

# Predictors of Non-Enrollment Among Juniors and Seniors:

Logistic Regression Modeling Using  
Selected Banner Data

**Junior-Senior Retention Study Research Group**

# Analysis of Selected Banner Data

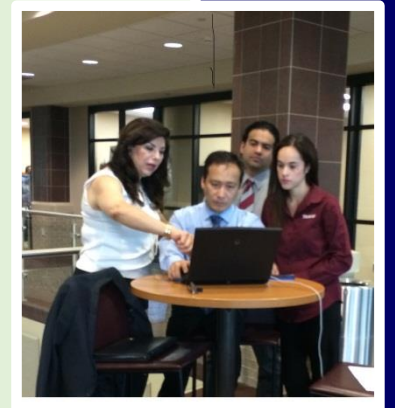
Data source used?

Indicators considered?

Modeling strategy employed?

Sample size?

- Sample size (n) = 2,761 student records
- There were 25 original Banner indicators considered.
- Missing values and preliminary analyses reduced the number of core indicators used to 10.
- Binary logistic regression modeling employed
  - Main effects model
  - Interaction effects model
  - Main effects model (by college)

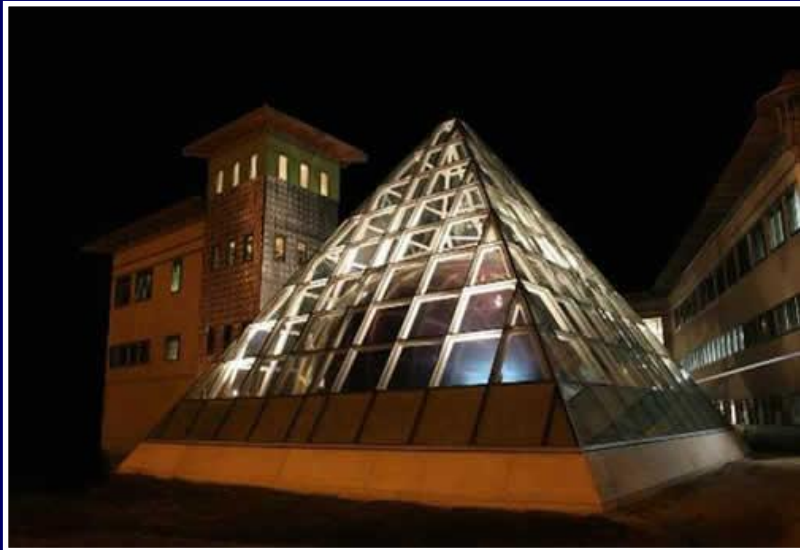


# Probability Effect Plots and Modeling Results



COAS

# COAS – Basic Statistics for Selected Indicators



## COAS

Variables	N	%
<b>Enrollment Status</b>		
Non-enrollment (Estat=0)	176	11.3
Enrollment (Estat=1)	1381	88.7
<b>Gender</b>		
Female	885	56.8
Male	672	43.2
<b>Student Classification</b>		
Junior	585	37.6
Senior	972	62.4
<b>Dependency Status</b>		
Dependent	954	64.0
Independent	537	36.0
<b>EFC</b>		
Low (0)	838	56.2
Medium (> 0 to 10,000)	506	33.9
High (>= 10,000)	147	9.9

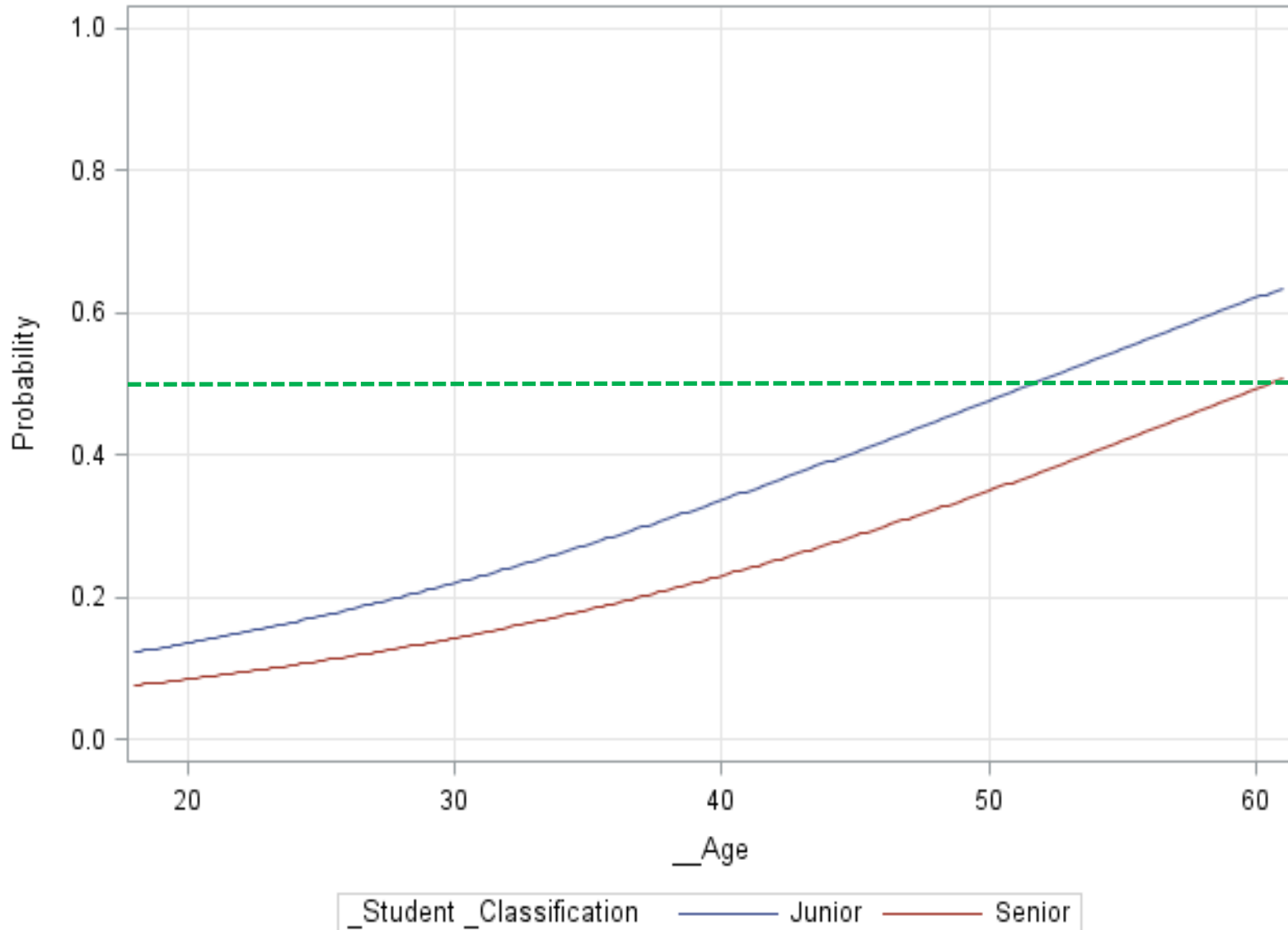
n = 1,557

## COAS

Variables	Mean	Min	Max	SD
Age	23.87	18	61	5.67
Institutional GPA	2.89	0.00	4.00	0.57
Overall GPA	2.89	1.63	4.00	0.48
EAratio (cumulative; %)	90.28	47.41	100.00	9.78
EAratio (previous; %)	89.35	0.00	100.00	22.15

n = 1,557

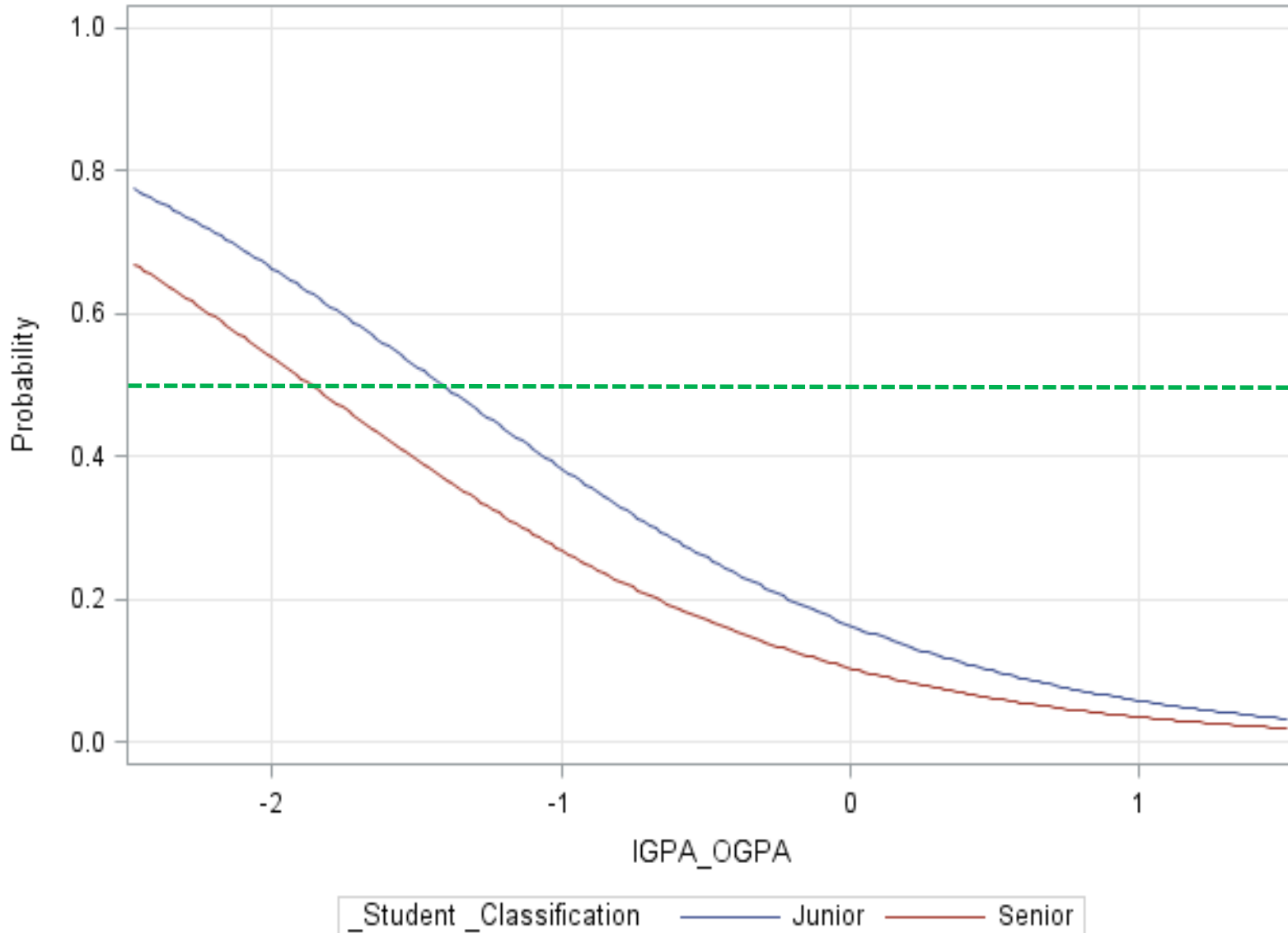
**Predicted Probabilities for estat = 0**



Predictors	COAS	
	B	OR
Gender (female=1)	-0.30	0.74
Student Classification (Junior=1)	0.53	1.69 **
Dependent Status (dependent=1)	0.05	1.06
EFC Low (compared to EFC high)	-0.24	0.79
EFC Middle (compared to EFC high)	-0.13	0.88
Age	0.06	1.06 ***
GPA difference (IGPA - OGPA)	-1.16	0.32 ***
EA ratio (Prev - Cum)	-0.02	0.98 ***
Concordance (%)	68.60	
n	1557	

- **For COAS,**
  - Juniors are at risk of non-enrollment.
  - Older students are at risk of non-enrollment
  - Simultaneously, these attributes heighten the risk of non-enrollment.

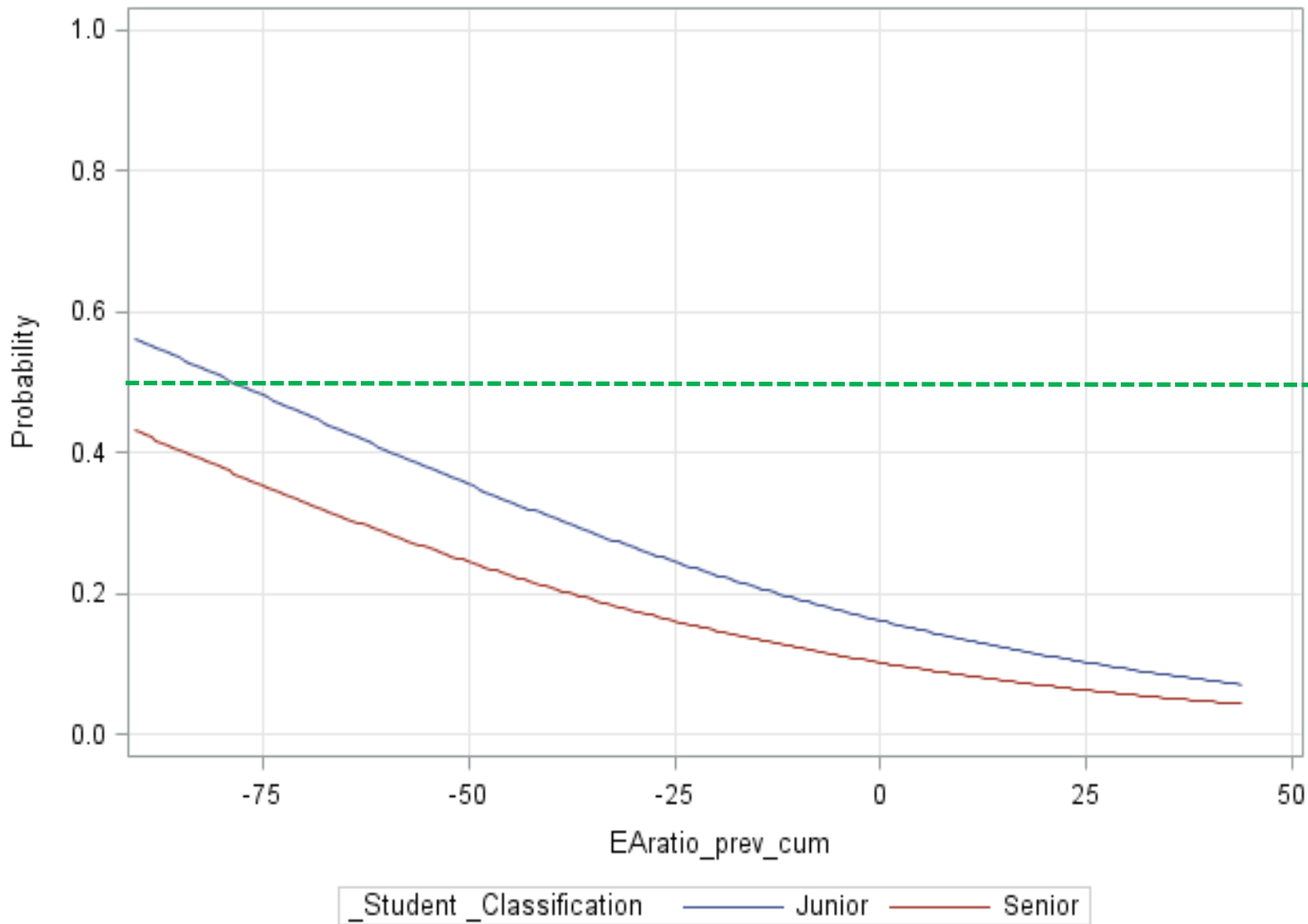
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n	1557	

- **For COAS,**
  - high iGPA is protective against non-enrollment.
  - There is an observed “tension” between iGPA and oGPA
  - Somehow higher iGPA makes students enroll; and somehow higher oGPA makes students not enroll

**Predicted Probabilities for estat = 0**



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	B	OR
Gender (female=1)	-0.30	0.74
Student Classification (Junior=1)	0.53	1.69 **
Dependent Status (dependent=1)	0.05	1.06
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Concordance (%)	68.60	
n	1557	

- **For COAS,**
  - the observed “tension” between EAR previous and EAR cumulative is more or less intuitive
  - High EAR previous is protective against non-enrollment (“recency effect”).

# Probability Effect Plots and Modeling Results



**COBA**



# COBA – Basic Statistics for Selected Indicators



## COBA

Variables	N	%
<b>Enrollment Status</b>		
Non-enrollment (Estat=0)	43	8.7
Enrollment (Estat=1)	454	91.4
<b>Gender</b>		
Female	220	44.3
Male	277	55.7
<b>Student Classification</b>		
Junior	161	32.4
Senior	336	67.6
<b>Dependency Status</b>		
Dependent	271	58.2
Independent	195	41.9
<b>EFC</b>		
Low (0)	241	51.7
Medium (> 0 to 10,000)	172	36.9
High (>= 10,000)	53	11.4

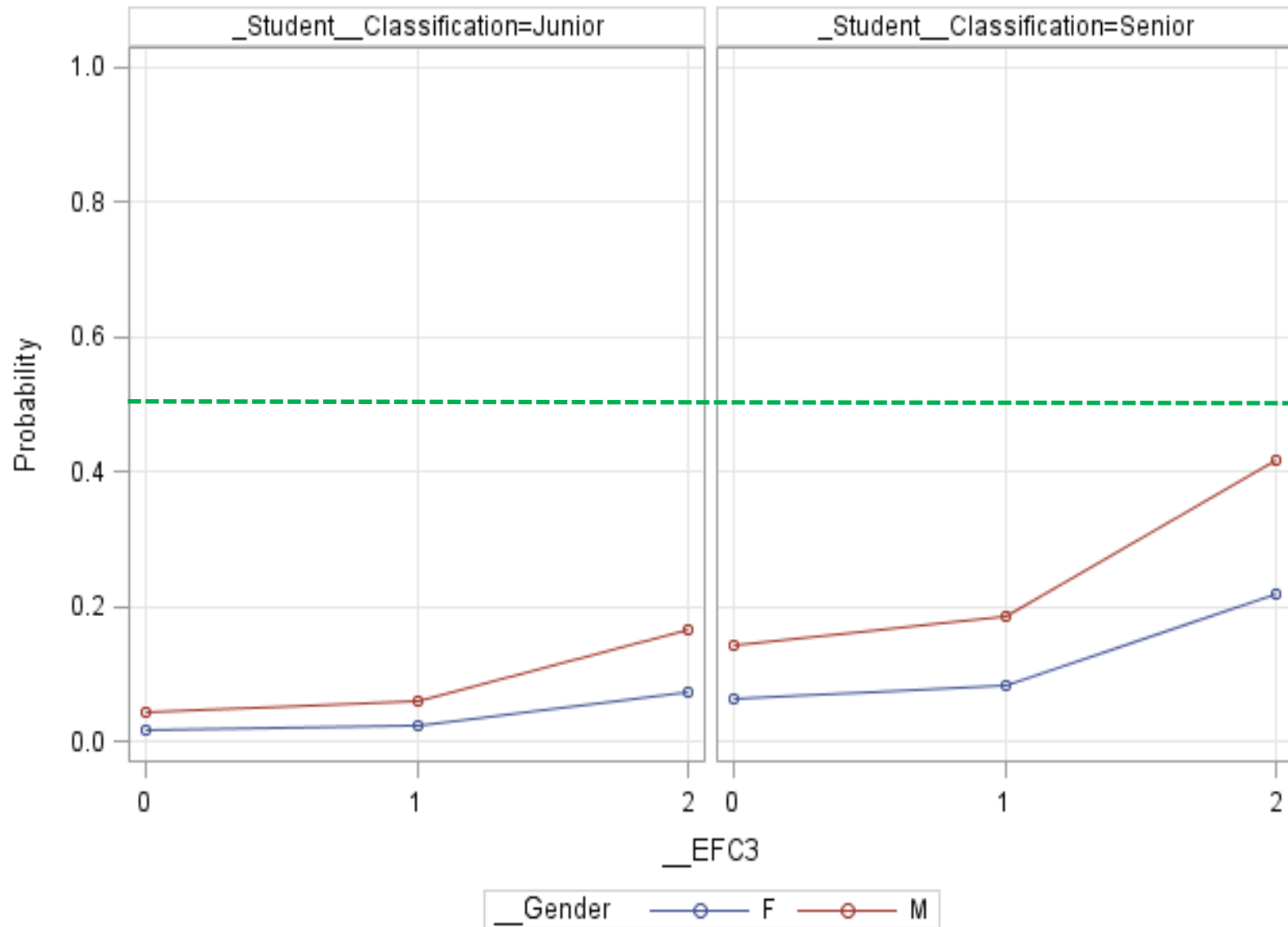
n = 497

## COBA

Variables	Mean	Min	Max	SD
Age	24.43	19	58	5.64
Institutional GPA	2.80	0.00	4.00	0.55
Overall GPA	2.86	1.91	4.00	0.46
EAratio (cumulative; %)	90.59	51.18	100.00	10.21
EAratio (previous; %)	87.62	0.00	100.00	22.65

n = 497

### Predicted Probabilities for estat = 0



Predictors	COBA	
	B	OR
Gender (female=1)	-0.93	0.39 *
Student Classification (Junior=1)	-1.27	0.28 *
Dependent Status (dependent=1)	-0.88	0.42
EFC Low (compared to EFC high)	-1.46	0.23 **
EFC Middle (compared to EFC high)	-1.13	0.32 *
Age	0.02	1.02
GPA difference (IGPA - OGPA)	-0.01	0.99
EA ratio (Prev - Cum)	-0.01	0.99
Concordance (%)	75.20	
n	497	

- **For COBA,**
  - lower EFC is associated with lower likelihood of non-enrollment
  - Juniors exhibit lower likelihood of non-enrollment
  - Females exhibit lower likelihood of non-enrollment

# Probability Effect Plots and Modeling Results



COED

# COED – Basic Statistics for Selected Indicators



## COED

Variables	N	%
<b>Enrollment Status</b>		
Non-enrollment (Estat=0)	20	3.9
Enrollment (Estat=1)	494	96.1
<b>Gender</b>		
Female	386	75.1
Male	128	24.9
<b>Student Classification</b>		
Junior	149	29.0
Senior	365	71.0
<b>Dependency Status</b>		
Dependent	285	56.8
Independent	217	43.2
<b>EFC</b>		
Low (0)	282	56.2
Medium (> 0 to 10,000)	169	33.7
High (>= 10,000)	51	10.2

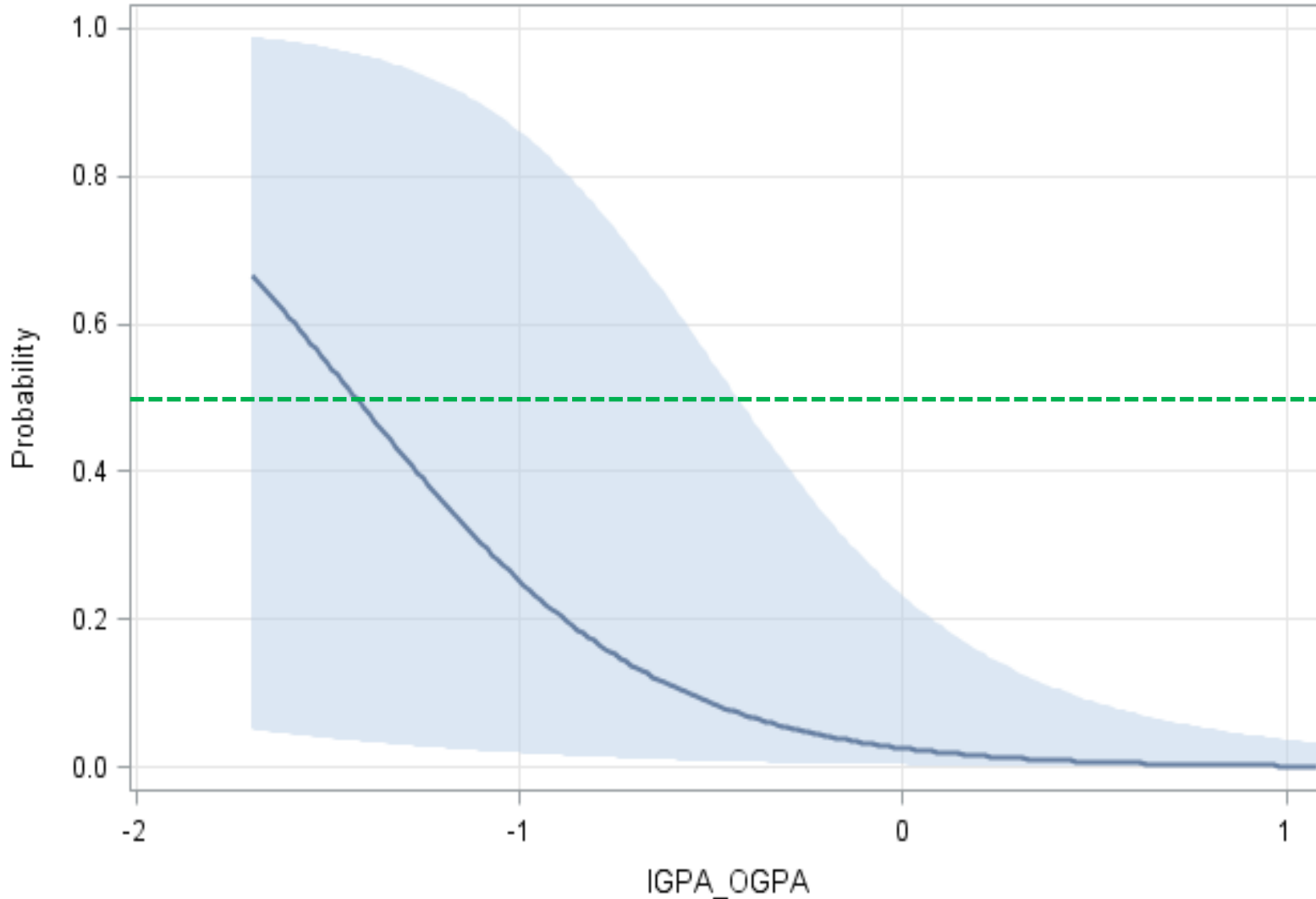
n = 514

## COED

Variables	Mean	Min	Max	SD
Age	24.11	19	57	4.67
Institutional GPA	3.09	0.86	4.00	0.43
Overall GPA	3.00	1.98	3.98	0.38
EAratio (cumulative; %)	90.17	50.42	100.00	9.15
EAratio (previous; %)	92.94	0.00	100.00	16.39

n = 514

**Predicted Probabilities for estat = 0**  
With 95% Confidence Limits



Predictors	COED	
	B	OR
Gender (female=1)	-0.67	0.51
Student Classification (Junior=1)	0.28	1.32
Dependent Status (dependent=1)	0.40	1.49
EFC Low (compared to EFC high)	0.60	1.81
EFC Middle (compared to EFC high)	0.61	1.83
Age	0.04	1.04
GPA difference (IGPA - OGPA)	-2.54	0.08 **
EA ratio (Prev - Cum)	-0.01	0.99
Concordance (%)	66.50	
n	514	

- **For COED,**
  - those with higher institutional GPA relative to their overall GPA are at lower risk of not enrolling

# Probability Effect Plots and Modeling Results



**CONS**

# CONS – Basic Statistics for Selected Indicators



## CONS

Variables	N	%
<b>Enrollment Status</b>		
Non-enrollment (Estat=0)	32	16.6
Enrollment (Estat=1)	161	83.4
<b>Gender</b>		
Female	153	79.3
Male	40	20.7
<b>Student Classification</b>		
Junior	93	48.2
Senior	100	51.8
<b>Dependency Status</b>		
Dependent	111	59.7
Independent	75	40.3
<b>EFC</b>		
Low (0)	101	54.3
Medium (> 0 to 10,000)	57	30.7
High (>= 10,000)	28	15.1

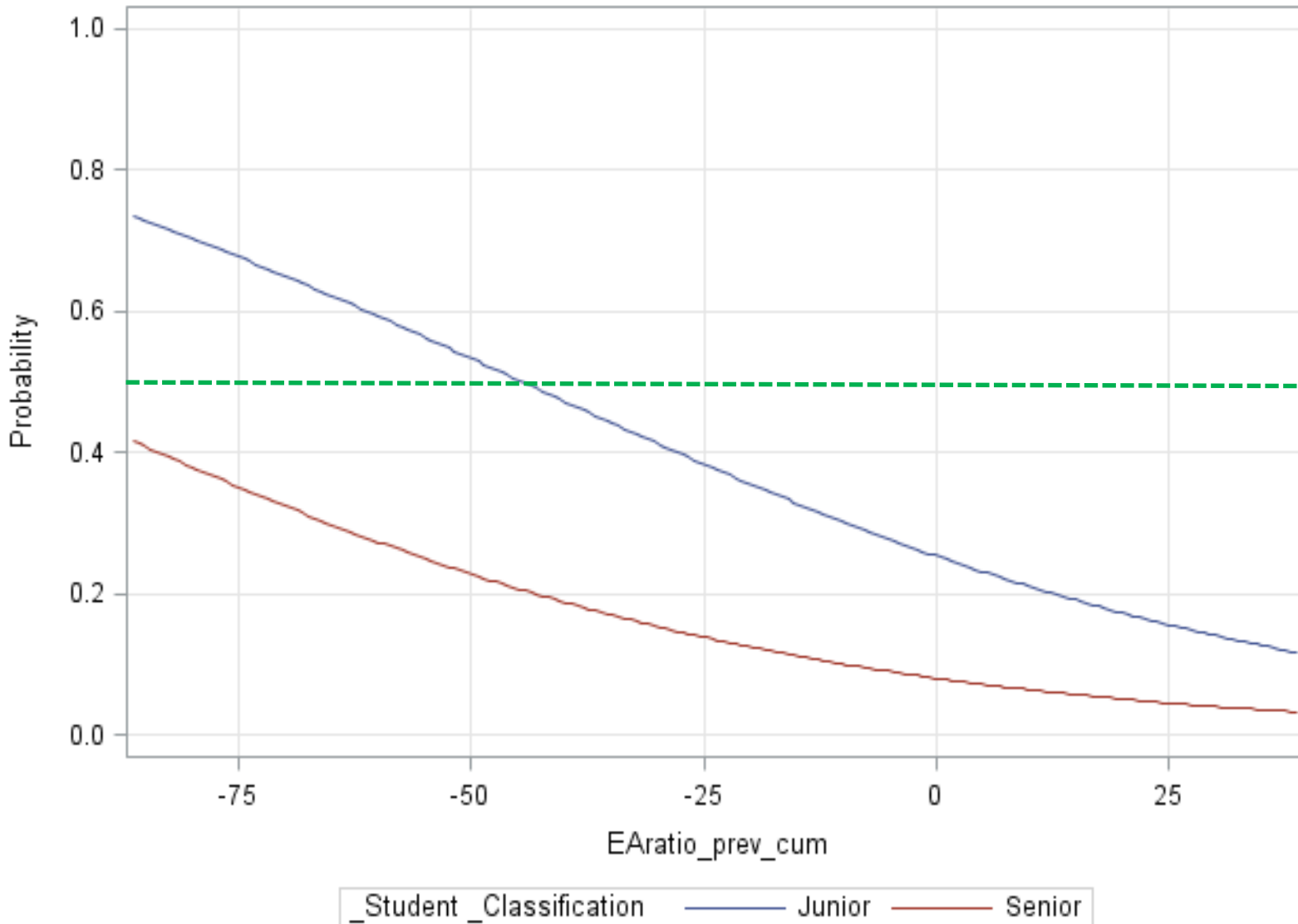
n = 193

## CONS

Variables	Mean	Min	Max	SD
Age	23.36	19	45	4.51
Institutional GPA	2.99	1.77	3.93	0.44
Overall GPA	3.08	1.63	3.95	0.38
EAratio (cumulative; %)	91.51	50.00	119.15	10.43
EAratio (previous; %)	89.83	0.00	100.00	22.85

n = 193

Predicted Probabilities for estat = 0



Predictors	CONS	
	B	OR
Gender (female=1)	-0.50	0.61
Student Classification (Junior=1)	1.35	3.87 **
Dependent Status (dependent=1)	-0.35	0.71
EFC Low (compared to EFC high)	0.44	1.55
EFC Middle (compared to EFC high)	0.58	1.78
Age	-0.04	0.96
GPA difference (IGPA - OGPA)	-0.88	0.42
EA ratio (Prev - Cum)	-0.02	0.98 **
Concordance (%)	75.30	
n	193	

- For CONS,
  - juniors at risk of leaving
  - those with lower EAR-previous compared to EAR-cumulative are at risk of leaving



## OBSERVATIONS

- Being **Female** is a protective factor in COBA; it is a non-factor in other colleges.
- Dependent status** does not predict non-enrollment.
- Being a **Junior** is a risk factor in COAS (opens opportunity to transfer to other universities) and CONS (dismal performance at this stage is disastrous), but is a protective factor in COBA.
- Lower **EFC** is protective against non-enrollment in COBA but is a non-factor in the other colleges.

Predictors of the Likelihood of Non-Enrollment (by College)

Predictors	COAS		COBA		COED		CONS	
	B	OR	B	OR	B	OR	B	OR
Gender (female=1)	-0.30	0.74	-0.93	0.39 *	-0.67	0.51	-0.50	0.61
Student Classification (Junior=1)	0.53	1.69 **	-1.27	0.28 *	0.28	1.32	1.35	3.87 **
Dependent Status (dependent=1)	0.05	1.06	-0.88	0.42	0.40	1.49	-0.35	0.71
EFC Low (compared to EFC high)	-0.24	0.79	-1.46	0.23 **	0.60	1.81	0.44	1.55
EFC Middle (compared to EFC high)	-0.13	0.88	-1.13	0.32 *	0.61	1.83	0.58	1.78
Age	0.06	1.06 ***	0.02	1.02	0.04	1.04	-0.04	0.96
GPA difference (IGPA - OGPA)	-1.16	0.32 ***	-0.01	0.99	-2.54	0.08 **	-0.88	0.42
EA ratio (Prev - Cum)	-0.02	0.98 ***	-0.01	0.99	-0.01	0.99	-0.02	0.98 **
Concordance (%)	68.60		75.20		66.50		75.30	
n	1557		497		514		193	

\*, \*\*, \*\*\* denote statistical significance at the .05, .01, and .001 levels

B = estimated regression coefficient; OR = estimated odds ratio

## OBSERVATIONS

- **AGE** is a risk factor for non-enrollment in COAS, but it is a non-factor in other colleges.
- Low **iGPA** is a risk factor in both COAS and COED, but is non-factor in both COBA and CONS.
- Low **previous EA ratio** is a risk factor in both COAS and CONS, but are non-factors in both COBA and COED.

Predictors of the Likelihood of Non-Enrollment (by College)

Predictors	COAS		COBA		COED		CONS	
	B	OR	B	OR	B	OR	B	OR
Gender (female=1)	-0.30	0.74	-0.93	0.39 *	-0.67	0.51	-0.50	0.61
Student Classification (Junior=1)	0.53	1.69 **	-1.27	0.28 *	0.28	1.32	1.35	3.87 **
Dependent Status (dependent=1)	0.05	1.06	-0.88	0.42	0.40	1.49	-0.35	0.71
EFC Low (compared to EFC high)	-0.24	0.79	-1.46	0.23 **	0.60	1.81	0.44	1.55
EFC Middle (compared to EFC high)	-0.13	0.88	-1.13	0.32 *	0.61	1.83	0.58	1.78
Age	0.06	1.06 ***	0.02	1.02	0.04	1.04	-0.04	0.96
GPA difference (IGPA - OGPA)	-1.16	0.32 ***	-0.01	0.99	-2.54	0.08 **	-0.88	0.42
EA ratio (Prev - Cum)	-0.02	0.98 ***	-0.01	0.99	-0.01	0.99	-0.02	0.98 **
Concordance (%)	68.60		75.20		66.50		75.30	
n	1557		497		514		193	

\*, \*\*, \*\*\* denote statistical significance at the .05, .01, and .001 levels

B = estimated regression coefficient; OR = estimated odds ratio

## RECOMMENDATIONS

- Protective factors against and the risk factors for non-enrollment vary across colleges; need to build models using both university-wide and college-specific indicators.
- Predictive power is low for all models; need to search or derive indicators with greater “discriminant” power.
- No definitive answers to original questions; results highlight emergent points that needs to be addressed.



## RECOMMENDATIONS

- Need to have access to the complete list of Banner indicators. This will allow the team: (1) to have a comprehensive view of the data that are stored, and (2) to identify and derive better indicators.
- Need to continuously monitor (through surveys and archival data) enrollment and associated indicators
- Need to utilize longitudinal data analysis. This cross-sectional study serves as baseline and a learning experience.



**Thanks for your attention**

**Junior-Senior Retention Study Research Group**