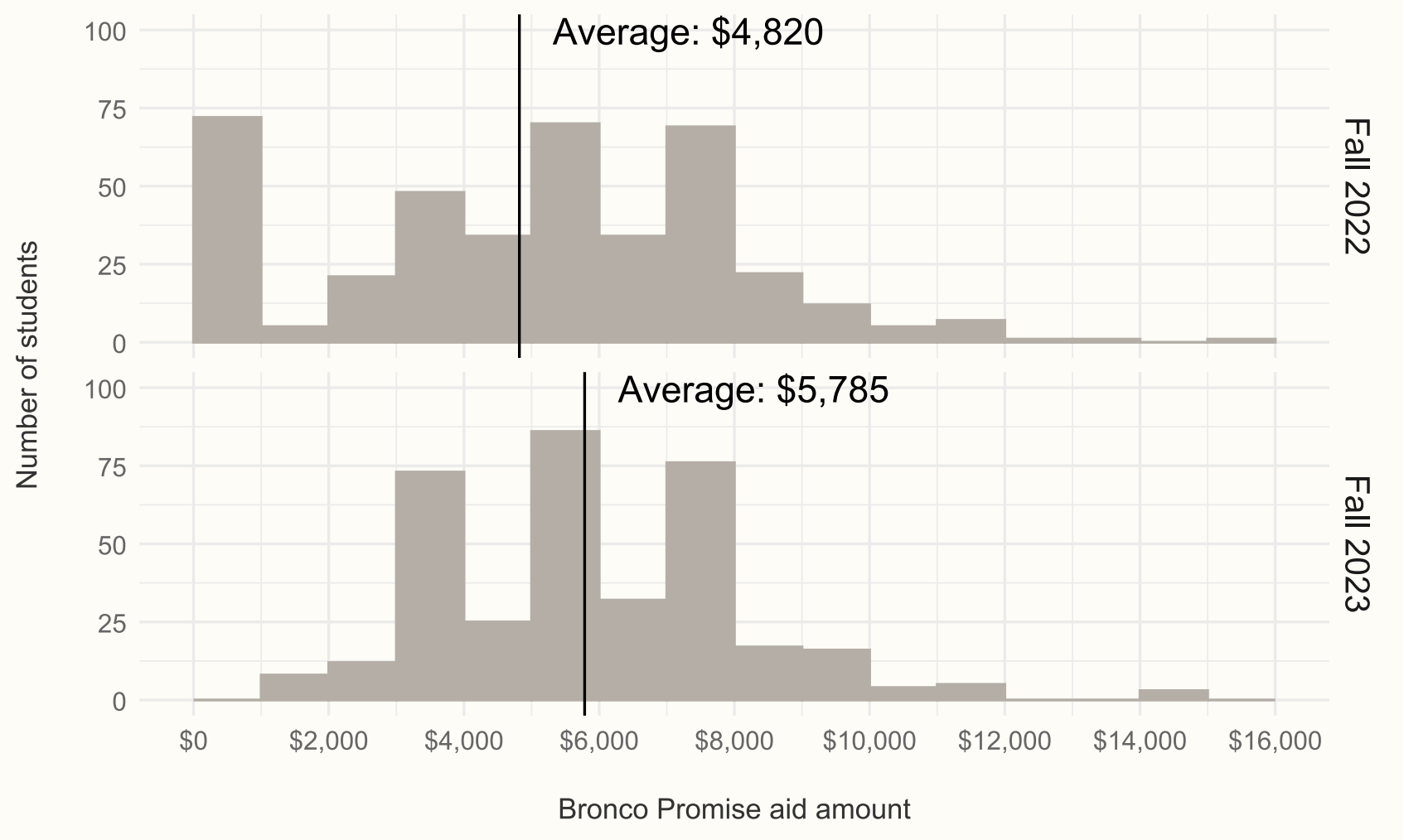
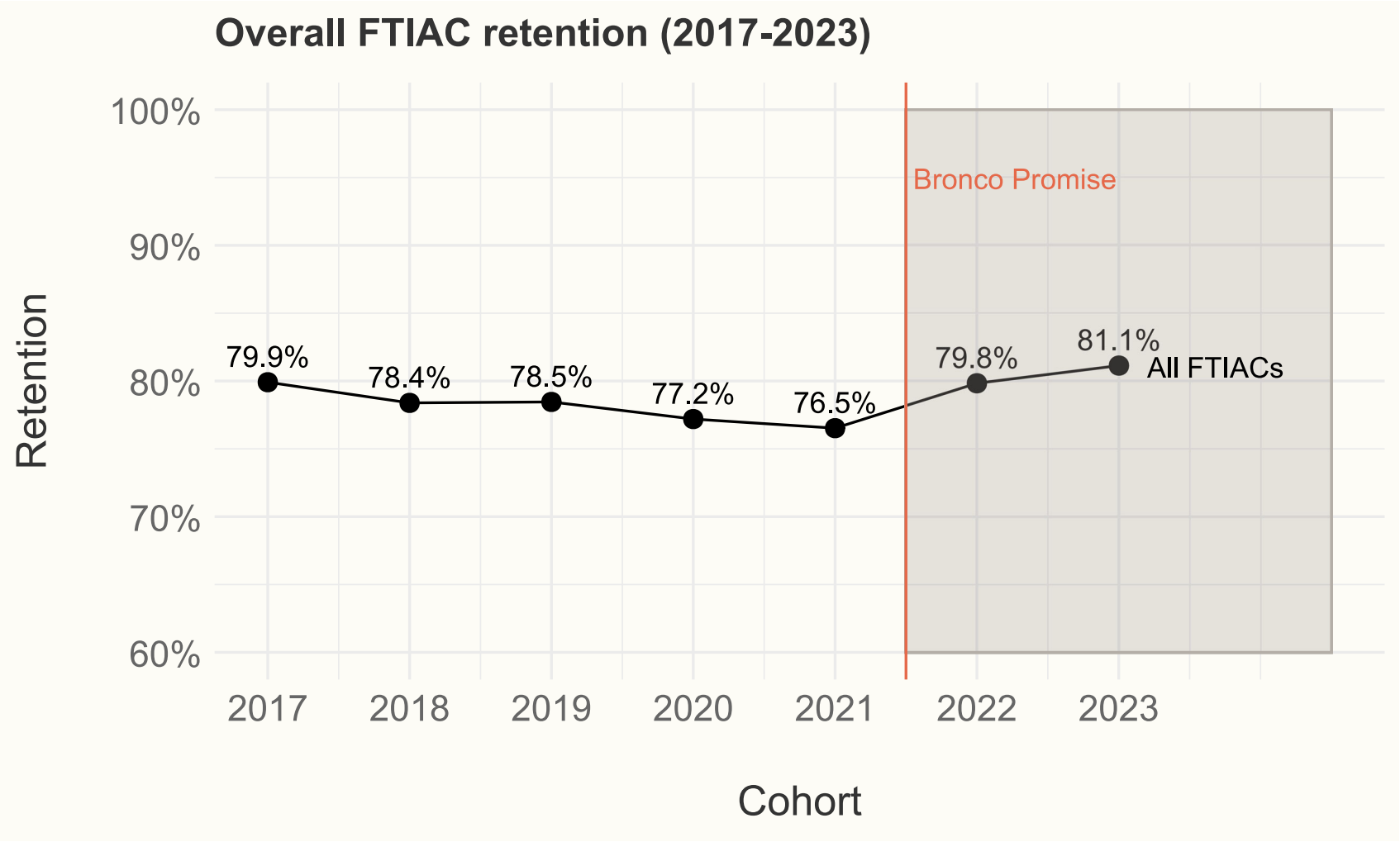


What has retention looked like for eligible students?



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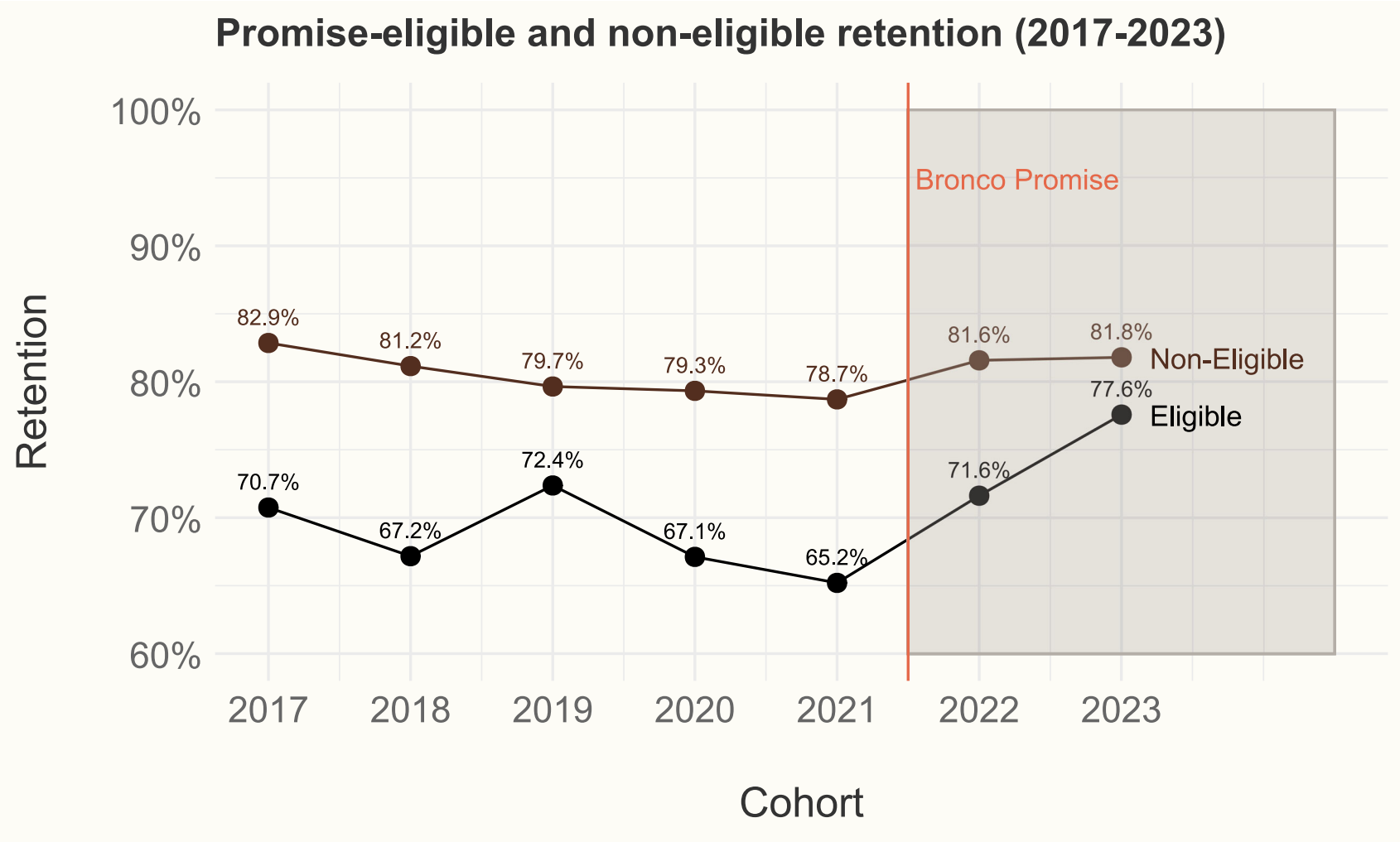

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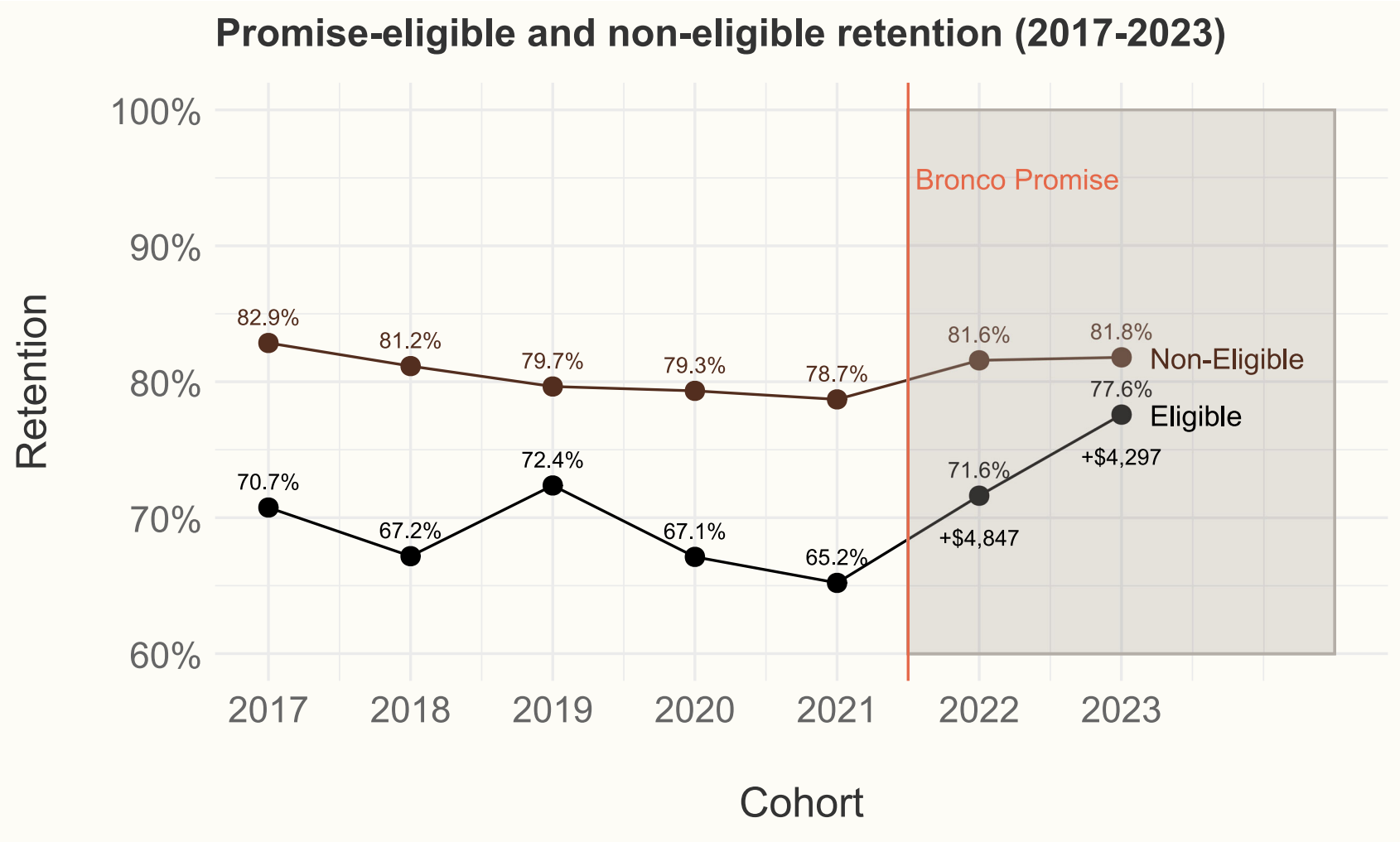

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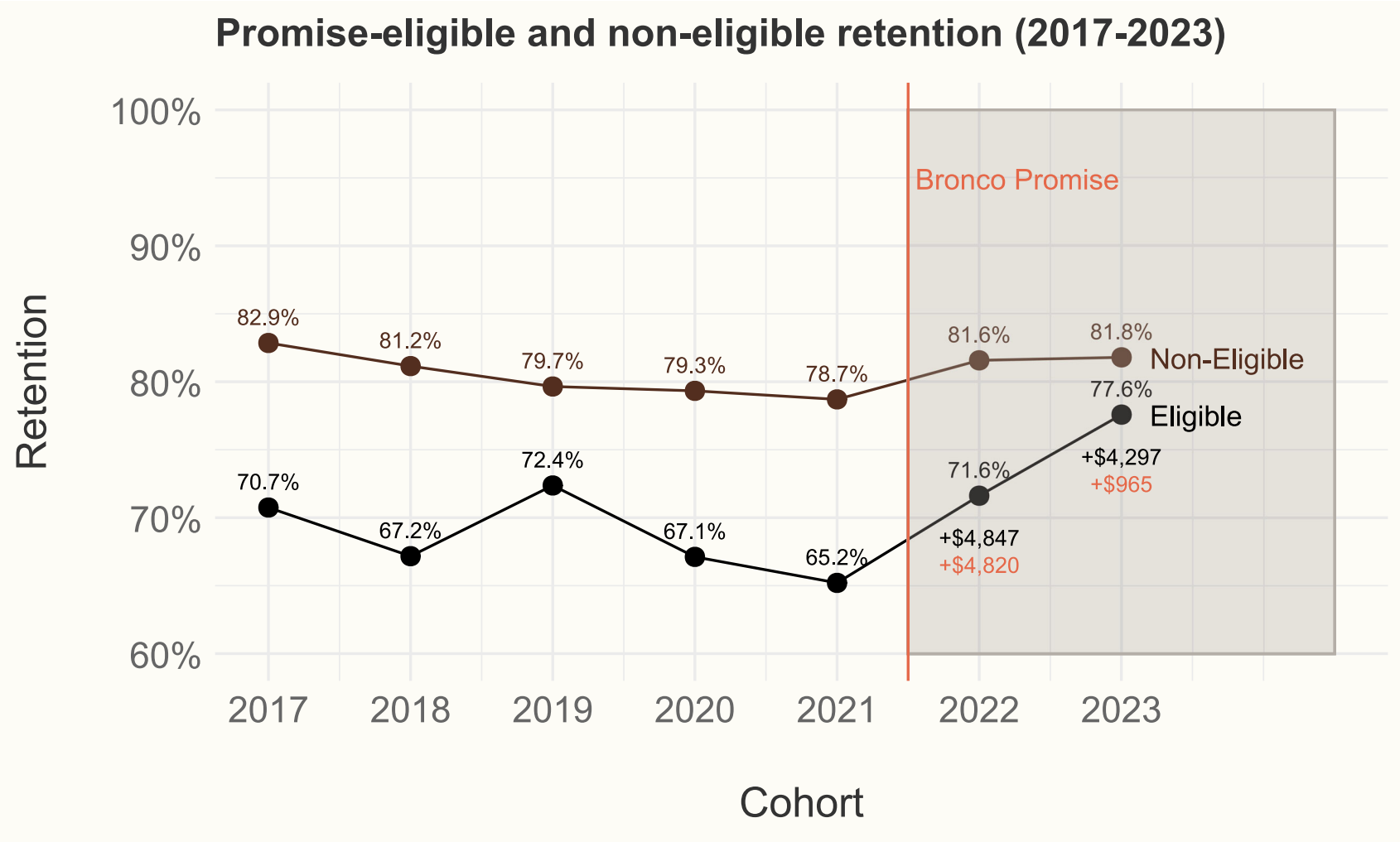

What have we learned so far?

Since the start of the Bronco Promise program in the Fall of 2022:

- financial aid for Promise-eligible students has **increased by about $9,000 per student on average**, 63% of which comes from Bronco Promise scholarships.
- 2nd-year retention of Promise-eligible students has **increased by over 12 percentage points**, reaching it's highest number in the last 7 years.

What have we learned so far?

Since the start of the Bronco Promise program in the Fall of 2022:

- financial aid for Promise-eligible students has increased by about $9,000 per student on average, 63% of which comes from Bronco Promise scholarships.
- 2nd-year retention of Promise-eligible students has increased by over 12 percentage points, reaching it's highest number in the last 7 years.

To what extent can we attribute the rise in retention for eligible students to the increased spending associated with the Bronco Promise scholarship program?

Primary Research Questions

Before we get there:

- What was the impact of financial aid on the second-year retention of eligible students in the years prior to the promise?
- What was the impact of *last dollar* financial aid on the second-year retention of eligible students in the years prior to the promise?
- **To what extent can we attribute the rise in retention for eligible students to the increased spending associated with the Bronco Promise scholarship program?**

Question 1: What was the impact of financial aid on the second-year retention of eligible students in the years prior to the promise?

Question 1: Predicting the future

Imagine we are back in Spring 2022 and we are considering whether to introduce a new need-based scholarship in the Fall (i.e. like the Bronco Promise).

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Imagine we are back in Spring 2022 and we are considering whether to introduce a new need-based scholarship in the Fall (i.e. like the Bronco Promise).

We want to know: **What is the relationship between increased financial aid and the probability of returning for Fall?**

Question 1: How do we do this?

Build a statistical model to predict the probability that a student will return for a second year based on:

- their cost-of-attendance
- their total gift aid

Interlude: Some Data Definitions

- **Total Gift Aid**: The sum total amount of gift (i.e. non self-help) aid awarded to a student during the academic year. Includes need- and merit-based scholarships, awards, grants, fellowships, etc.
- **Cost of Attendance (COA)**: The total cost of attendance for the entire academic year. Includes tuition and fees, housing and food, books and supplies, transportation, miscellaneous personal expenses, study abroad expenses.
- **COA Gap**: Difference, or gap, between the Total Gift Aid and the COA.

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Pr(returning) ~ COA gap + **other variables that impact retention**

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Pr(returning) ~ COA gap + **other variables that impact retention**

What other variables should we consider?

- Pre-college: HSGPA, AP courses, high school, county
- Academic: major, department, college, # of credit hours
- Demographic: age, gender, race/ethnicity, first generation
- Financial aid: aid period, household AGI, household assets, expected family contribution

Question 1: Building the model

Pr(returning) ~ COA gap + **other variables that impact retention**

What other variables should we consider?

What data should we use to fit the model?

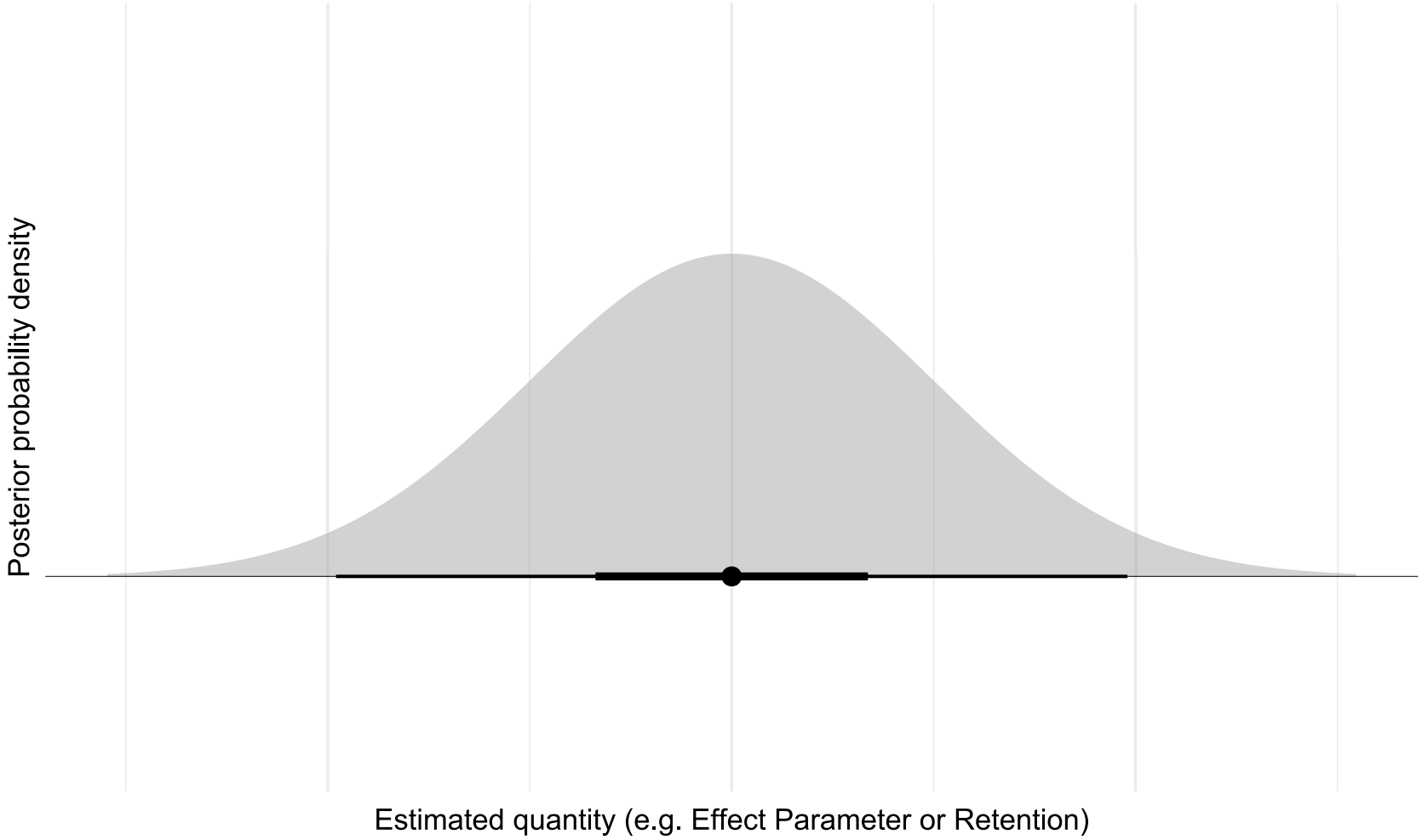
- All Bronco-promise eligible FTIACs from Fall 2017-2022 (5 total cohorts)
- 2,606 total students

Question 1: Building the model

Pr(returning) ~ COA gap + **other variables that impact retention**

- Logistic regression model
- Use a previous model of retention model as a starting point
- Variable inclusion optimized for *out-of-sample* prediction
- Bayesian probability model (quantify uncertainty in what we are estimating)

Interlude 2: Quantifying uncertainty with Bayesian Probability



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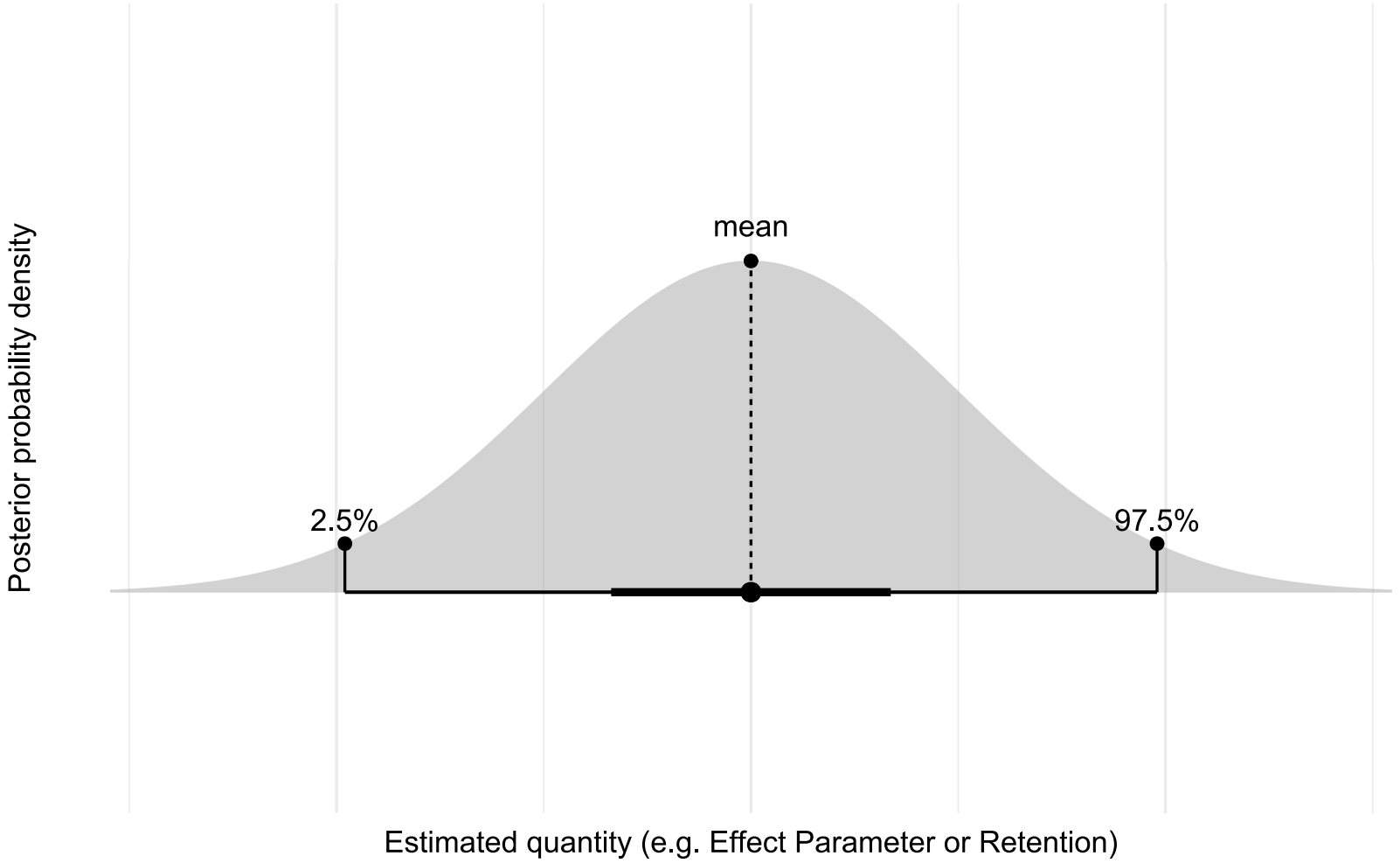

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Pr(returning) ~ COA gap + **other variables that impact retention**

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Pr(returning) ~ COA gap + HSGPA + AP Courses (Y/N) + Cohort + County + Aid Period

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Some notable variables that were not included:

- Financial aid: COA, Household AGI, Assets, EFC
- Academic: College, Department, Major
- Demographic: Race/Ethnicity, Gender, Age

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Pr(returning) ~ COA gap + HSGPA + AP Courses (Y/N) + Cohort + County + Aid Period

We want to know: **What is the relationship between having a smaller COA gap and the probability of returning for Fall?**

Question 1: Building the model

Pr(returning) ~ COA gap + HSGPA + AP Courses (Y/N) + Cohort + County + Aid Period

We want to know: What is the relationship between having a smaller COA gap and the probability of returning for Fall?

What is the *marginal effect* of decreasing the COA gap is on the probability of returning for fall.

Interlude: Marginal Effects

Marginal effect: effect of having a larger (or smaller) value for some variable x (e.g. COA gap) on the predicted value of y (e.g. probability of returning).

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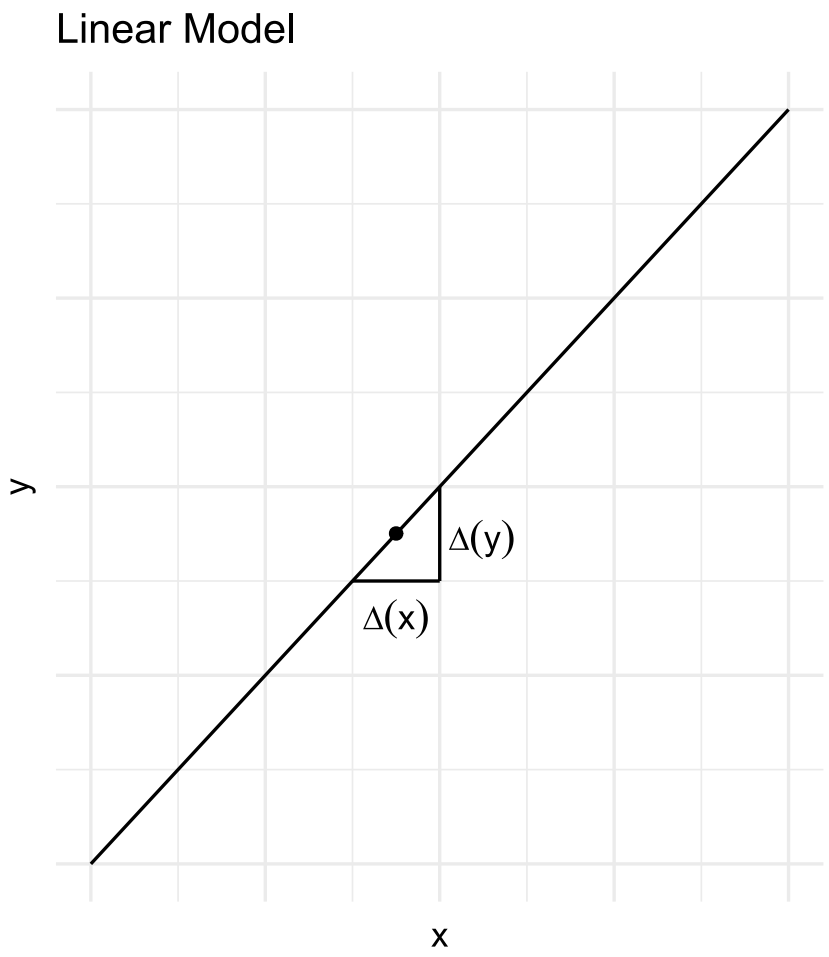
Typically measured as a slope, regression coefficient, effect size, etc.

Interlude: Marginal Effects



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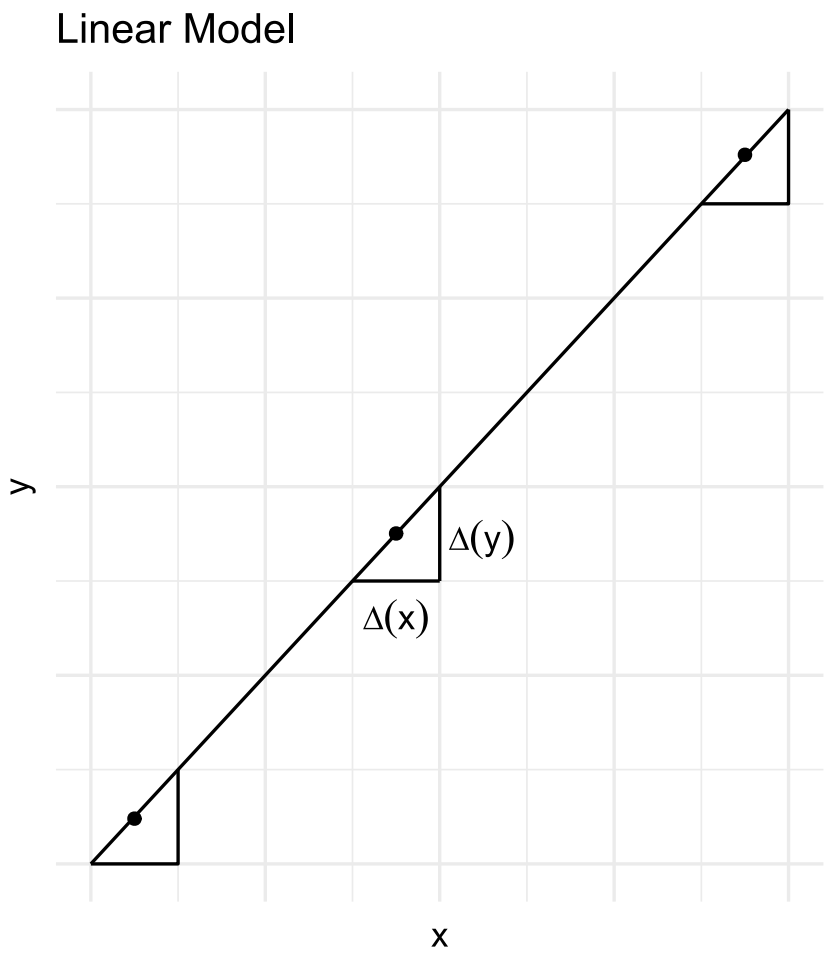

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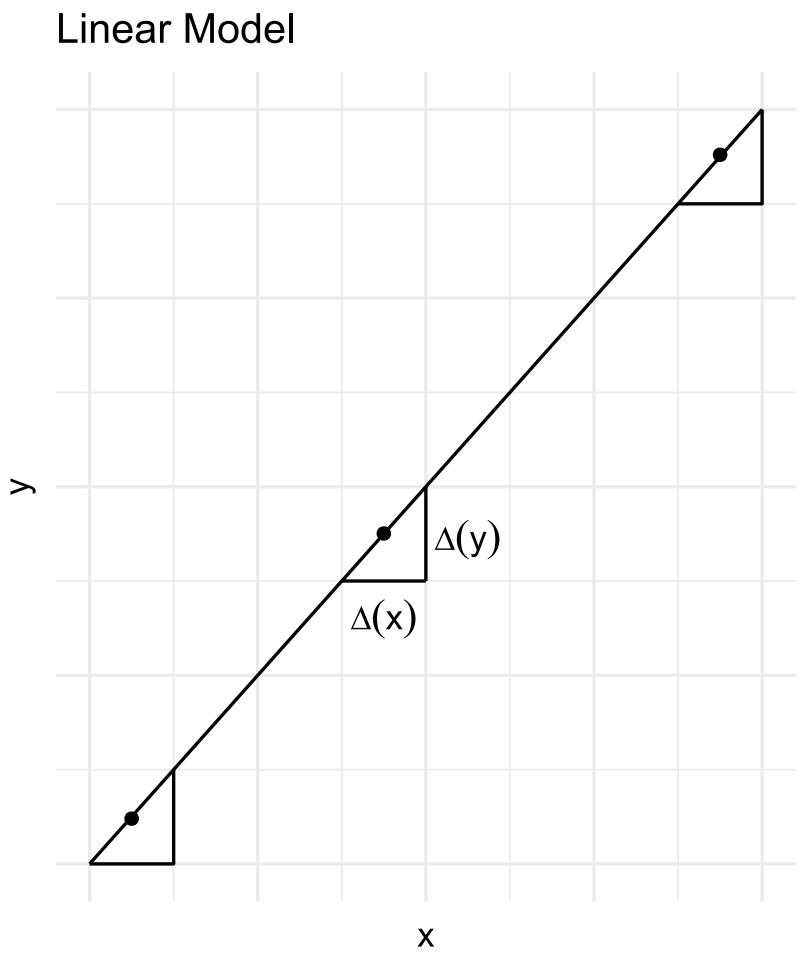

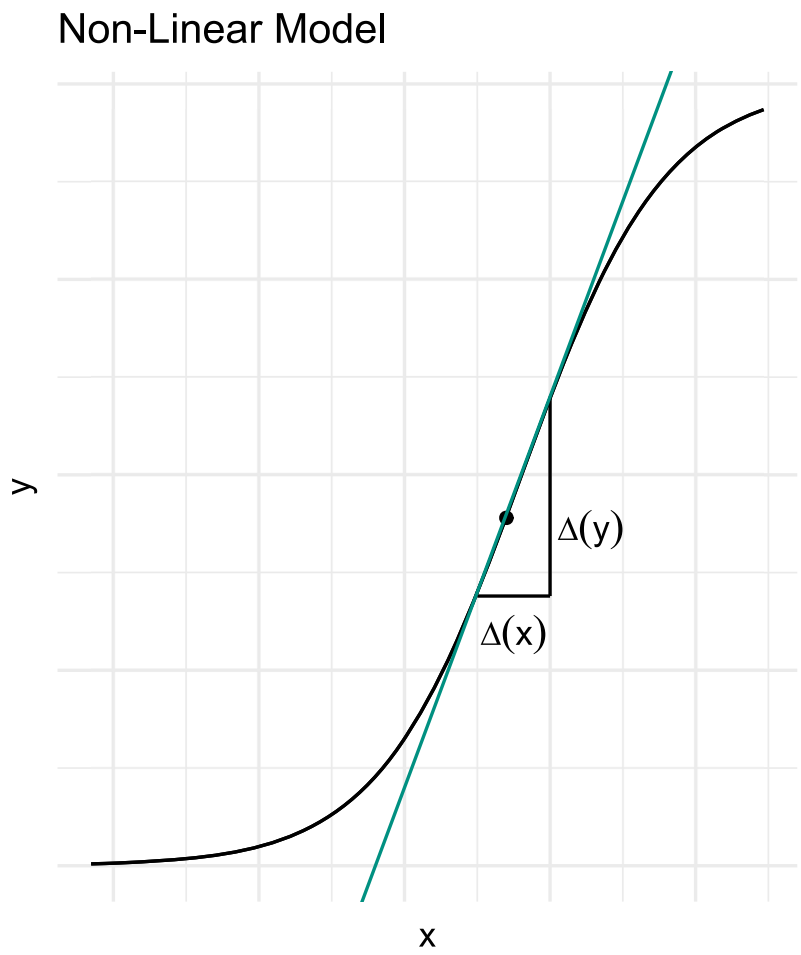

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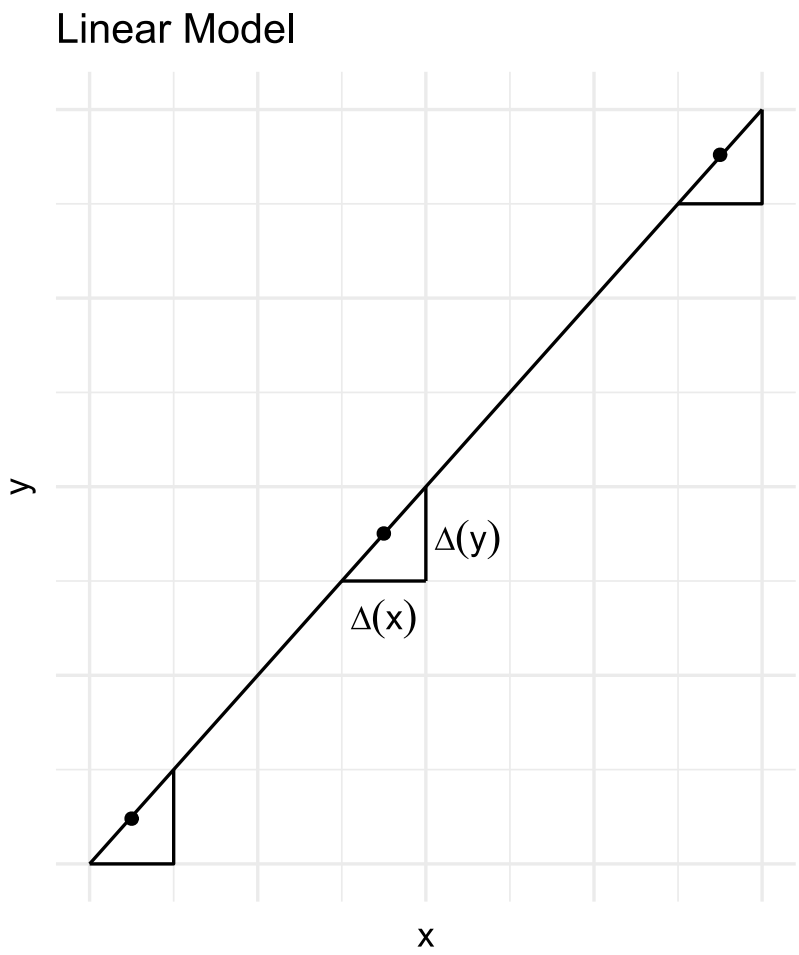

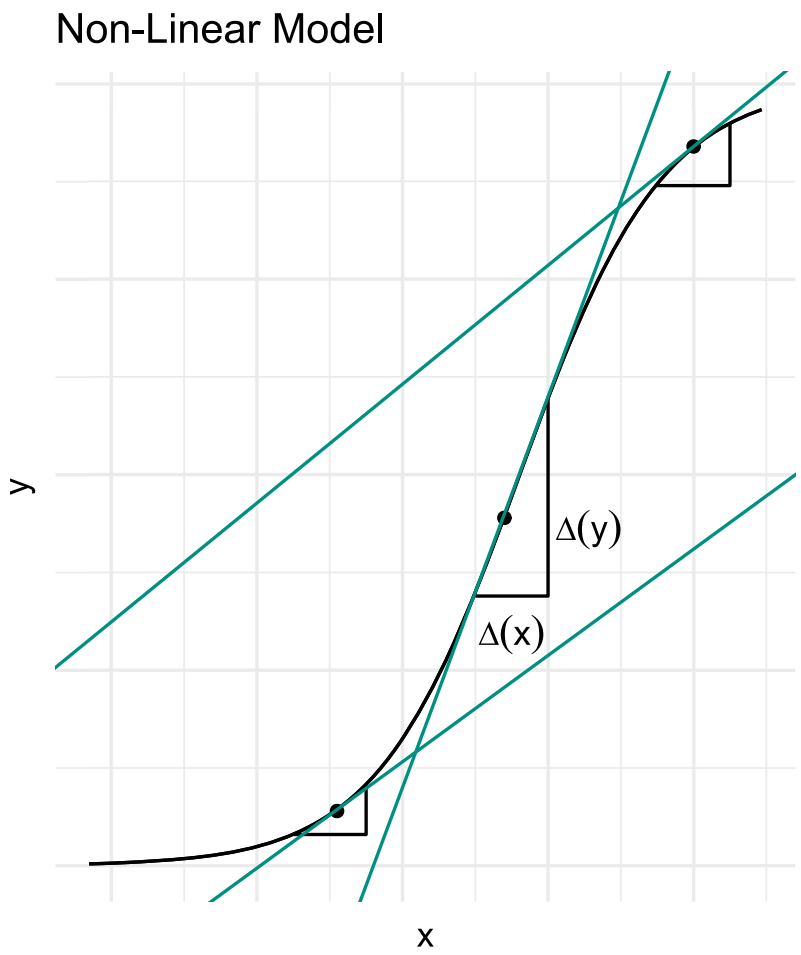

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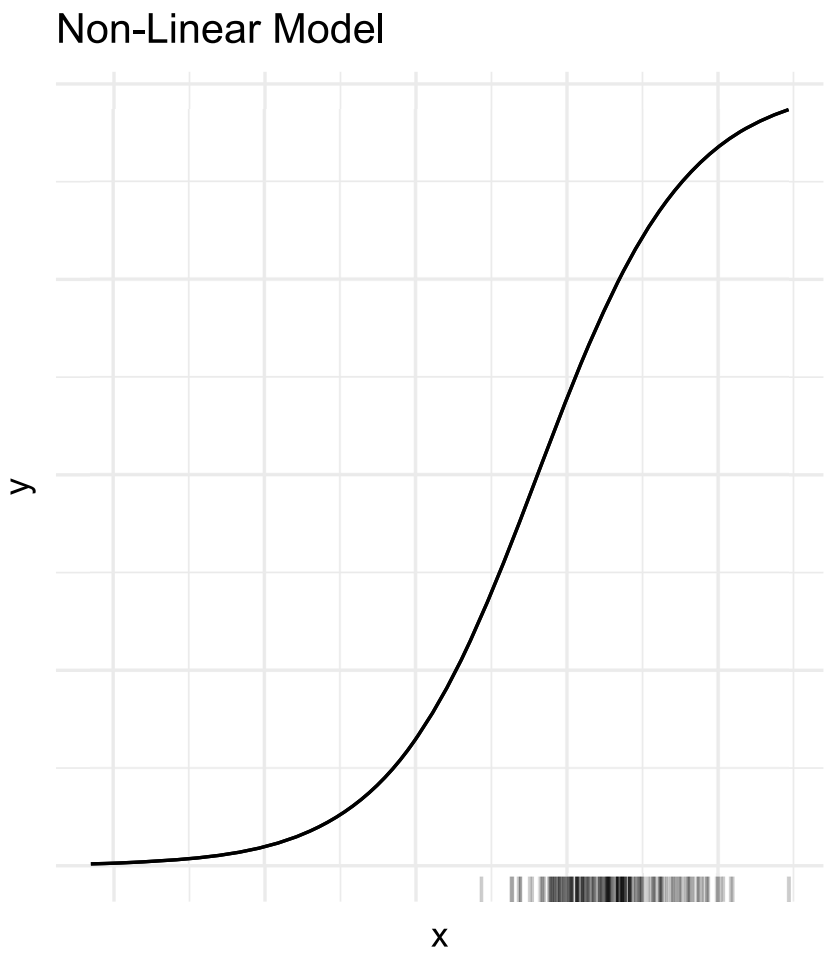

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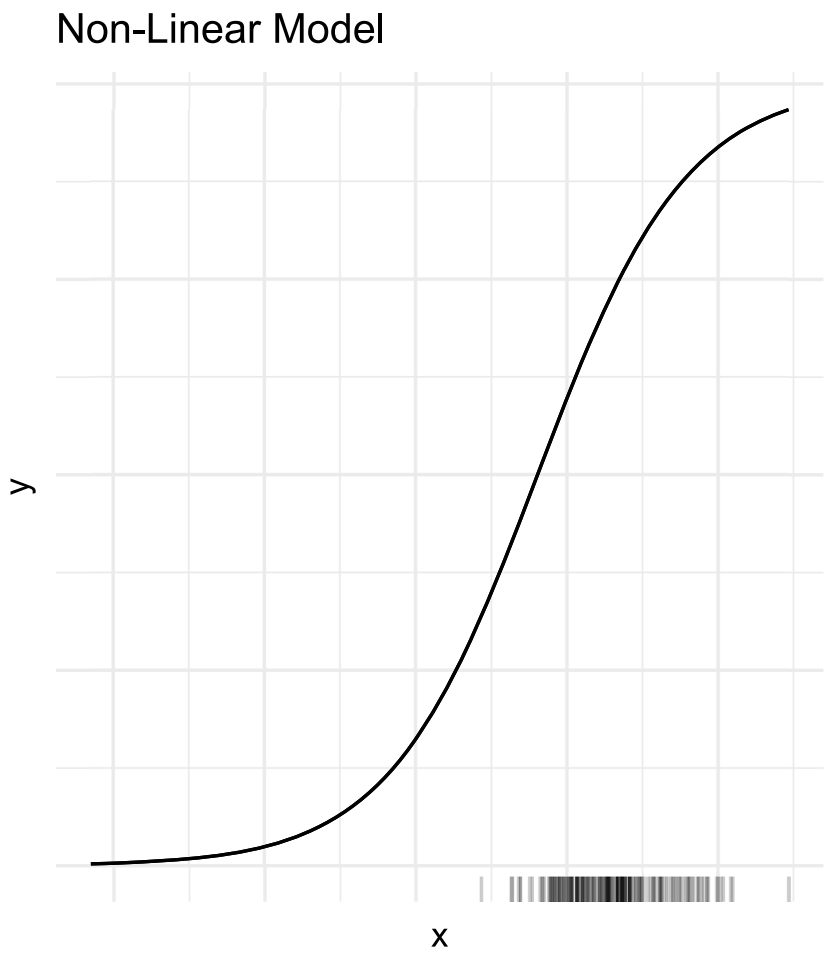

We can determine the slope at every x
and calculate the average
or
Average Marginal Effect

Question 1: Average Marginal Effects of COA Gap

What was the impact of **decreasing the COA gap** on the second-year retention of eligible students in the years prior to the promise?

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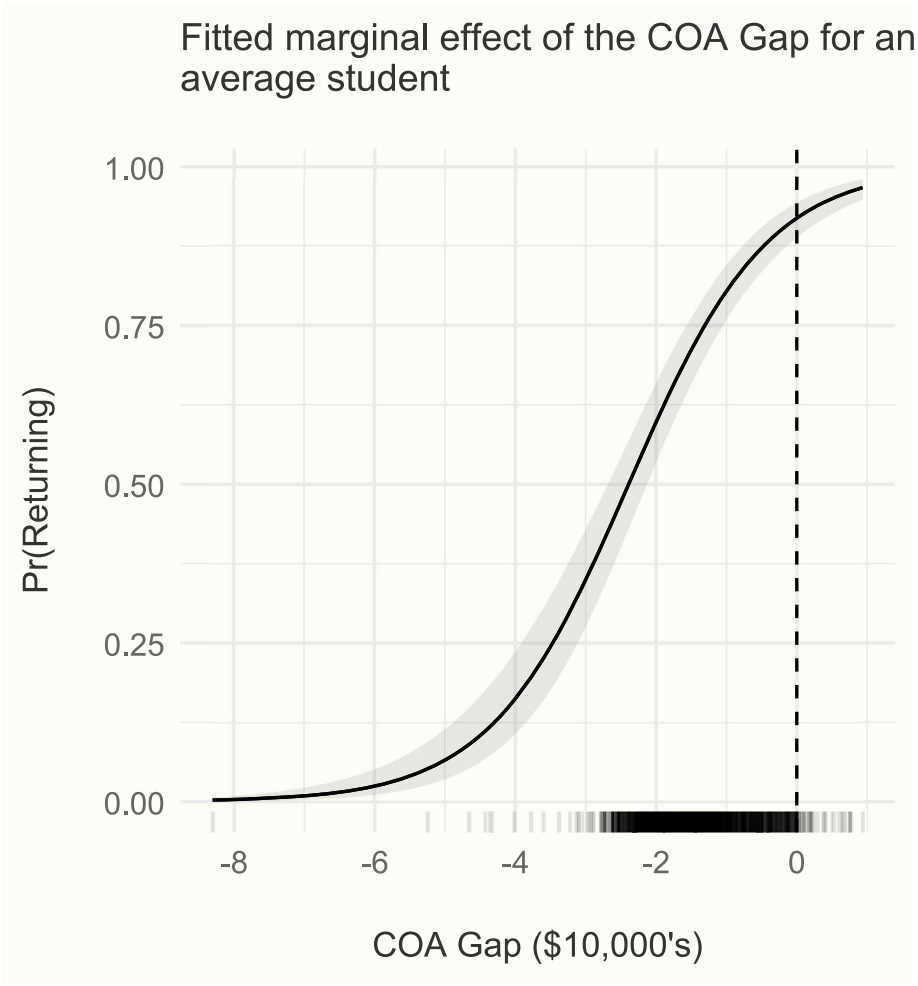
What was the impact of **decreasing the COA gap** on the second-year retention of eligible students in the years prior to the promise?

We need to estimate the **average marginal effect** of decreasing the COA gap by a certain amount.

Question 1: Average Marginal Effects of COA Gap



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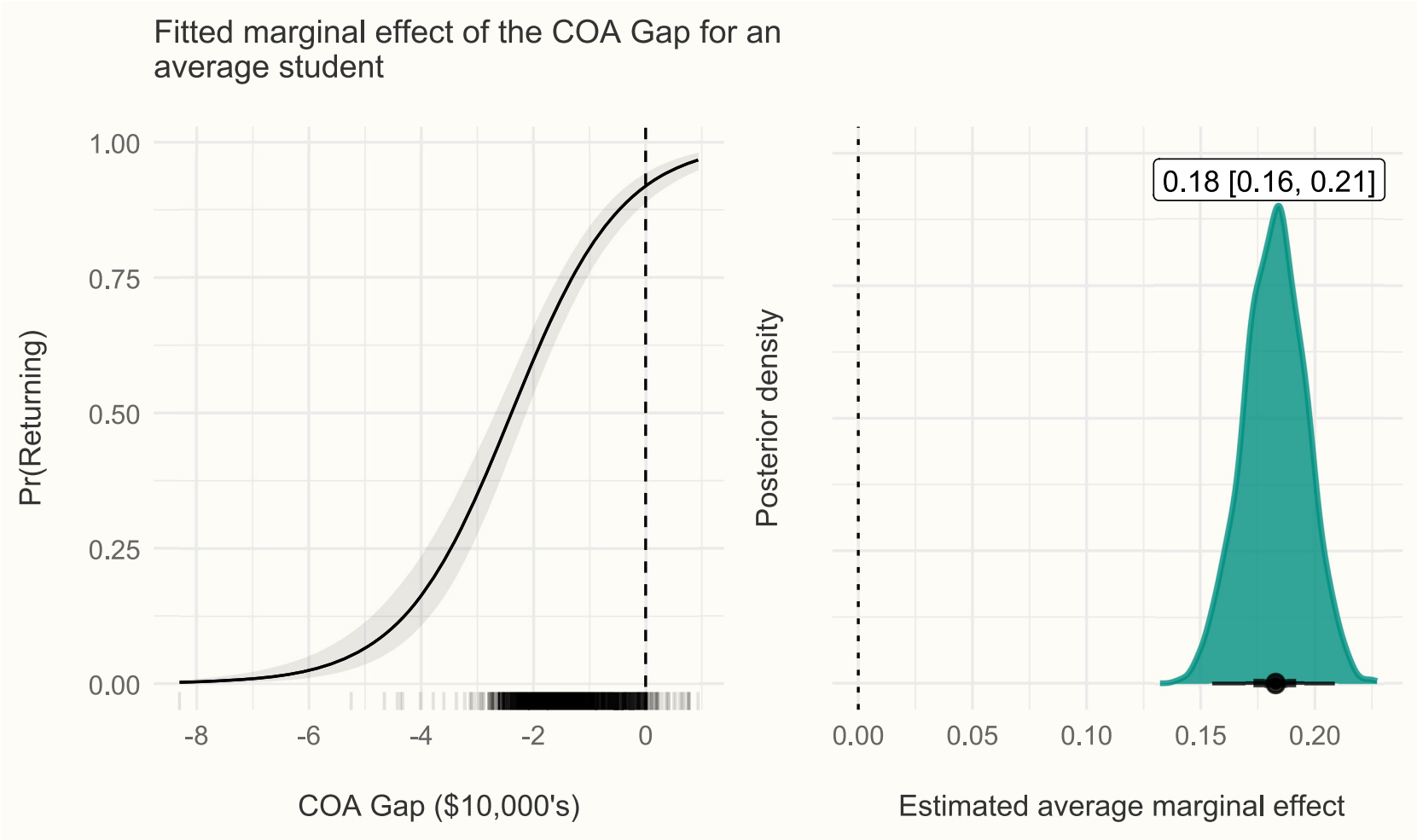

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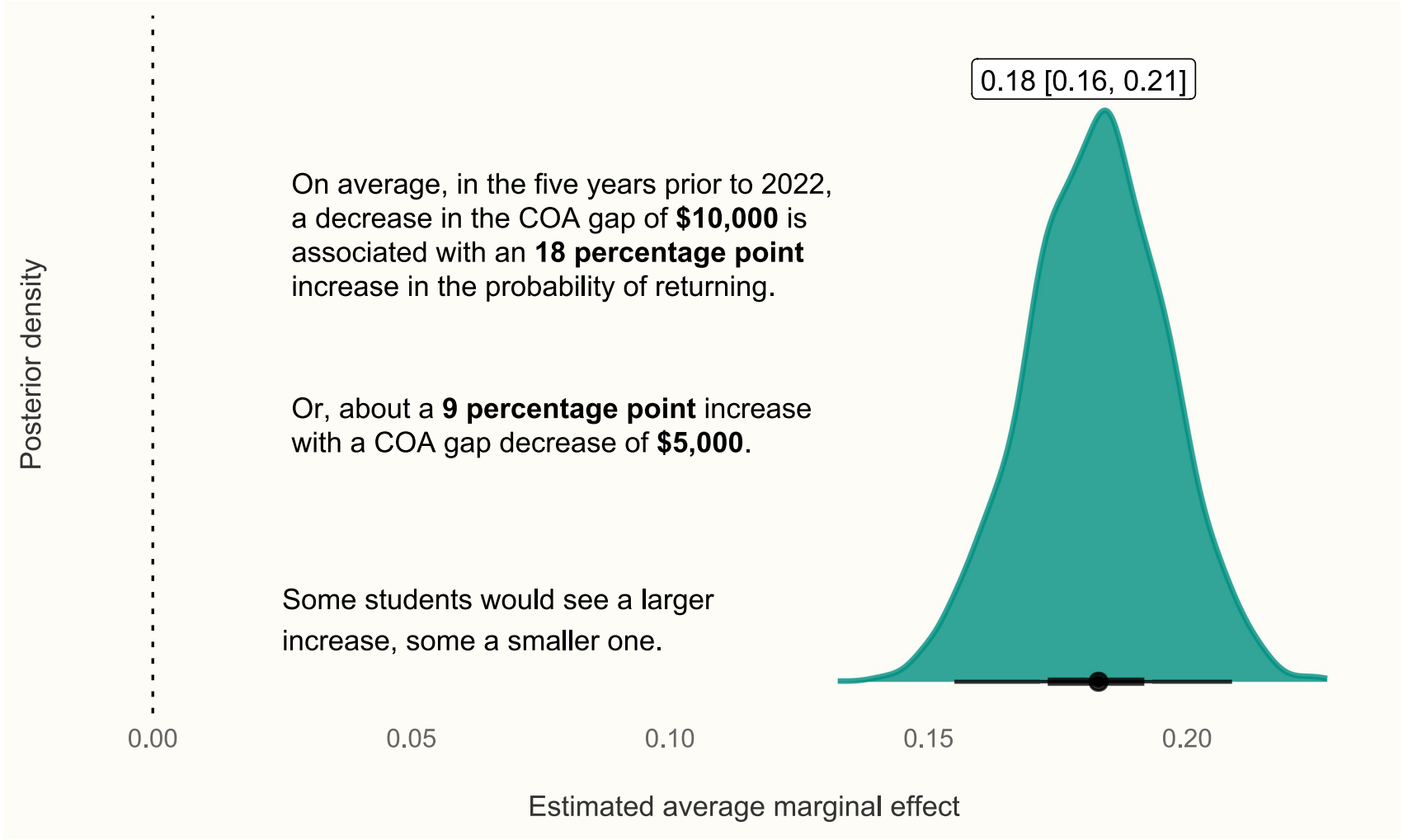

Question 1: Summary

What was the impact of financial aid on the second-year retention of eligible students in the years prior to the promise?

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> Between 2017 and 2021, **for every additional $5,000 spent** on decreasing a student's COA gap, we would expect to see an **average increase of 9 percentage points** in the probability a student returns for the following fall.

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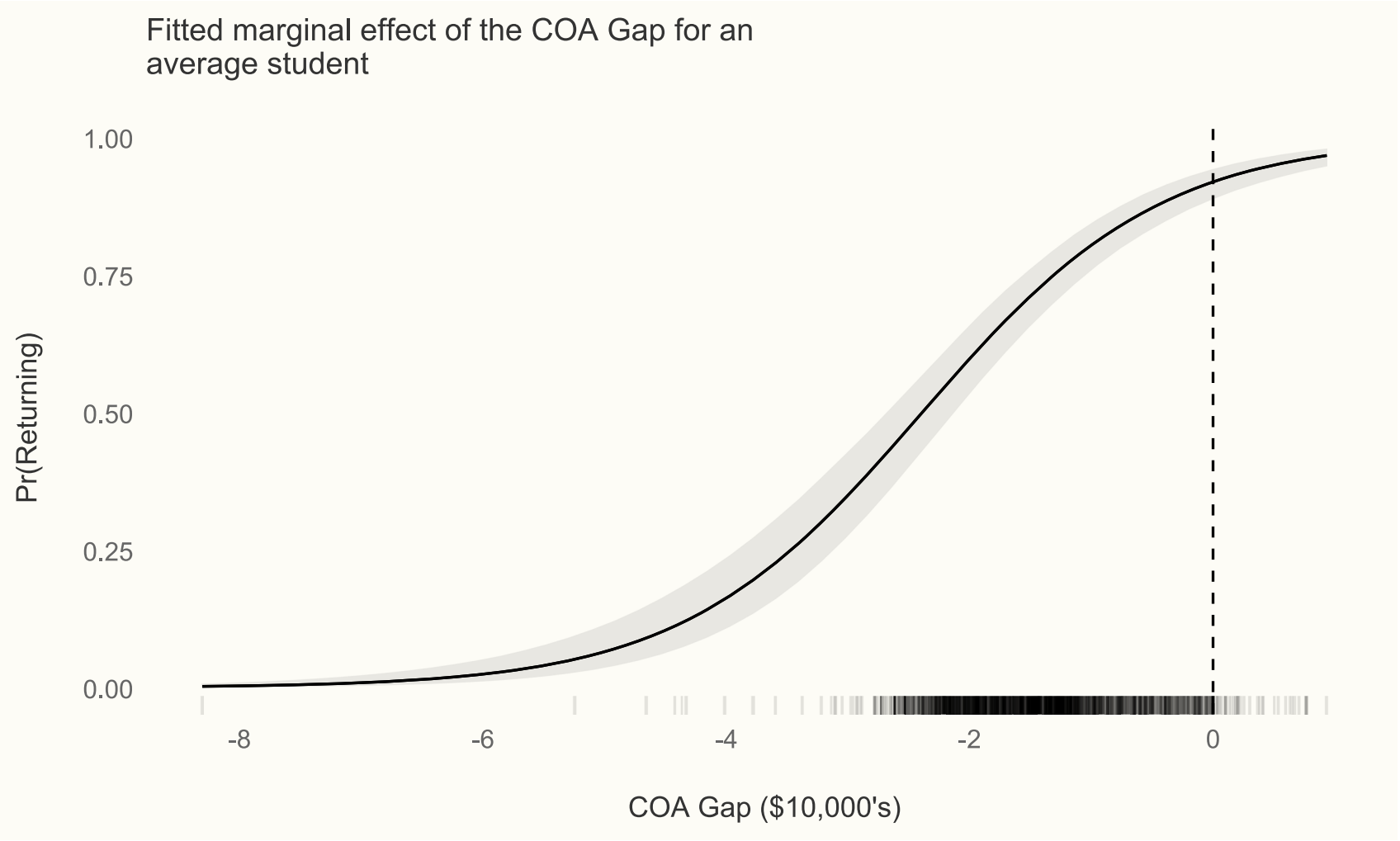
What was the impact of financial aid on the second-year retention of eligible students in the years prior to the promise?

> Between 2017 and 2021, **for every additional $5,000 spent** on decreasing a student's COA gap, we would expect to see an **average increase of 9 percentage points** in the probability a student returns for the following fall.

Giving eligible students more money in need- or merit-based financial aid should increase their retention rates substantially.

Question 2: What was the impact of last dollar financial aid on the second-year retention of Bronco Promise-eligible students?

Question 2: Last Dollar Effects of COA Gap



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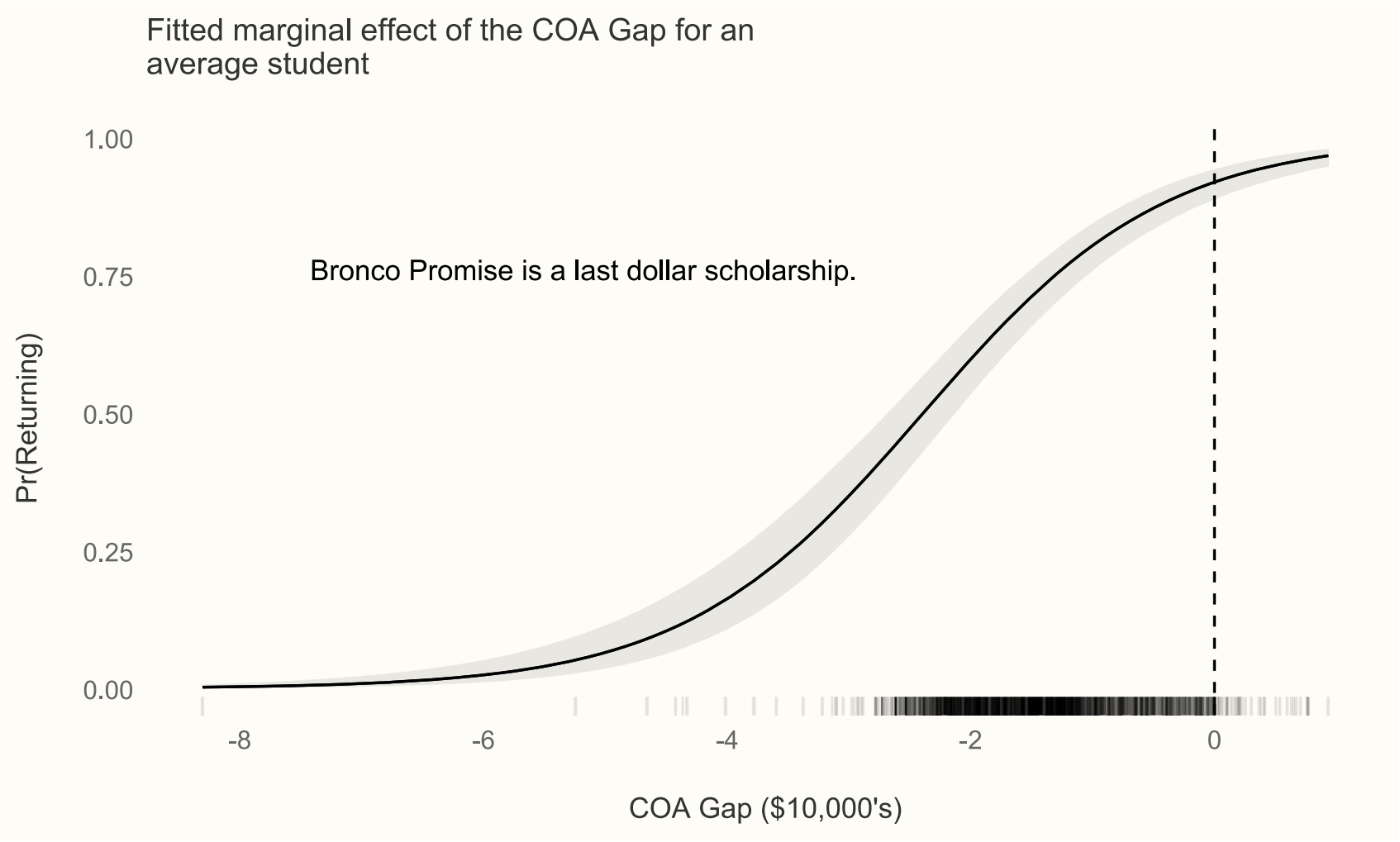

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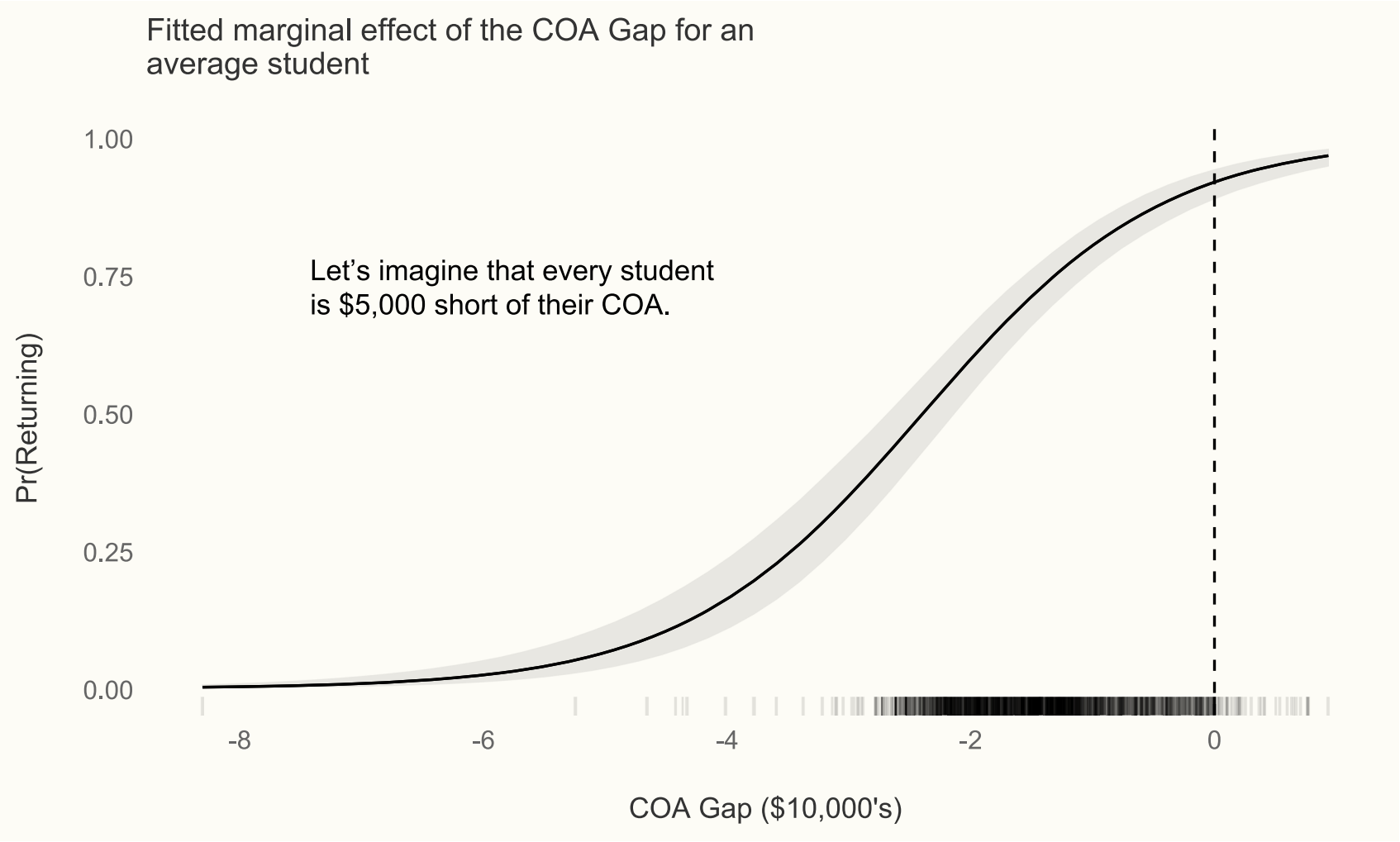

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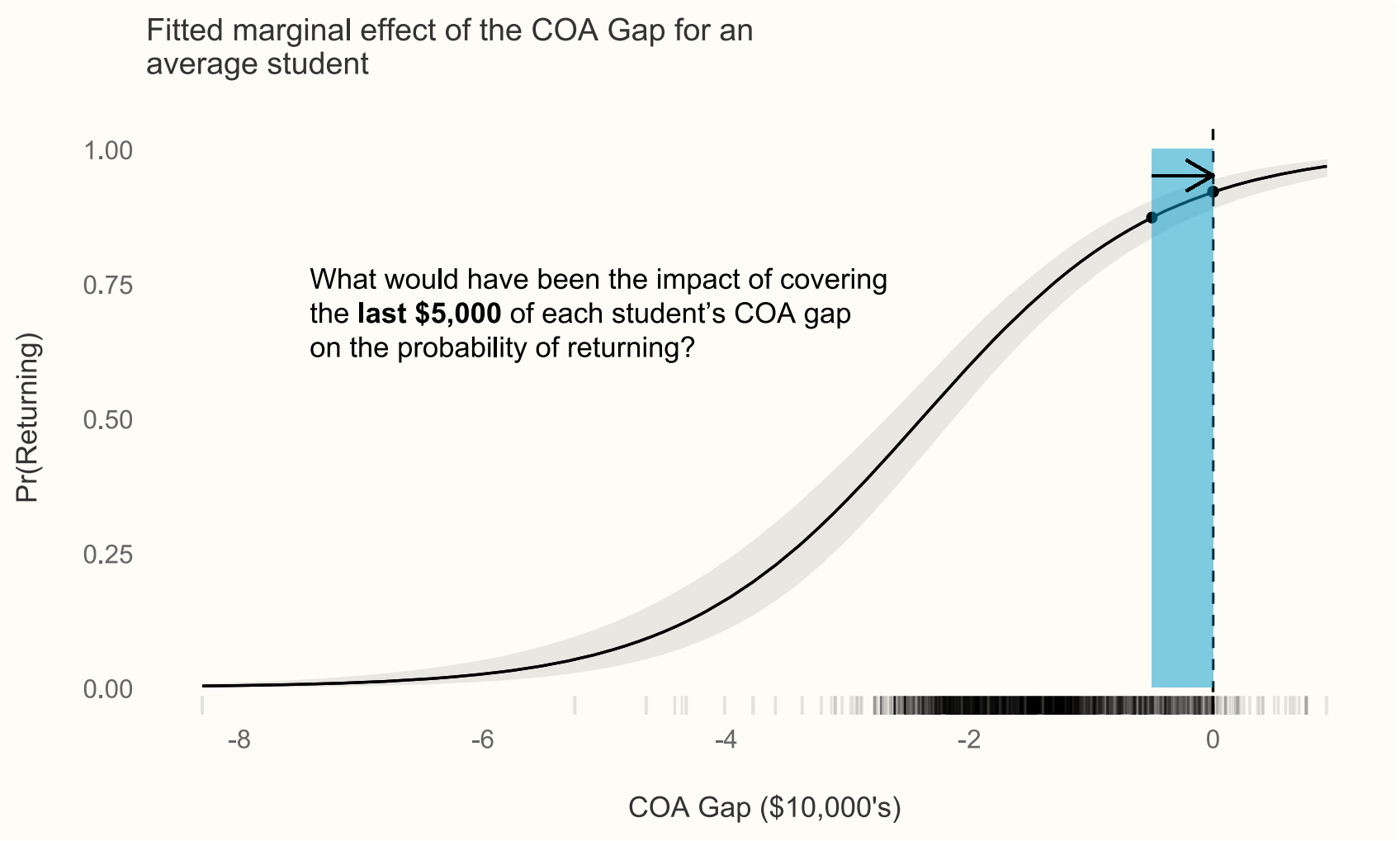

Question 2: Last Dollar Effects of COA Gap

Take two students from the data:

Student 1

- HSGPA: 2.99
- AP courses: 0
- cohort: Fall 2019
- county: MACOMB
- aid period: FS

Student 2

- HSGPA: 4.08
- AP courses: 1
- cohort: Fall 2017
- county: GENESEE
- aid period: FS

Question 2: Last Dollar Effects of COA Gap

Take two students from the data:

Student 1

- HSGPA: 2.99
- AP courses: 0
- cohort: Fall 2019
- county: MACOMB
- aid period: FS
- $5,000 gap: 87%

Student 2

- HSGPA: 4.08
- AP courses: 1
- cohort: Fall 2017
- county: GENESEE
- aid period: FS
- $5,000 gap: 97%

Question 2: Last Dollar Effects of COA Gap

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- county: MACOMB
- aid period: FS
- $5,000 gap: 87%
- $0 gap: 91%

Student 2

- HSGPA: 4.08
- AP courses: 1
- cohort: Fall 2017
- county: GENESEE
- aid period: FS
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- $0 gap: 98%

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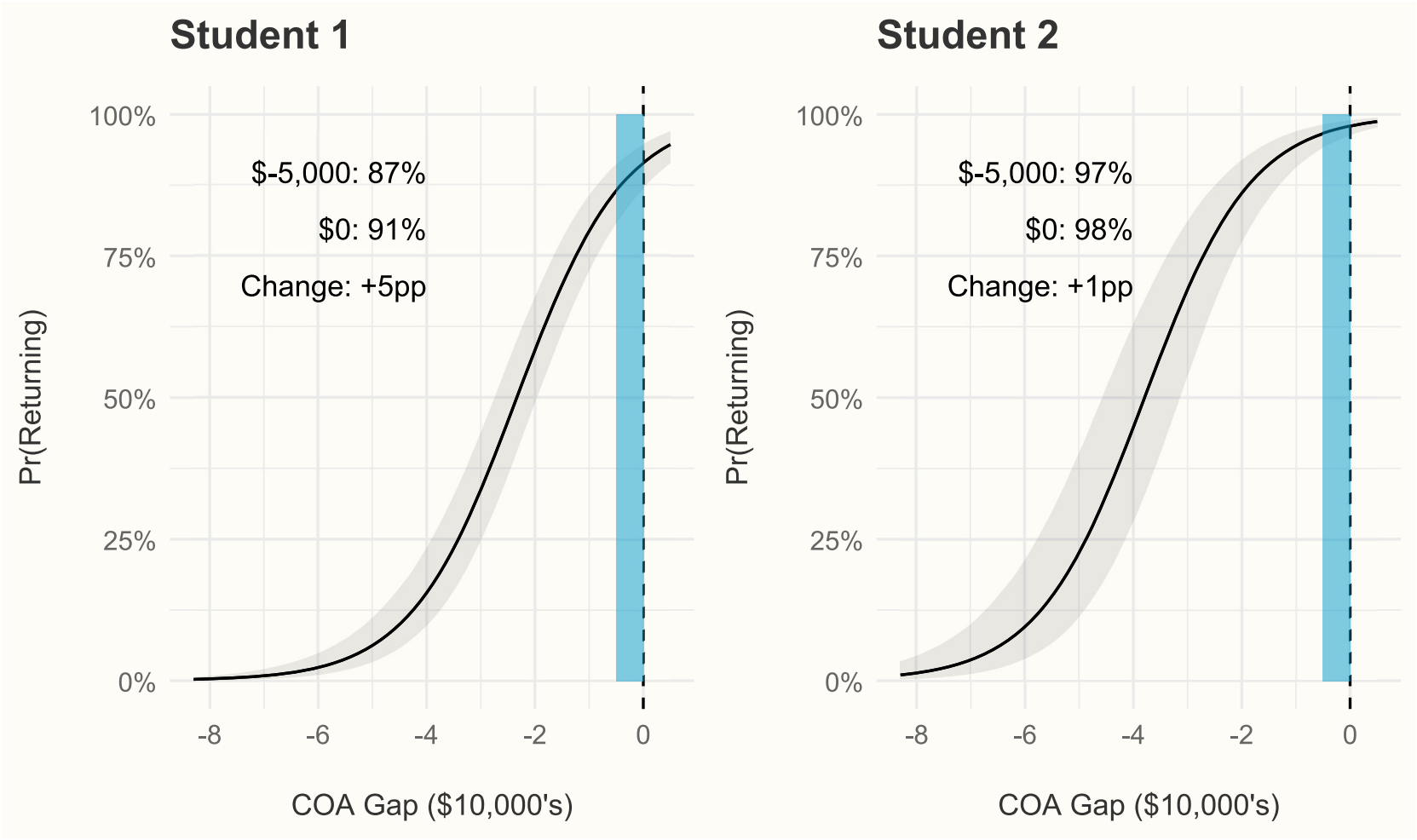

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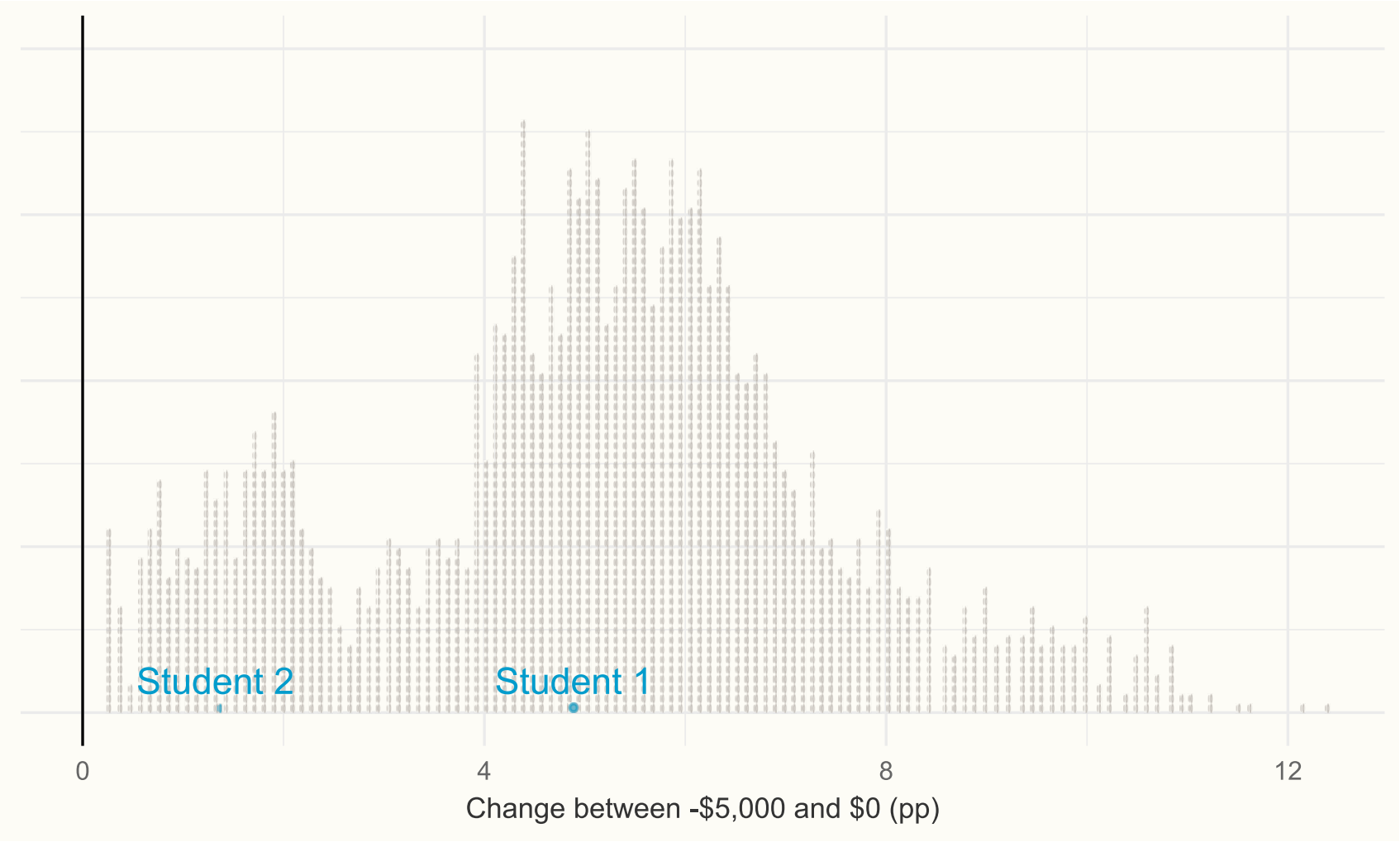

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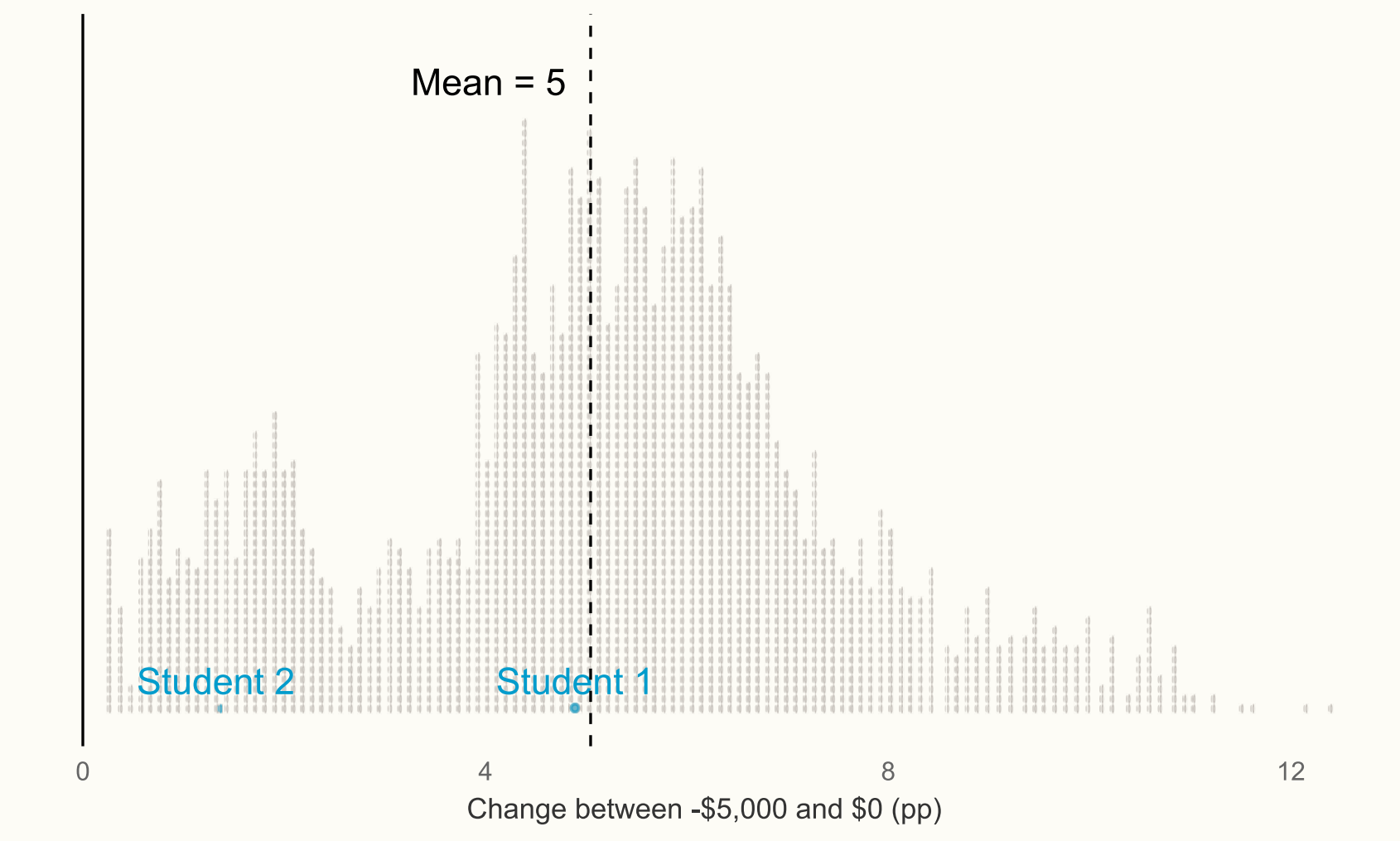

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What was the impact of *last dollar* financial aid on the second-year retention of Bronco Promise-eligible students?

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What was the impact of *last dollar* financial aid on the second-year retention of Bronco Promise-eligible students?

> Between 2017 and 2021, **covering the last $5,000** of the COA gap would have resulted in an **average increase of 5 percentage points** in the probability a student returns for the following fall.

Question 2: Summary

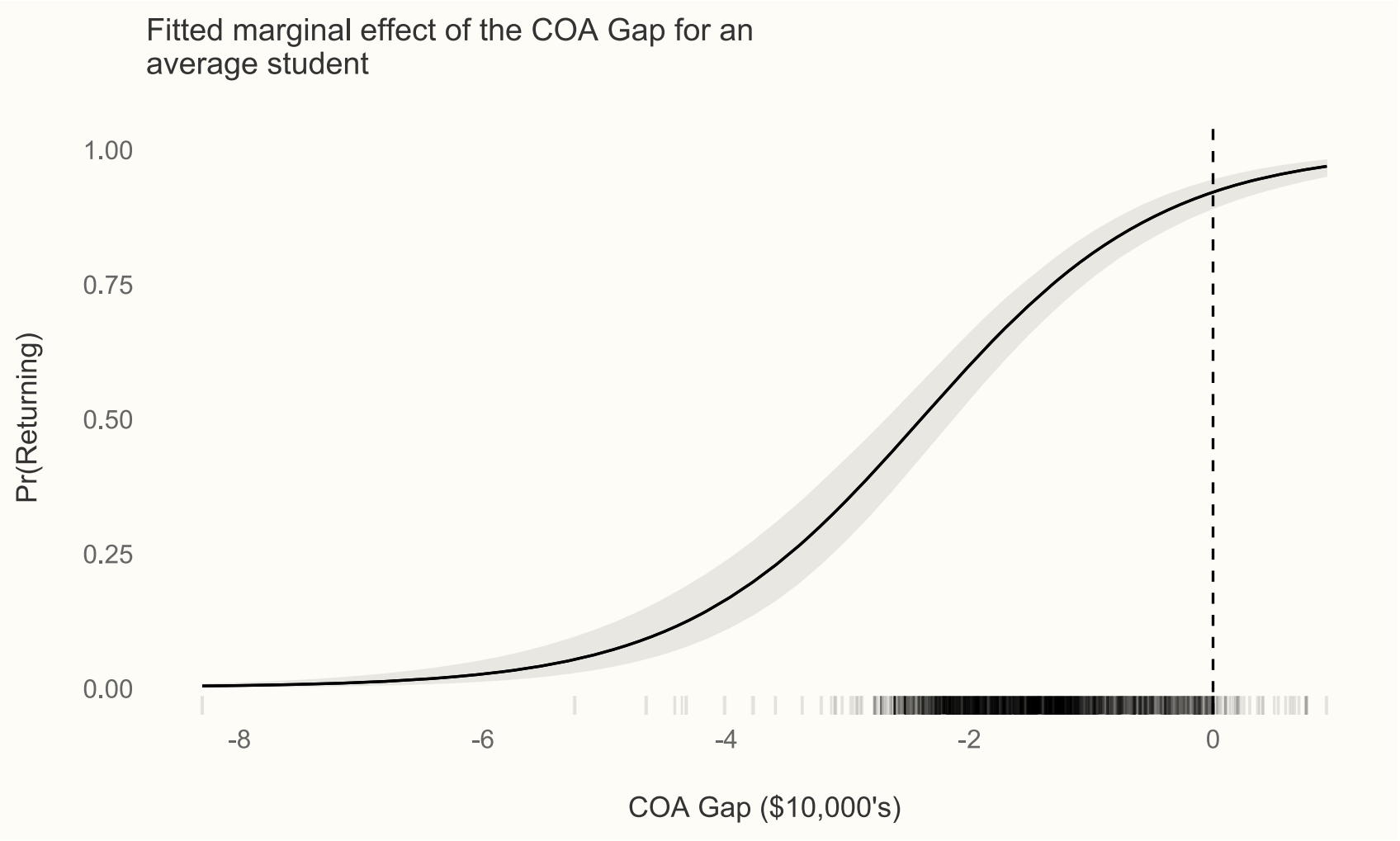
What was the impact of *last dollar* financial aid on the second-year retention of Bronco Promise-eligible students?

> Between 2017 and 2021, **covering the last $5,000** of the COA gap would have resulted in an **average increase of 5 percentage points** in the probability a student returns for the following fall.

Even if every student were already close to (i.e. within $5,000) their COA (i.e. within $5,000), a last dollar scholarship like the Bronco Promise should still make a substantial impact on retention.

Question 3: To what extent can we attribute the rise in retention for eligible students to the increased spending associated with the Bronco Promise scholarship program?

Question 3: Counterfactual Comparison



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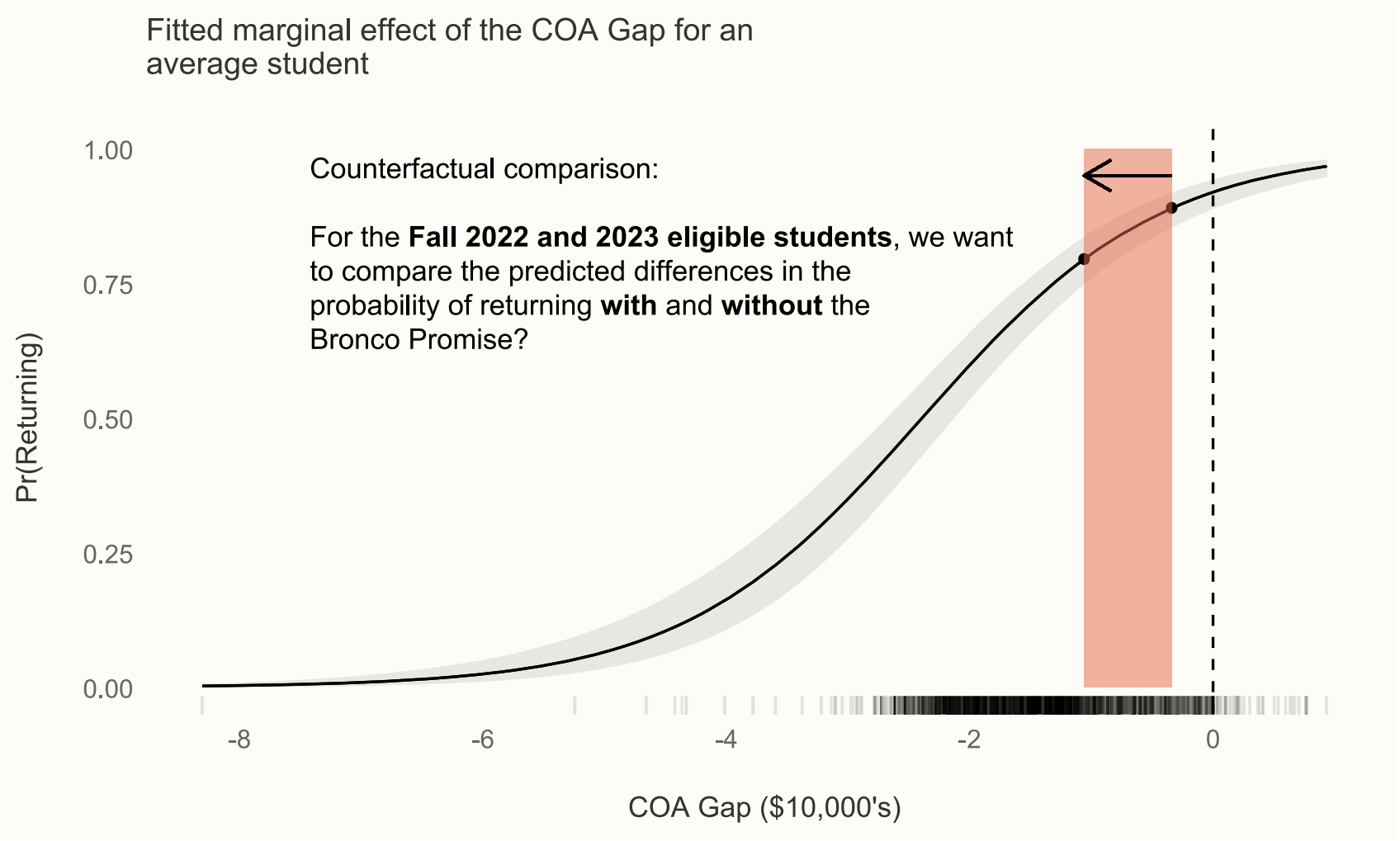

Question 3: Counterfactual Comparison

Take two students from the Fall 2023 data:

Student 1

- HSGPA: 3.33
- AP courses: 0
- cohort:Fall 2023
- county:WAYNE
- aid period: FS
- promise amount: $7,167
- gap: -$3,420

Student 2

- HSGPA: 4.11
- AP courses: 1
- cohort:Fall 2023
- county:MONROE
- aid period: FS1
- promise amount: $3,199
- gap: -$11,319

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- HSGPA: 3.33
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- county:WAYNE
- aid period: FS
- promise amount: $7,167
- gap: -$3,420
- gap counterfactual: -$10,587

Student 2

- HSGPA: 4.11
- AP courses: 1
- cohort:Fall 2023
- county:MONROE
- aid period: FS1
- promise amount: $3,199
- gap: -$11,319
- gap counterfactual: -$14,518

Question 3: Counterfactual Comparison

Take two students from the Fall 2023 data:

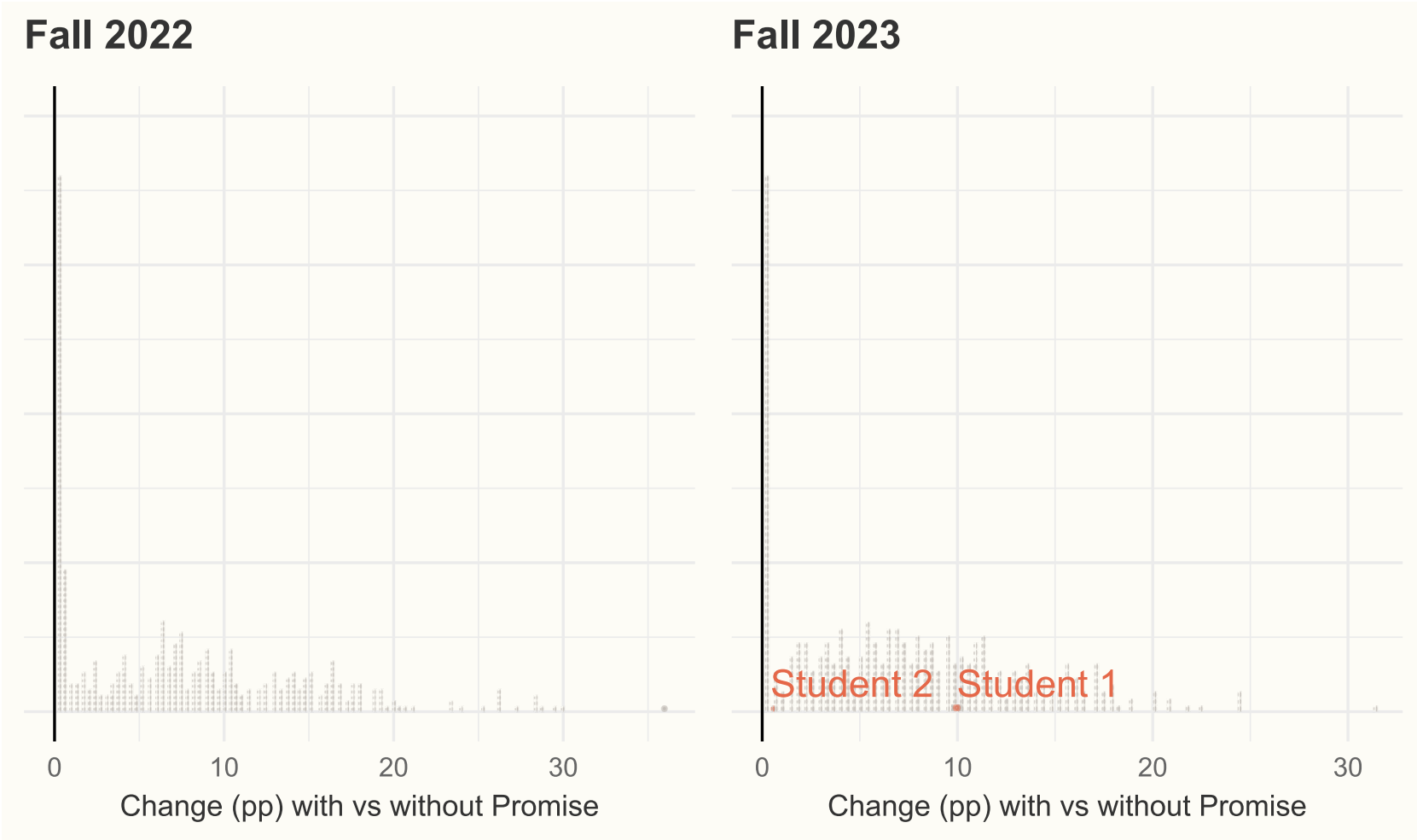
Student 1

- promise amount: $7,167
- gap: -$3,420
- gap counterfactual: -$10,587 -
  ——————————————-
- with promise: 87.8%
- without promise: 77.8%
- difference: 10

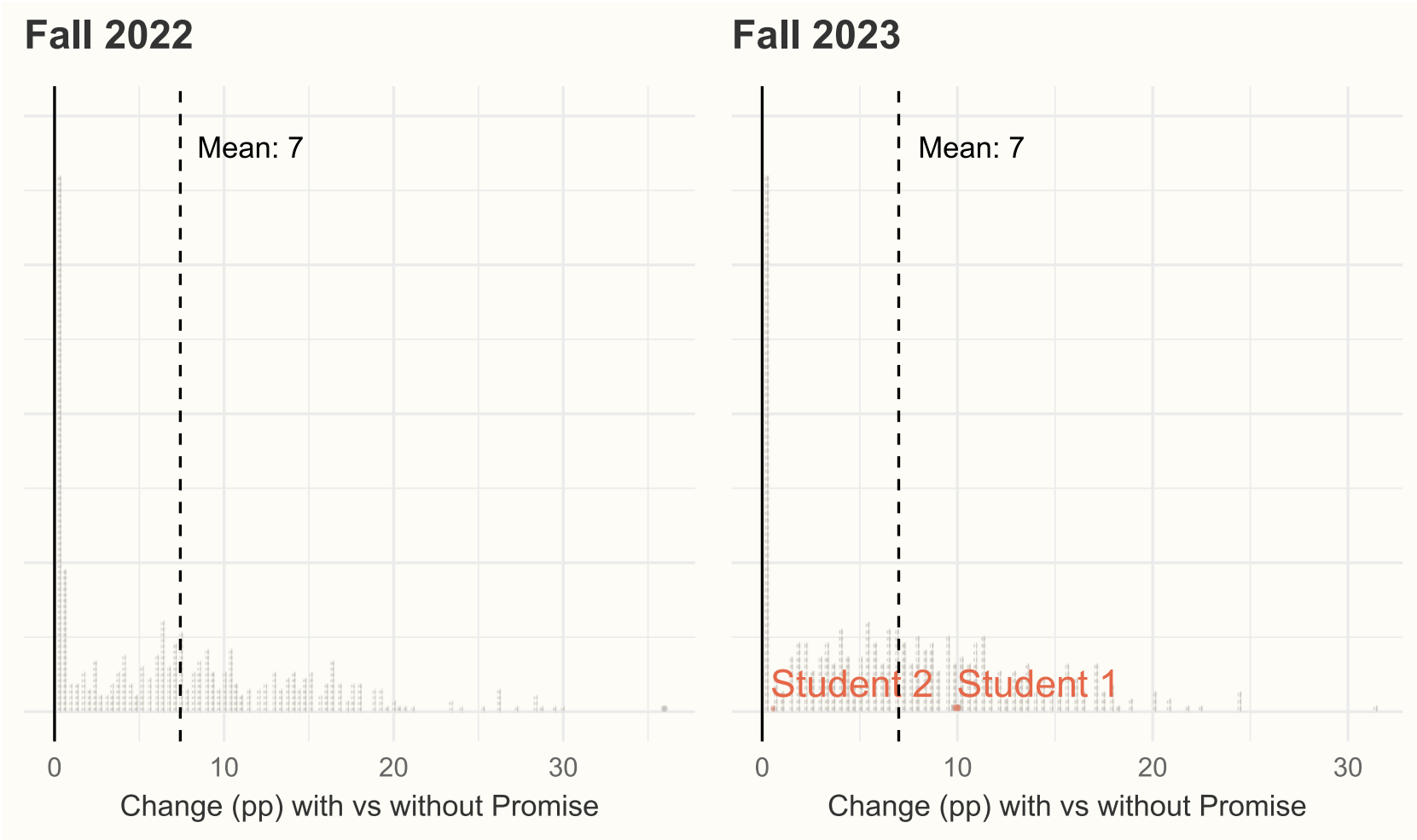
Student 2

- promise amount: $3,199
- gap: -$11,319
- gap counterfactual: -$14,518 -
  ——————————————–
- with promise: 98.9%
- without promise: 98.5%
- difference: 0.4

Question 3: Counterfactual Comparison



Question 3: Counterfactual Comparison



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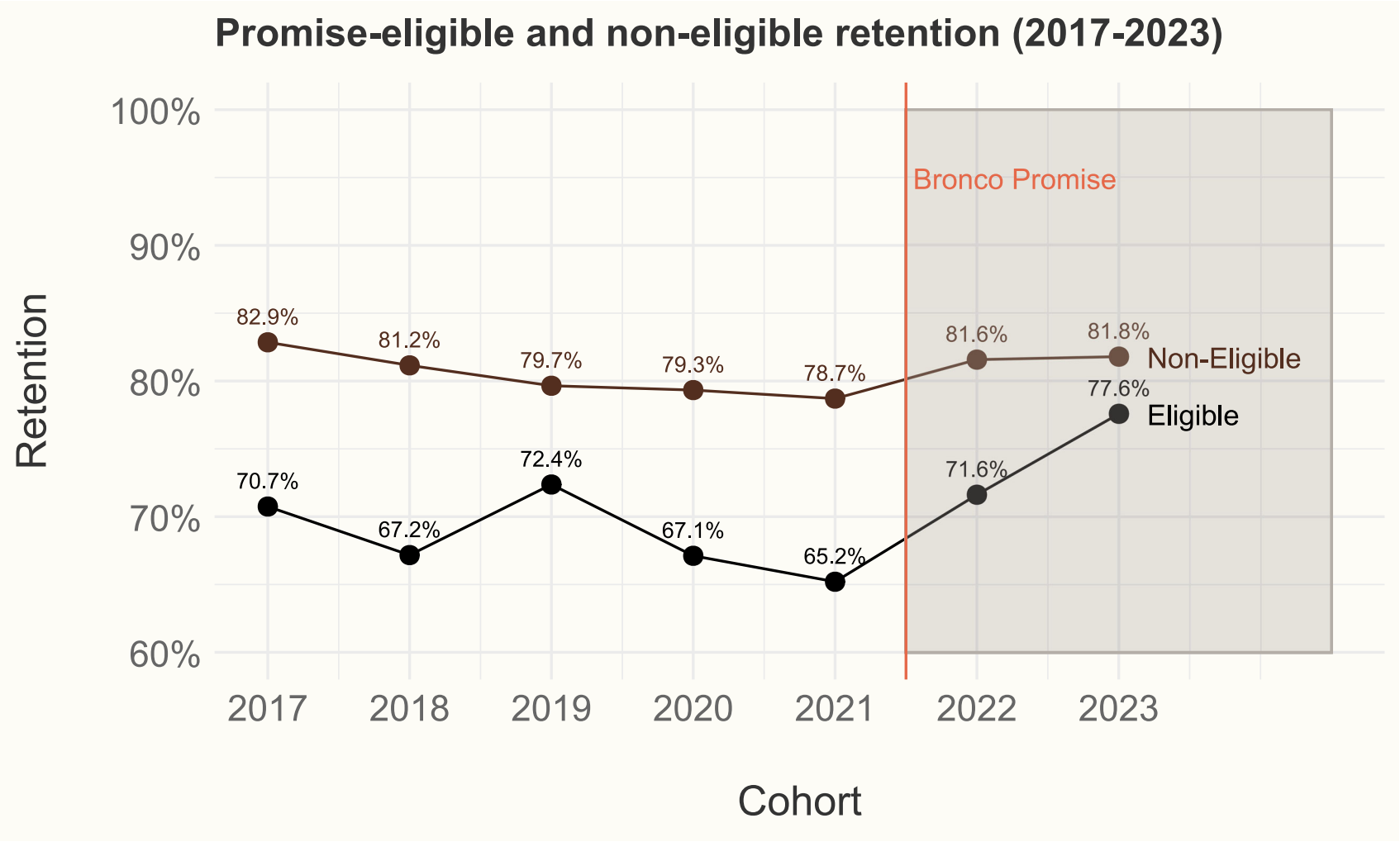
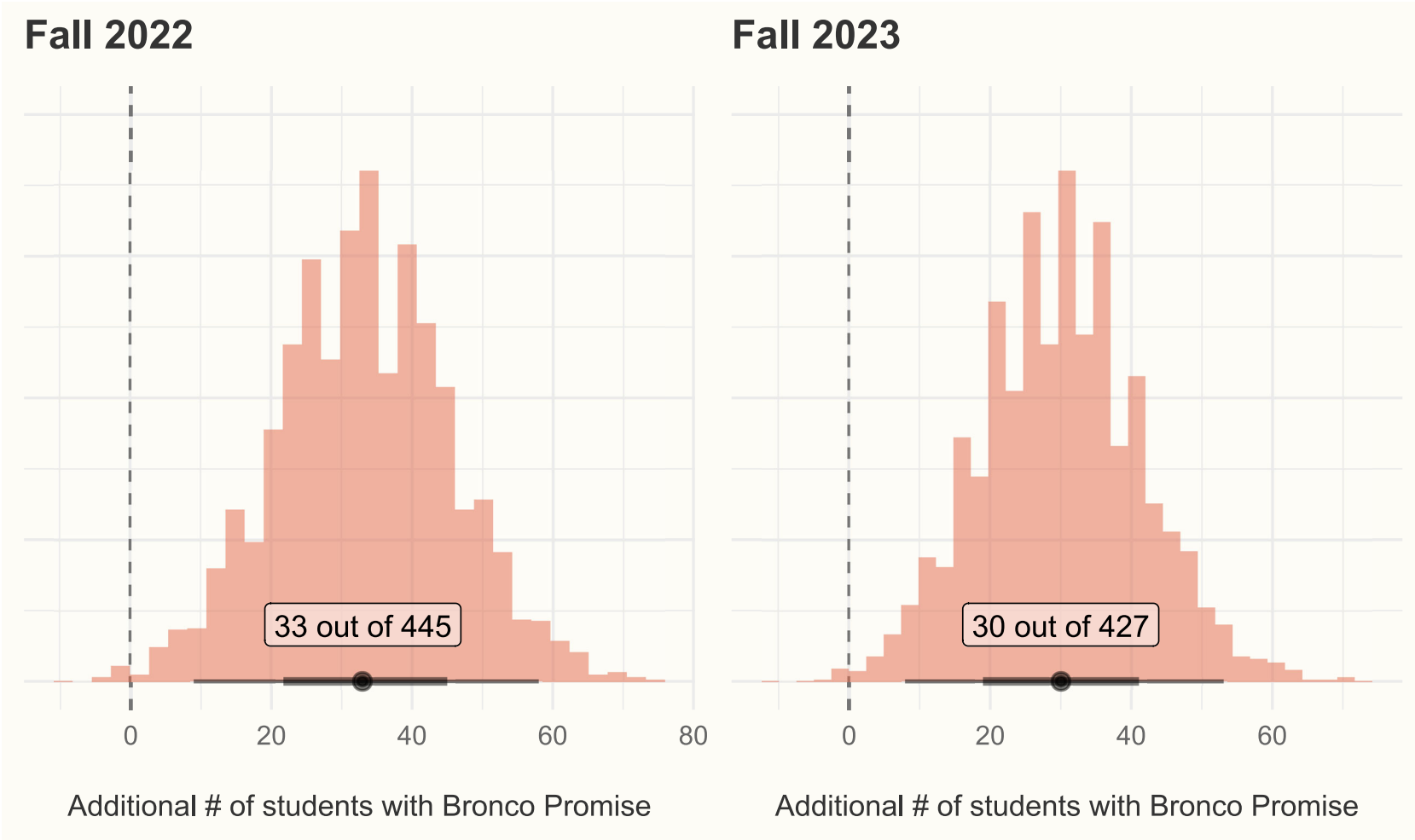
> Given the Bronco Promise scholarship money we *actually ended up spending*, eligible students would have been **7 percentage points more likely to return, *on average*, than if we didn't spend it**.

What does this hypothetical increase mean for the retention rates of eligible students? How many fewer students would have returned without the Bronco Promise money?

Question 3: Counterfactual Comparison Retention



Question 3: Counterfactual Comparison Retention



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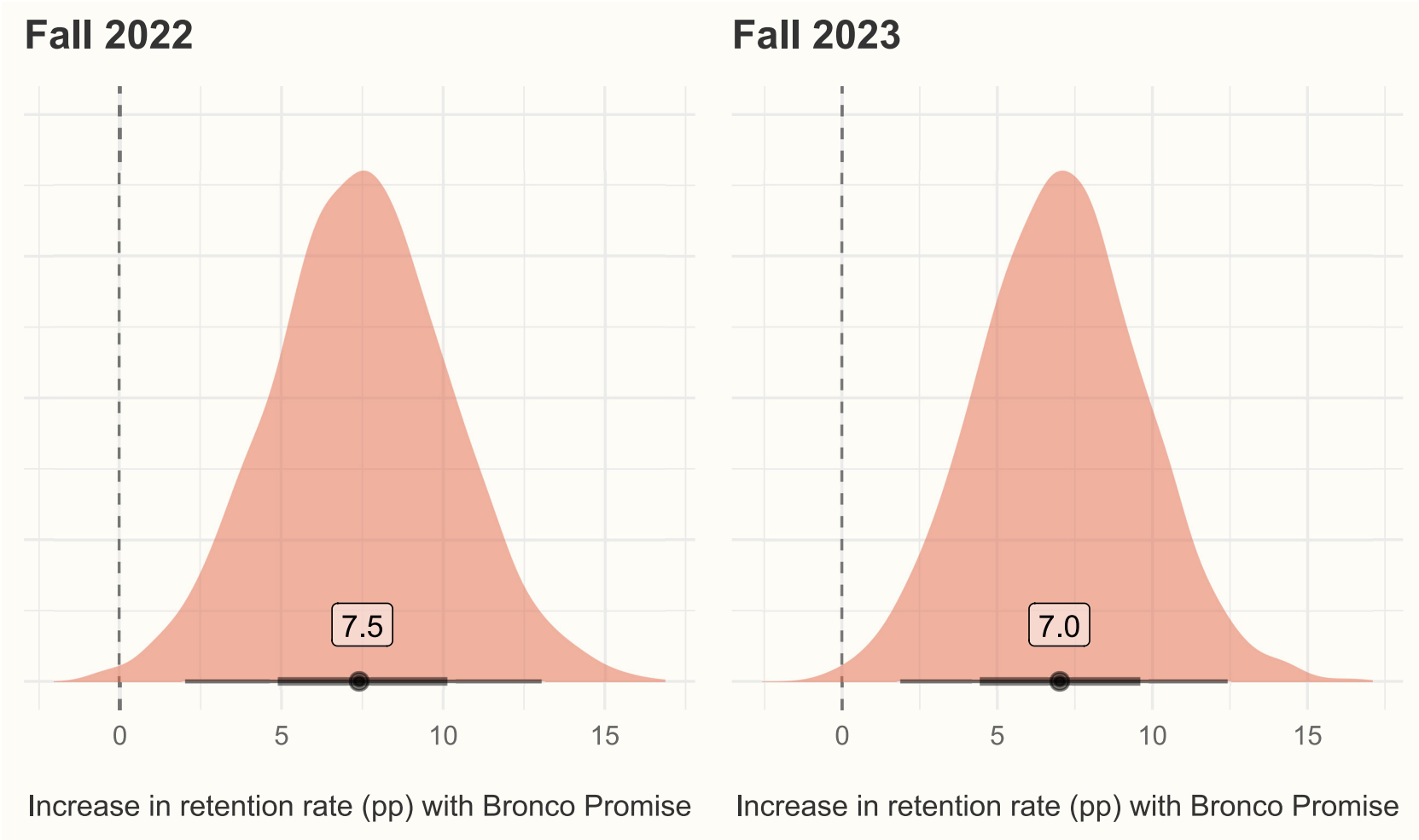

Question 3: Summary

For the Fall 2022 and 2023 cohorts, what would would have been the predicted differences in retention rates of eligible students with and without the Bronco Promise?

> Given the Bronco Promise scholarship money we *actually ended up spending*, we would have expected **retention to be 7 percentage points higher for eligible students, *on average*, than if we didn't spend it**.

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For the Fall 2022 and 2023 cohorts, what would would have been the predicted differences in retention rates of eligible students with and without the Bronco Promise?

> Given the Bronco Promise scholarship money we *actually ended up spending*, we would have expected **retention to be 7 percentage points higher for eligible students, *on average*, than if we didn't spend it**.

The expected differences in retention rates associated with Bronco Promise spending are consistent with the actual retention increases we saw for eligible students in 2022 and 2023.

Question 3: Summary

What about our **overall FTIAC retention gains** for the 2022 and 2023 cohorts?

Bonus Question: What about our overall FTIAC retention gains?

Bonus Question

How likely would the retention rates we *actually observed* in 2022 and 2023 have been in the scenarios *with* and *without* the Bronco Promise scholars program?

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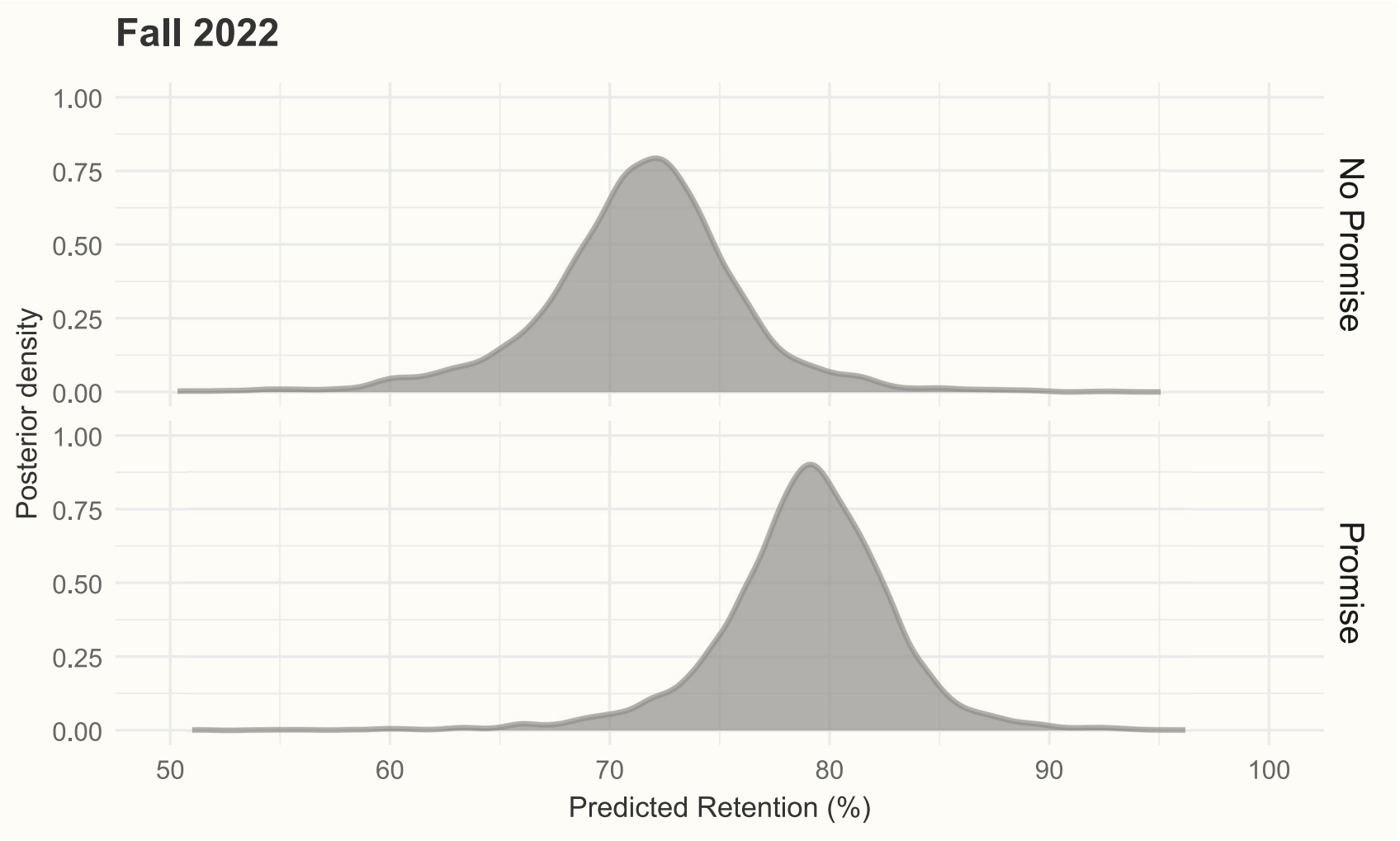
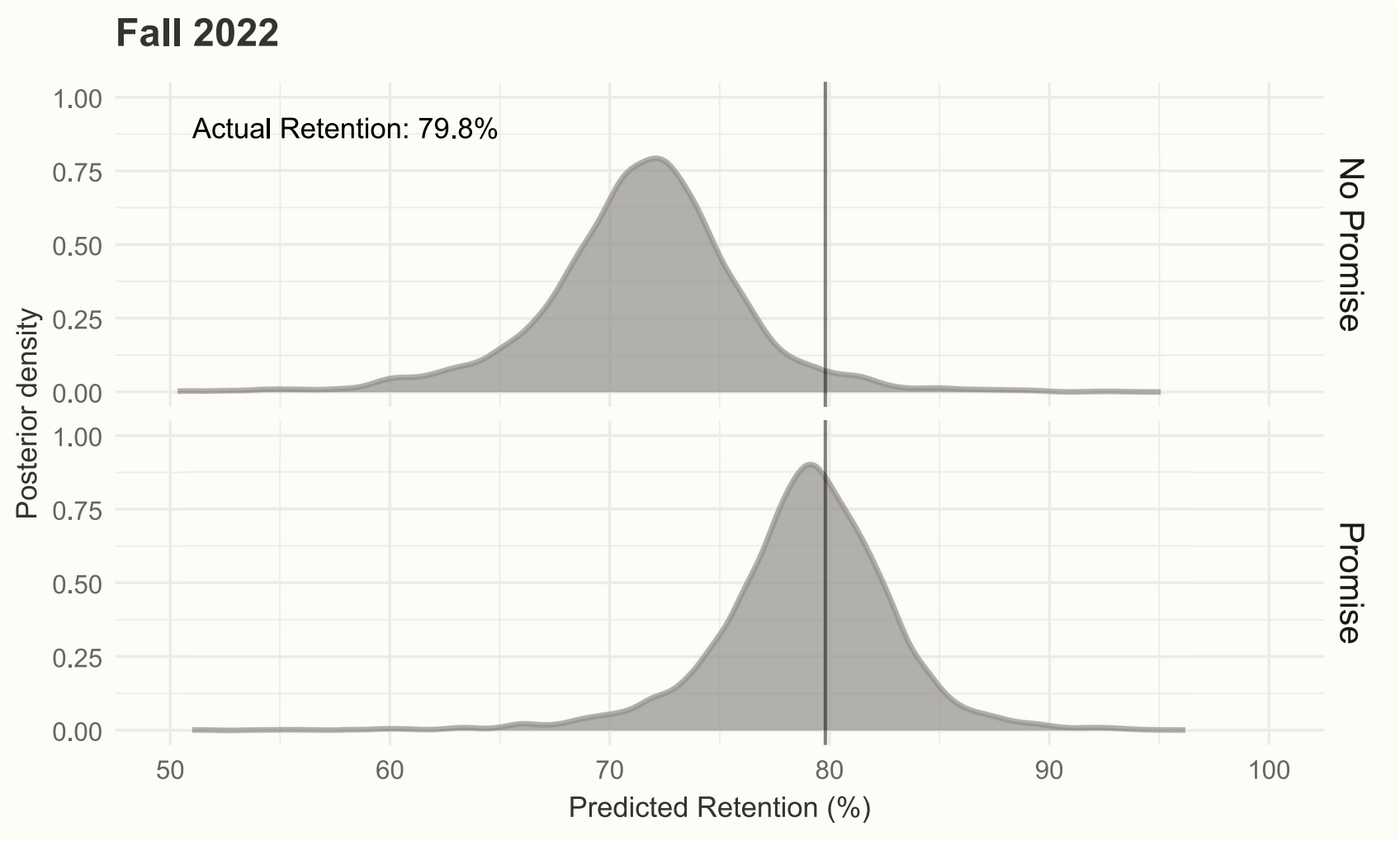
(Assume non-eligible retention doesn't change.)

Bonus Question



Bonus Question



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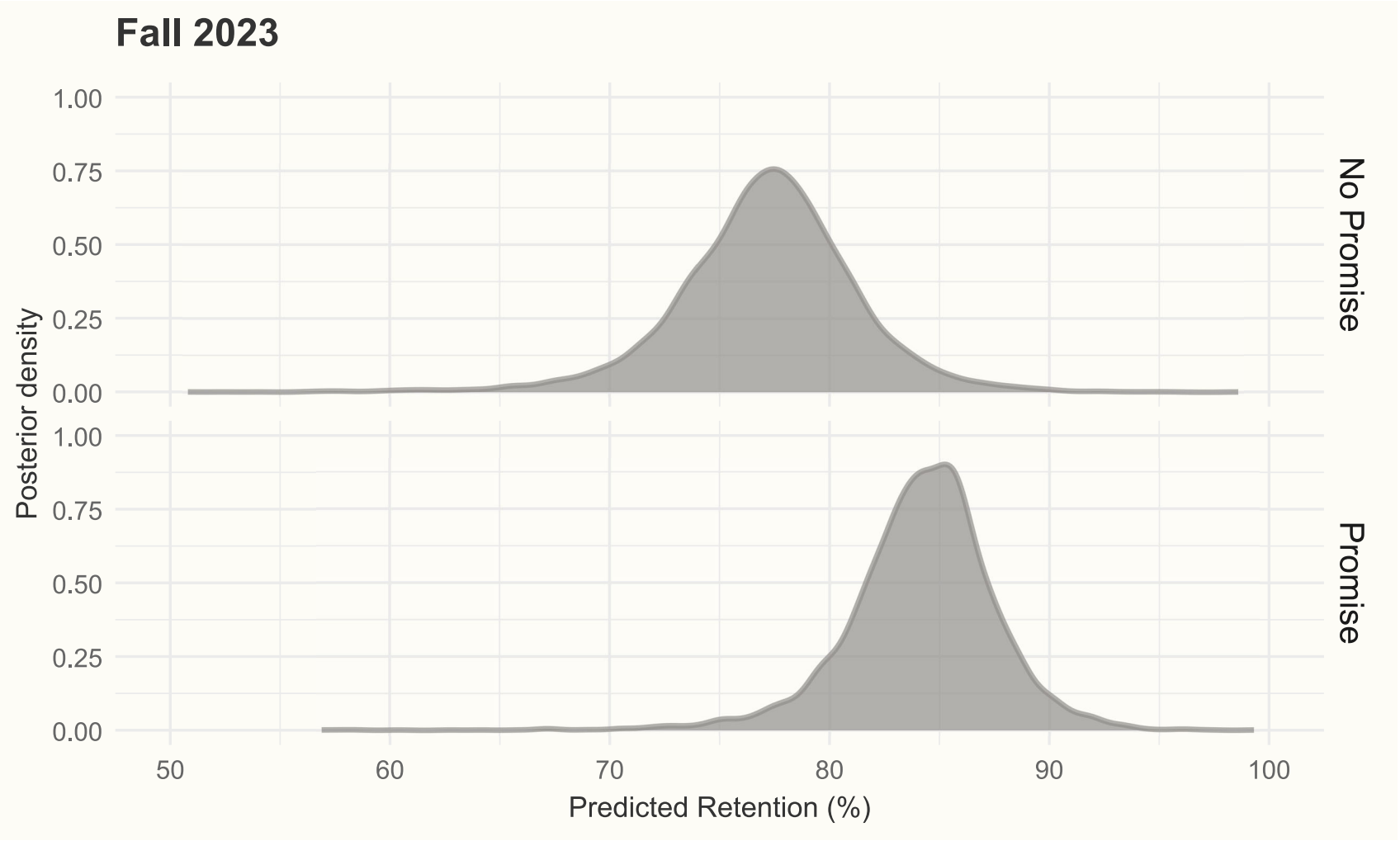

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How likely would the retention rates we *actually observed* in 2022 and 2023 have been in the scenarios *with* and *without* the Bronco Promise scholars program?

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> The FTIAC retention rates we achieved would have been **extremely unlikely in 2022 (3.1%) and very unlikely in 2023 (13.4%) without the Bronco Scholar program**.

Conclusions

- Increasing financial aid (decreasing COA gaps) should increase retention for students *in need*
- This is true even if that aid is *last dollar* aid, though the impact is not quite as strong
- The increases in first year retention we saw in 2022 and 2023 were entirely consistent with expectations given the increased financial aid provided to Promise eligible students