

Variable	Model (A)	Model (B)	Model (C)	Model (D)
Concept Shift	−0.0128 (0.000)	0.0037 (0.000)	−2.6045 (0.000)	−0.1947 (0.010)
Covariate Shift	−0.0063 (0.544)	0.0003 (0.177)	25.7513 (0.000)	−0.1857 (0.000)
Interaction	1.5013 (0.000)	−0.0260 (0.000)	185.6372 (0.002)	1.7629 (0.000)

Table 1: Regression Coefficients and p-values Across Four Scenarios

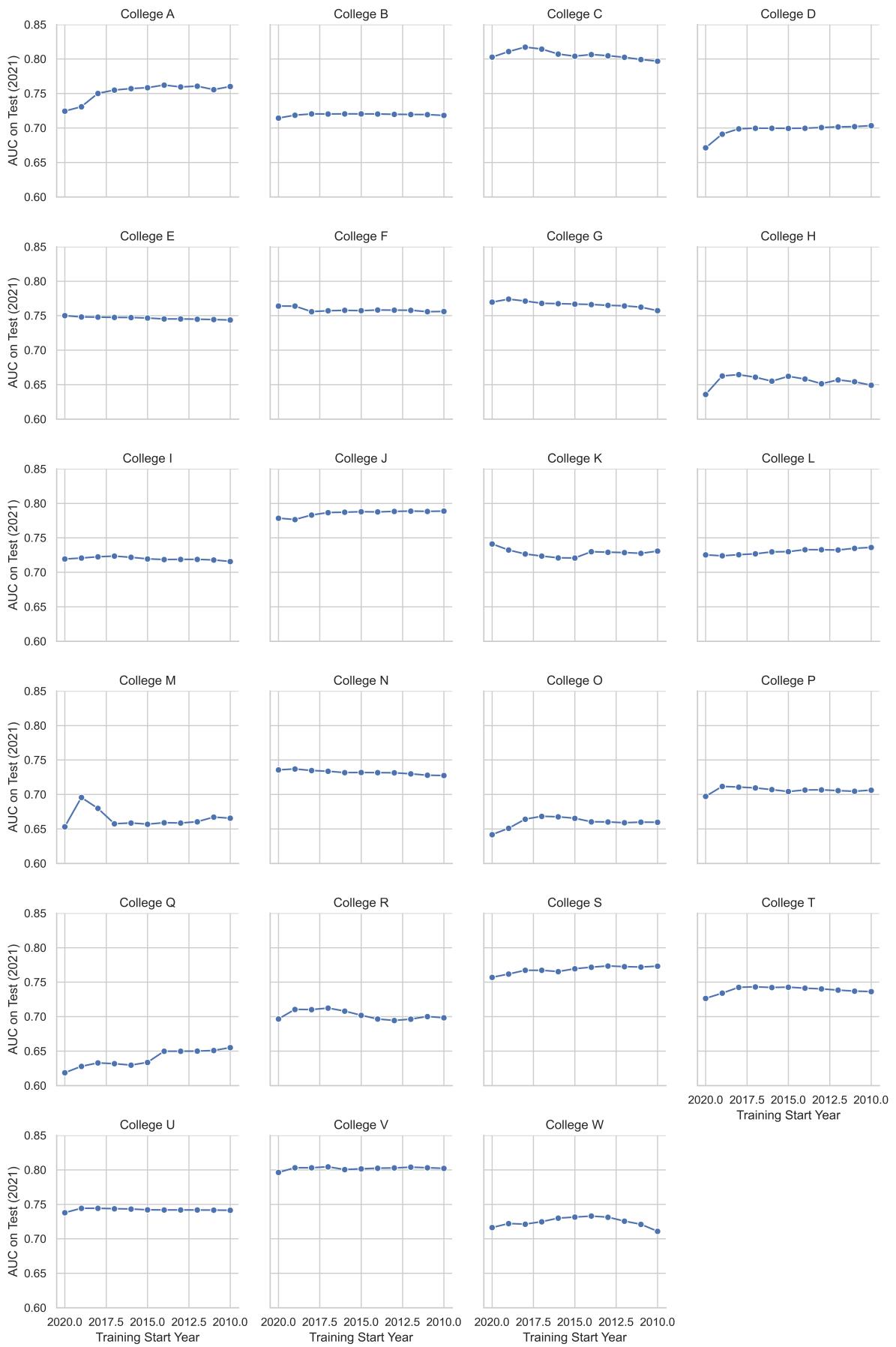


Figure 1: Performance for All Colleges.

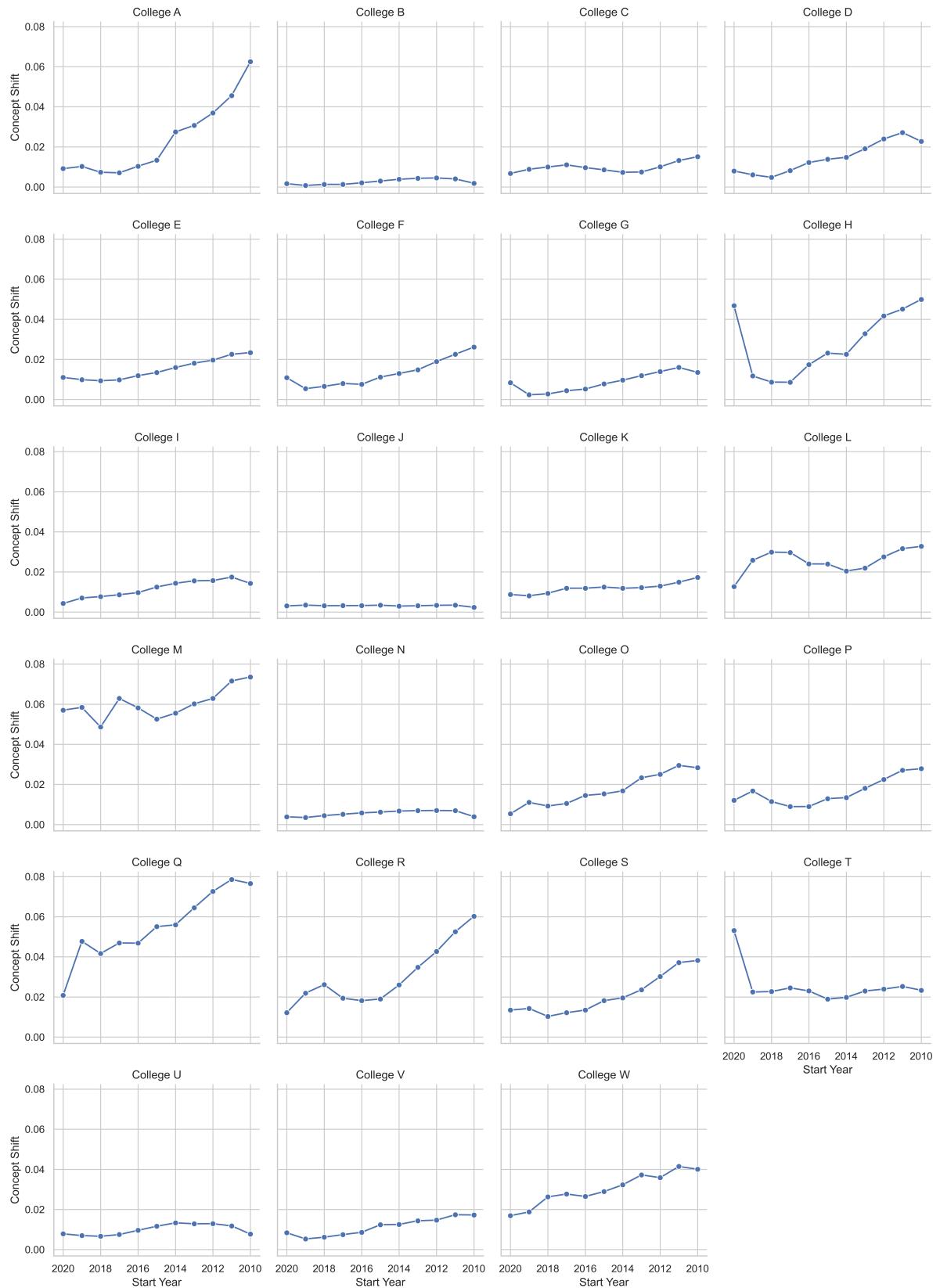


Figure 2: Concept Shift across Training Start Years for All Colleges.

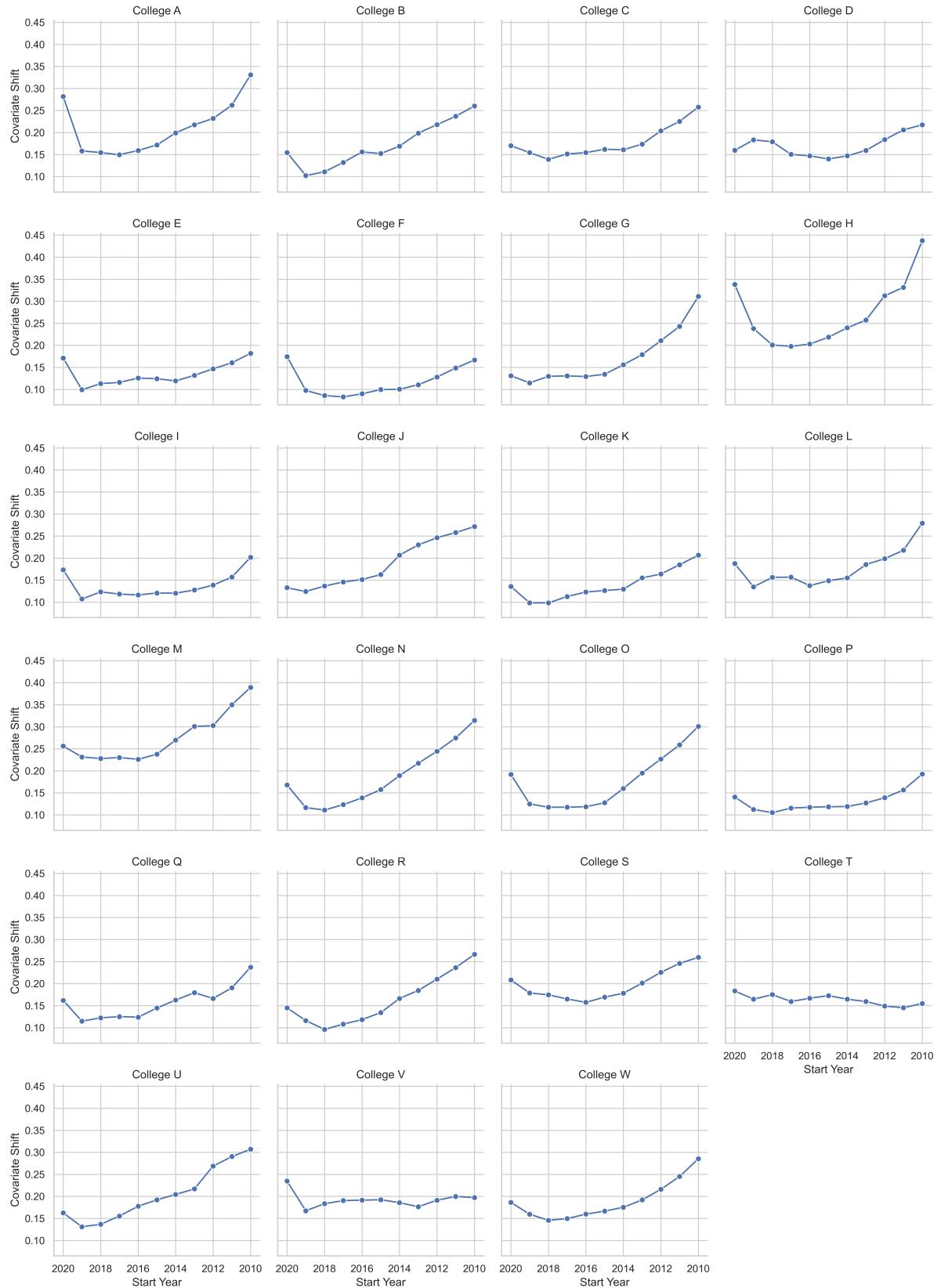


Figure 3: Covariate Shift across Training Start Years for All Colleges.

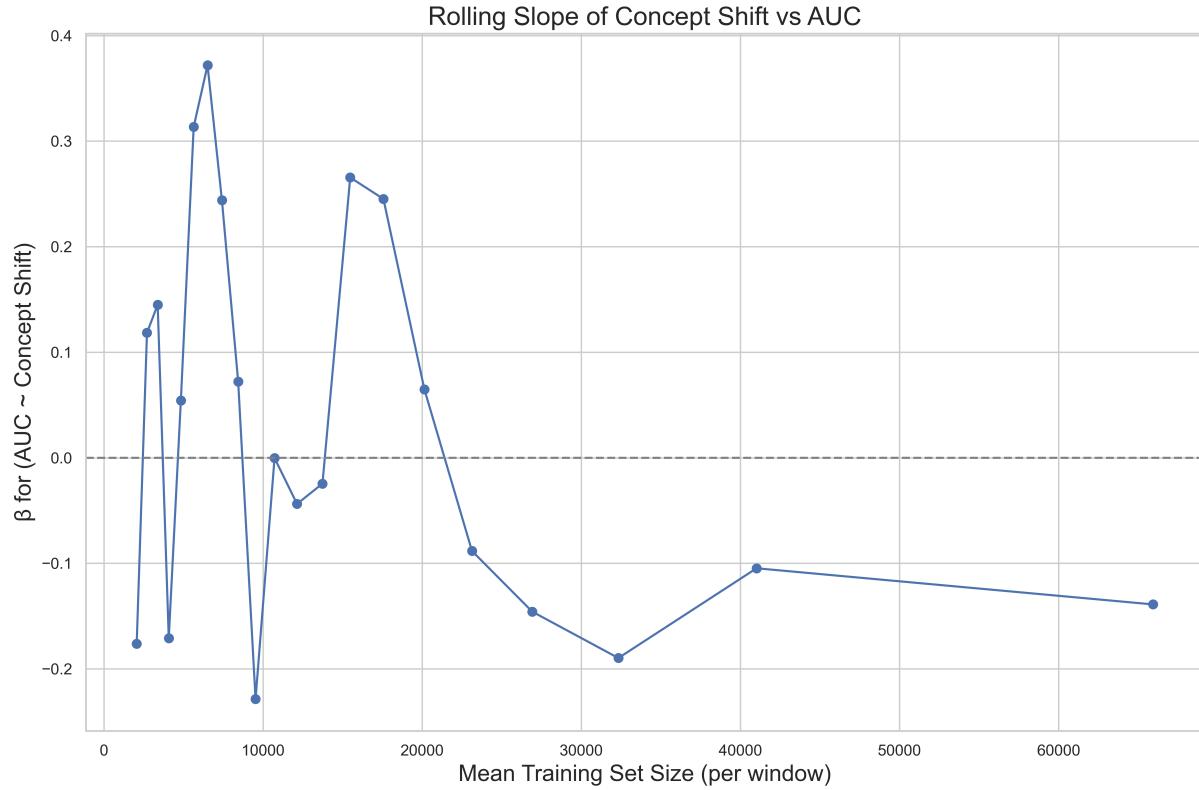


Figure 4: Rolling regression coefficients estimating the relationship between concept shift and predictive performance (AUC) across training set sizes. Each point represents the estimated parameter (β) from a local regression of AUC on concept shift within a moving training window, plotted against the mean training set size of that window. Larger training sets yield more stable and interpretable associations between concept shift and predictive performance.

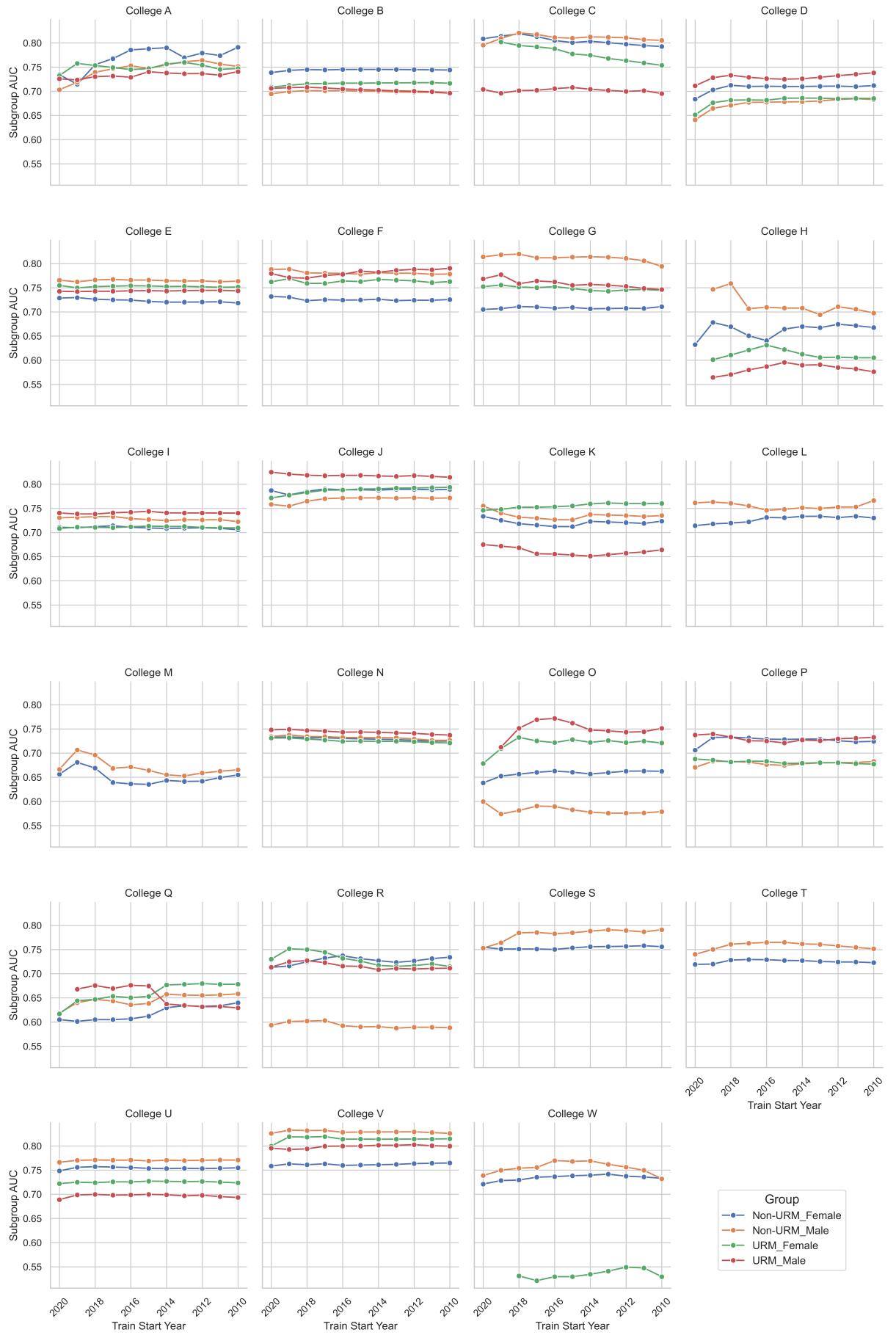


Figure 5: Performance for Intersectional Groups for All Colleges.

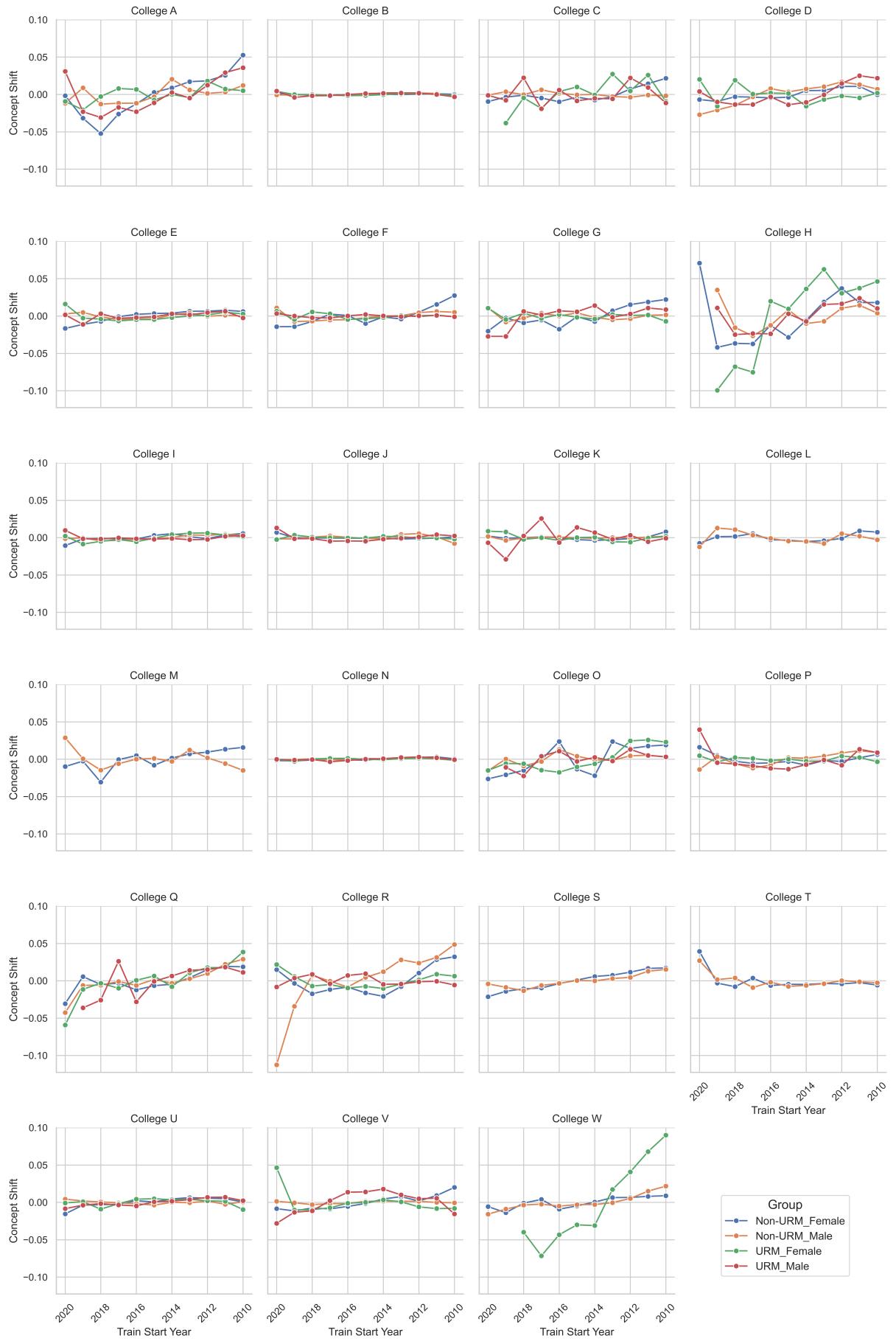


Figure 6: Concept Shift Metrics for Intersectional Groups for All Colleges.

Feature Name	Description		Type	Nullable	Min	Max	
Units	Credit units the student enrolled in this term		Float	No	0	100	
Units Failed	Percentage of enrolled units the student failed		Float	No	0	100	
Units Incomplete	Percentage of enrolled units the student earned an incomplete for		Float	No	0	100	
Units Withdrawn	Percentage of enrolled units the student withdrew from		Float	No	0	100	
Cumulative GPA	Cumulative GPA from all known tertiary education sources		Float	No	0	4	
Age	Age at course start		Integer	Yes	0	150	
GPA Mean	The term-level GPA average weighted by units		Float	No	0	4	
GPA Stddev	The term-weighted GPA stddev		Float	No	0	∞	
GPA z-score	The weighted average z-score of the student in their courses		Float	No	$-\infty$	∞	
GPA z-score std-dev	The weighted stddev z-score of the student in their courses		Float	No	0	∞	
Sex	Self-declared sex		Categorical	Yes			
Ethnicity	Self-declared ethnicity		Categorical	Yes			
URM Status	Institutionally-assigned indicator for underrepresented minority status		Categorical	No			
Major Code	1	CIP	2-digit CIP code for first major	Categorical	Yes	1	61
Year	The current year		Integer	No	2013	2019	
Retention	Indicator for whether the student was enrolled in following fall term		Binary	No	0	1	

Table 2: **Data Schema**