

Factors Associated With South Korea Senior Workers' Skills

Jingyi Huang, Zhen Liu and Linda Liu
Department of Statistics, University of British Columbia

Abstract

- ❖ The study aims to identify how demographic, organizational and learning factors are associated with numeracy and literacy scores of senior workers in South Korea.
- ❖ After applying variable selection methods, the result shows that gender, education level, work flexibility, sectors (public or private) and the ability to master active learning strategies are important variables associate with both numeracy scores and literacy scores.

Introduction



- ❖ The senior population in South Korea is rapidly growing. As a result, seniors continue to participate in the labour market.
- ❖ It is interesting to know how demographic variables are associated with senior workers' skills.
- ❖ Organizational managers care more about organizational factors, which helps with organizational development.
- ❖ HR officers are interested in learning factors. Our study findings will help HR officers to develop training programs and further improve workers' literacy and numeracy skills.

Methods

- ❖ Model I is obtained using stepwise AIC.
- ❖ Model II is obtained using stepwise adjusted R-squared.
- ❖ Variables selected by both Model I and II are included in the final model.
- ❖ For variables selected by only one of the model, we used ANOVA nested model comparison.

Results

- ❖ In Figure 1, the median of numeracy score increases as the education level increases if we hold other variables constant
- ❖ In Figure 2, the literacy score (pvlitM) and numeracy score (pvnumM) are highly correlated because the circle connecting them is big with dark blue color

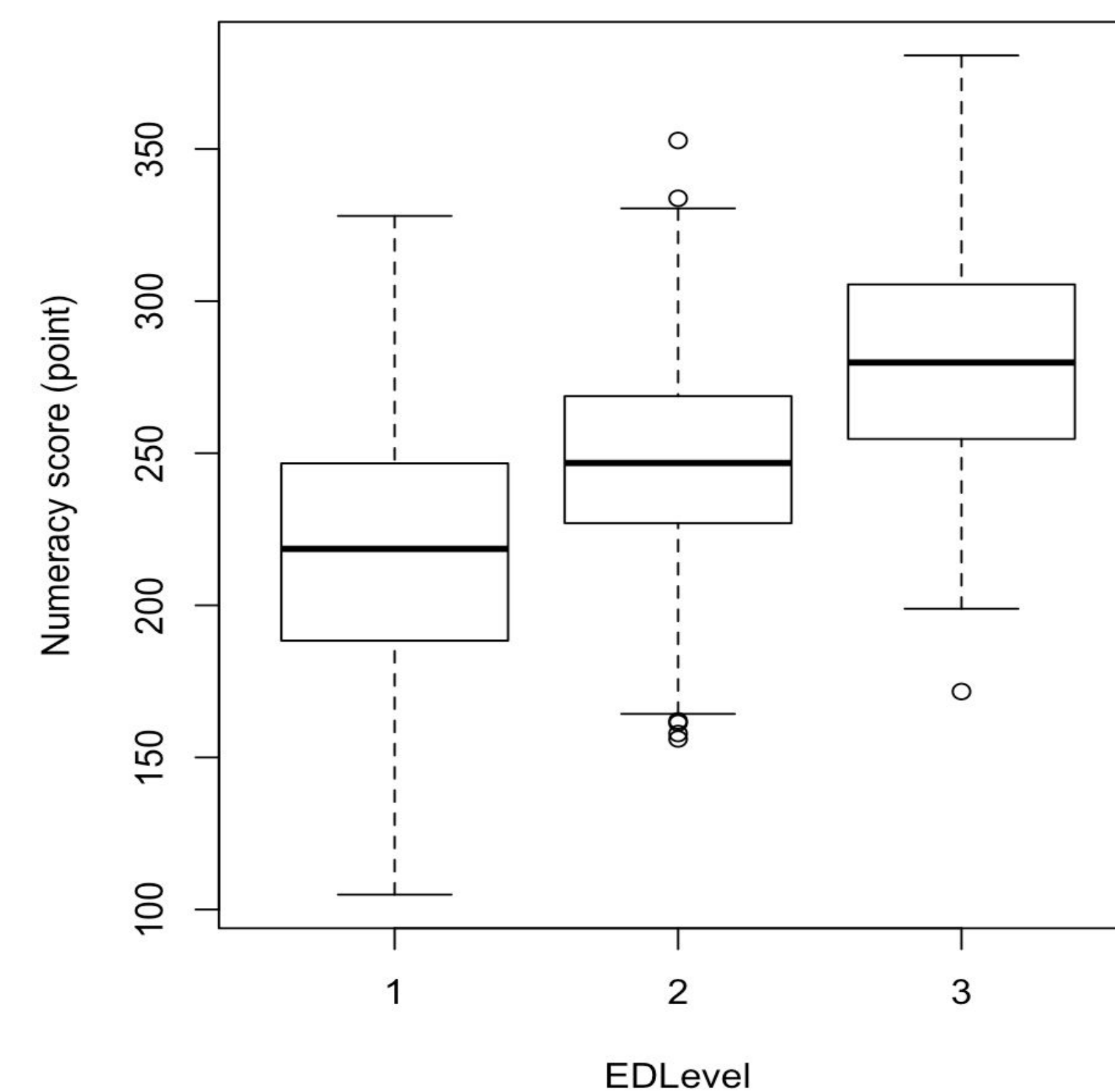


Figure 1: Boxplots for education level vs numeracy score

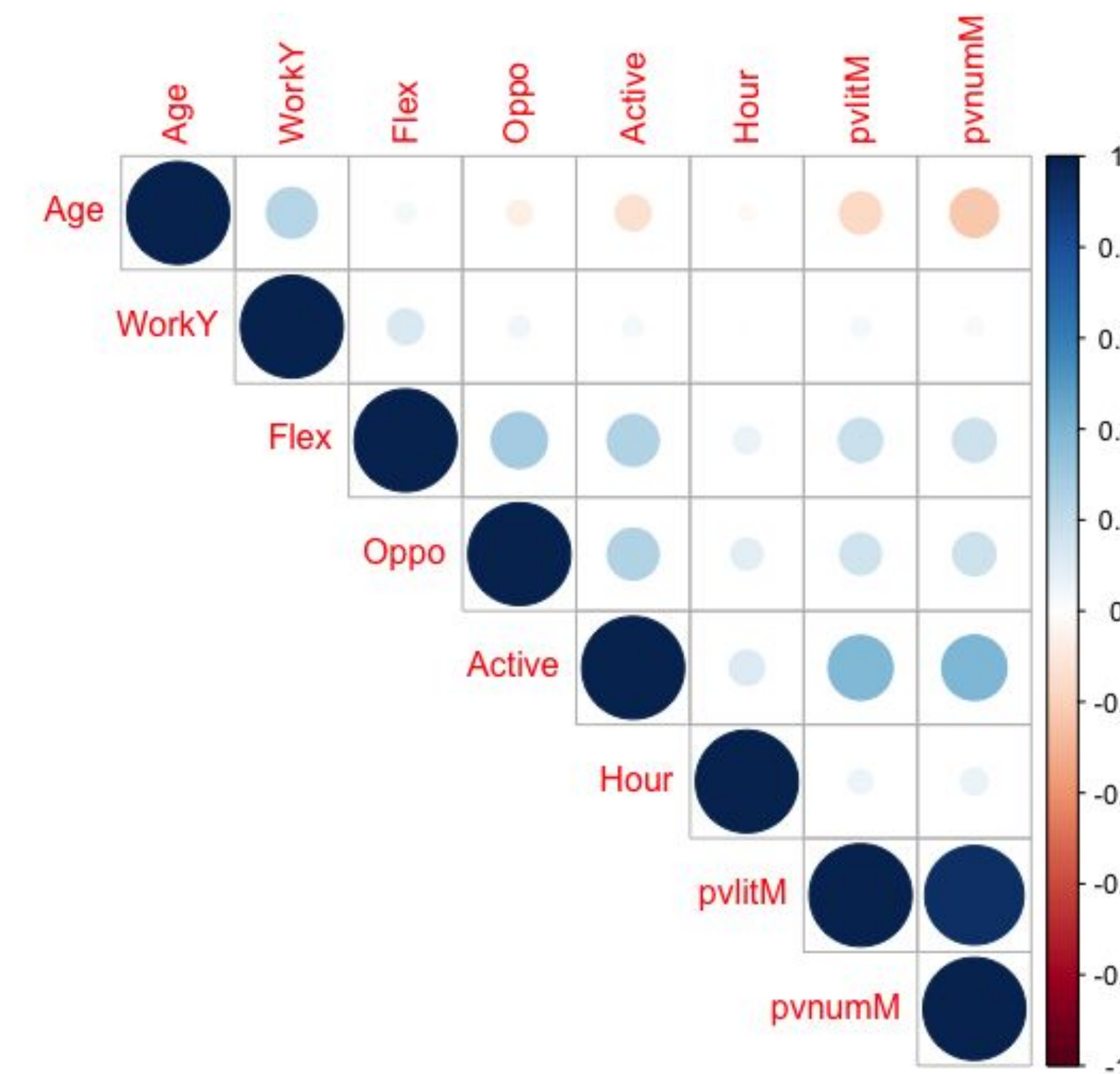


Figure 2: Correlation plots for continuous variables

The results of our final linear regression model are summarized in Table 1. Holding other variables constant:

- ❖ The higher education level the workers have, the higher the scores they receive
- ❖ Workers with better active learning ability achieve better scores
- ❖ The more flexible they can arrange their tasks, the higher the scores they have
- ❖ Workers from the public sector have higher scores than those in private sector
- ❖ As the worker's age increases, the scores decrease
- ❖ Women receive lower scores than men

Variable	Literacy Score		Numeracy Score	
	Estimate	p-value	Estimate	p-value
Intercept	238.57	<0.01	259.60	<0.01
High vs Middle	19.43	<0.01	22.52	<0.01
College vs Middle	36.43	<0.01	46.77	<0.01
Active learning	8.49	<0.01	8.72	<0.01
Work Flexibility	1.92	0.010	1.90	0.020
Age	-0.57	0.011	-1.16	<0.01
Female vs Male	-4.07	0.041	-5.64	<0.01
Public vs Private	6.68	0.027	9.25	<0.01

Table 1: Estimated Coefficients for Independent Variables

Conclusion

- ❖ Six variables were found to have significant effects on both proficiency scores in the regression model:
 - ❑ **Demographic:** Gender, age, education level
 - ❑ **Organizational:** Work flexibility, public/private sector
 - ❑ **Learning:** Active learning strategies
- ❖ Same variables are picked for both literacy and numeracy scores; the correlation between them is **0.93**.
- ❖ To improve senior workers' skills:
 - ❑ the HR department can focus on developing training programs about active learning strategies (e.g. holding workshop activities)
 - ❑ managers and workers can negotiate about ways to make their work more flexible (e.g., Changing the working hours and the working place)
- ❖ **Recommendations:**
 - ❑ rather than removing observations with missing values, use some algorithms to do data imputation, such as K-NN
 - ❑ further analysis is needed to examine the credibility of the unbalanced data.

Acknowledgements

- ❖ Our client, **Hyunok Ryu**, for giving us this opportunity to work with real data in a professional environment
- ❖ Our professors, **Gabriela Cohen Freue**, **Edward Kroc**, for helping and guiding us through this project
- ❖ Our supervising students, **Nikolas Krstic**, **Xinyao Fan**, **Hyeongcheol "Tom" Park** for their support and insightful recommendations