

Letter to Editor

Blinder-Oaxaca Decomposition

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Dear Editor,

I read with great interest the article by Ghelichkhani et al¹ regarding cigarette and hookah inequality in Iran. The authors used the Blinder-Oaxaca decomposition method to determine the associated factors with inequality. As a researcher who first introduced this method in Iran,²⁻¹⁰ I noticed some critiques in using this method as listed below.

Dividing the community into two groups is the first step in using this decomposition technique. Given the conditions of the developing countries and the methodology proposed by the World Bank,¹¹ it is best suited to construct a socioeconomic status (SES) variable based on home assets and social variables. This is usually done with the principal component analysis (PCA). Authors refer to Asgari et al¹² to construct this variable, while they have just pointed out, the PCA is made up of a SES variable. Selecting variables and PCA should be done with caution,¹³ and if this variable is not correctly created, then the other conclusions will be wrong.

There was mild socioeconomic smoking inequality in Iran in 2005 (unpublished paper). This pro-rich inequality was prominent in southern provinces of Iran. Therefore, it was more informative if authors report inequality according to different provinces in Iran.

As the authors have pointed out, in case of smoking, the results of logistic regression indicate that the SES is not related to smoking. In this situation, it is unsuitable to make a decomposition for a gap that does not exist.¹¹ Therefore, the results of Table 3 seem unnecessary and may be misleading. In this table, despite lack of significance in the gap between the two groups ($P = 0.093$) and the total explained (0.697) and unexplained (0.293) components, the significant P values for some variables in the details of these two components is unusual and a statistical error may have occurred.

In performing the decomposition and regression models, the cluster sampling effect on the standard errors has not been mentioned. It is also not clear how to perform the decomposition with the categorical variables and to consider the economic status variable in calculating the regression coefficients. It was also appropriate in the discussion that similar articles in Iran^{2,15} as well as the

articles of Hosseinpour et al¹⁶ were considered.

Finally, the form of contribution for the first author is not mentioned in the Authors' Contributions, some initials are incorrect in this section and the phrase, "Effect of Inequalities on Socioeconomic Position" in the title is incorrect.

Conflict of Interest Disclosures

None.

Ethical Statement

Not applicable.

References


- Ghelichkhani P, Yaseri M, Yousefifard M, Baikpour M, Asady H, Oraii A, et al. The Gap of Cigarette and Hookah Smoking Between Socioeconomic Groups in Iran: Effect of Inequalities on Socioeconomic Position. Arch Iran Med. 2018;21(9):418-24.
- Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Fotouhi A. The gap of visual impairment between economic groups in Shahroud, Iran: a Blinder-Oaxaca decomposition. Am J Epidemiol. 2011;173(12):1463-7. doi: 10.1093/aje/kwr050.
- Emamian MH, Fateh M, Hosseinpour AR, Alami A, Fotouhi A. Obesity and its socioeconomic determinants in Iran. Econ Hum Biol. 2017;26:144-50. doi: 10.1016/j.ehb.2017.03.005.
- Emamian MH, Fateh M, Gorgani N, Fotouhi A. Mother's education is the most important factor in socio-economic inequality of child stunting in Iran. Public Health Nutr. 2014;17(9):2010-5. doi: 10.1017/S1368980013002280.
- Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Fotouhi A. Unmet refractive need and its determinants in Shahroud, Iran. Int Ophthalmol. 2012;32(4):329-36. doi: 10.1007/s10792-012-9567-8.
- Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Fotouhi A. Economic inequality in eye care utilization and its determinants: a Blinder-Oaxaca decomposition. Int J Health Policy Manag. 2014;3(6):307-13. doi: 10.15171/ijhpm.2014.100.
- Emamian MH, Zeraati H, Majdzadeh R, Shariati M, Hashemi H, Jafarzadehpour E, et al. Economic inequality in presenting near vision acuity in a middle-aged population: a Blinder-Oaxaca decomposition. Br J Ophthalmol. 2013;97(9):1100-3. doi: 10.1136/bjophthalmol-2013-303249.
- Damghanian M, Shariati M, Mirzaiinajmabadi K, Yunesian M, Emamian MH. Socioeconomic inequality and its determinants regarding infant mortality in Iran. Iran Red Crescent Med J. 2014;16(6):e17602.
- Fateh M, Emamian MH, Asgari F, Alami A, Fotouhi A.

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- Socioeconomic inequality in hypertension in Iran. *J Hypertens*. 2014;32(9):1782-8. doi: 10.1097/HJH.0000000000000260.
10. Mansouri A, Emamian MH, Zeraati H, Hashemi H, Fotouhi A. Economic Inequality in Presenting Vision in Shahroud, Iran: Two Decomposition Methods. *Int J Health Policy Manag*. 2017;7(1):59-69.
 11. O'Donnell O, Van Doorslaer E, Wagstaff A, Lindelow M. *Analyzing Health Equity Using Household Survey Data A Guide to Techniques and Their Implementation*. Washington, D.C: The World Bank; 2008.
 12. Asgari F, Majidi A, Koohpayehzadeh J, Etemad K, Rafei A. Oral hygiene status in a general population of Iran, 2011: a key lifestyle marker in relation to common risk factors of non-communicable diseases. *Int J Health Policy Manag*. 2015;4(6):343-52. doi: 10.15171/ijhpm.2015.18.
 13. Vyas S, Kumaranayake L. Constructing socio-economic status indices: how to use principal components analysis. *Health Policy Plan*. 2006;21(6):459-68.
 14. Moradi G, Mohammad K, Majdzadeh R, Ardakani HM, Naieni KH. Socioeconomic Inequality of Non-Communicable Risk Factors among People Living in Kurdistan Province, Islamic Republic of Iran. *Int J Prev Med*. 2013;4(6):671-83.
 15. Emamian MH, Alami A, Fateh M. Socioeconomic Inequality in Non-Communicable Disease Risk Factors in Shahroud, Iran. *Iranian J Epidemiol*. 2011;7(3):44-51.
 16. Hosseinpoor AR, Parker LA, Tursan d'Espaignet E, Chatterji S. Socioeconomic Inequality in Smoking in Low-Income and Middle-Income Countries: Results from the World Health Survey. *PLoS One*. 2012;7(8):e42843. doi: 10.1371/journal.pone.0042843.

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