

SOCY7708: Hierarchical Linear Modeling
Instructor: Natasha Sarkisian
Analyzing an HLM article

Article: Huffman, Matt L. 2004. More pay, more inequality? The influence of average wage levels and the racial composition of jobs on the Black–White wage gap. *Social Science Research* 33, 498–520.

1. What are the two levels of this analysis?
2. What variables are used on level 1?
3. What variables are used on level 2?
4. What centering options are used for each of these variables (mark in the variable lists above)? Given the centering options, what is the meaning of the intercept?
5. Which effects are modeled as random (i.e., what coefficients can vary across level 2 units)?
6. How many variance-covariance elements would there be in the tau matrix for this analysis?
7. Focusing on Model 5 in Table 2, discuss the effects of level 1 variables, level 2 variables, and cross-level interactions on wages. Specifically, write out a sentence for each main effect and interaction.

Table 2
 Effects of individual and job-level characteristics on earnings (logged): 2-level hierarchical linear regression results

Variable	Model 1 coeff.	Model 2 coeff.	Model 3 coeff.	Model 4 coeff.	Model 5 coeff.
<i>Intercept (β_0)</i>					
Intercept (γ_{00})	2.353*	2.383*	2.397*	1.896*	1.890*
Job % Black (γ_{01})	—	—	-.169*	—	.068*
Job rank, local hierarchy (γ_{02})	—	—	—	.010*	.010*
Job % Black job rank	—	—	—	—	-.001
<i>Black (β_1)</i>					
Intercept (γ_{10})	—	-.051*	-.039*	.030*	.091*
Job % Black (γ_{11})	—	—	-.083*	—	-.299*
Job rank, local hierarchy (γ_{12})	—	—	—	-.002*	-.002*
Job % Black \times job rank	—	—	—	—	.004*
<i>Control variables included</i>	None	Level-1	All	All	All
Level-1 R^2	—	.203	.336	.407	.404
<i>Variance components</i>					
Level-1 variance (σ^2)	.269	.237	.237	.236	.237
Intercept (τ_{00})	.154	.100	.044	.015	.015
Intraclass correlation coefficient (ρ)	.364	.297	.157	.060	.060

Notes. * $p < .001$ (two-tailed tests).

8. Based on Model 5 in Table 2, calculate the predicted log wage for someone who is Black, in a job with 50% Blacks and job rank=10.
9. Are the coefficients in Table 2 standardized or unstandardized? What would we need to know to calculate the other type of coefficients?
10. Interpret variance component information presented in the table.
11. How are the intraclass correlations calculated?
12. How did the author calculate the R squared presented in the table?
13. What information about variance components is missing from the table? What additional insights would that information provide us?
14. In Stata, how would you generate a graph like the one presented in Figure 1?

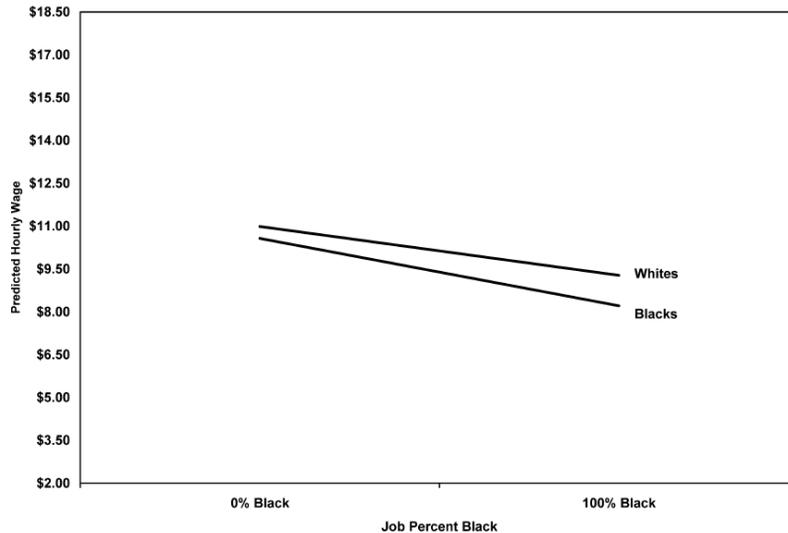


Fig. 1. Association between job percent Black and wages, by race. *Note.* Predictions based on Model 3 of Table 2.