Corrections Notes

"Undergraduate Student Success and Library Use: A Multimethod Approach" by Jennifer Mayer, Rachel Dineen, Angela Rockwell, and Jayne Blodgett

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In the findings section of this article, "chance" was replaced by "odds" in one instance and "probability" was also replaced by "odds" in other locations as it was later determined that the original presentation of the findings exaggerated the strength of each mentioned relationship. See below for an explanation of the change from the authors.

The Math:

These changes are necessary because otherwise the strength of each mentioned relationship is exaggerated. Odds and probability are related, but distinct concepts and they aren't linearly related. As one increases, so does the other, but a change in odds will have different effect on the resulting probability depending on the base rate. Using our data, a student who identifies as a URM, is a first generation junior with a pre-fall cum GPA of 3.0, doesn't live in University housing, is not in TRIO and of the four services we explored only logged into library computers has 7.8% higher probability of persisting than a student who is in all other ways the same except did not log in to a library computer.

If we start at the top with URM status being β_1 and at least one research consult being β_{12} the equation to calculate the estimated probability is:

$$Probability of Persisting = \frac{1}{1 + e^{-(.91 - .18*\beta_1 - .28*\beta_2 - 1.87*\beta_3 - .9*\beta_4 - .45*\beta_5 + .42*\beta_6 + .06*\beta_7 + 1.71*\beta_8 + .81*\beta_9 + .4*\beta_{10} + .64*\beta_{11} + .68*\beta_{12})}}$$

For the example student, β_1= 1, β_2=1, β_3=0, β_4=0, β_5=1, β_6=3.0, β_7=0, β_8=0, β_9=0, β_{10}=1, β_{11}=0, andβ_{12}=0, so the equation becomes:

$$Probability of Persisting = \frac{1}{1 + e^{-(.91 - .18*1 - .28*1 - 1.87*0 - .9*0 - .45*1 + .42*3.0 + .06*0 + 1.71*0 + .81*0 + .4*1 + .64*0 + .68*0)}}$$

Or just:

$$Probability of Persisting = \frac{1}{1 + e^{-(.91 - .18 - .28 - .45 + .42*3.0 + .4)}} = \frac{1}{1 + 0.19} = 84.0\%$$

If we take that same student and say that they don't use any library services (i.e. β_{10}=0), the equation becomes

$$Probability of Persisting = \frac{1}{1 + e^{-(.91 - .18*1 - .28*1 - 1.87*0 - .9*0 - .45*1 + .42*3.0 + .06*0 + 1.71*0 + .81*0 + .4*0 + .64*0 + .68*0)}}$$

Or just:

$$Probability of Persisting = \frac{1}{1 + e^{-(.91 - .18 - .28 - .45 + .42*3.0)}} = \frac{1}{1 + 0.19} = 77.9\%$$

Between these two students, the only difference is whether they logged in to a library computer, but unlike what I wrote for the interpretation the likelihood of persisting if the student logs into a computer doesn't increase by 50%, it increases by only 7.8% or 6 percentage points. The significance and direction of the relationships is correct. The only issue is that my misinterpretation has exaggerated the strength of the relationships.

TABLE 1
Three Library Service and Re

Hierarchical Logistic F	Step 2: Individual Services and Resources			
	B	S.E.	Wald	OR
Underrepresented Minority 1	–.18	.07	7.26	.84**
First-Generation 2	–.28	.06	19.95	.75***
Freshman 3	–1.87	.10	333.64	.16***
Sophomore 4	–.90	.10	75.56	.41***
Junior 5	–.45	.11	18.38	.64***
Pre-Fall Cumulative GPA 6	.42	.05	85.40	1.52***
Univ Housing 7	.06	.08	.66	1.06
TRIO 8	1.71	.60	8.28	5.55**
Checked Out at Least One Book 9	.81	.09	85.39	2.24***
Logged In to a Computer at Least Once 10	.40	.06	42.29	1.50***
Participated in at Least One Instruction Session 11	.64	.07	82.53	1.89***
Received at Least One Research Consult 12	.68	.61	1.24	1.97
Number of Distinct Services				
Number of Instruction Sessions Participated In				
Constant d	.91	.17	29.46	2.48***

*$P < .05$; **$P < .01$; ***$P <$