Structure equation modeling

I. Overview

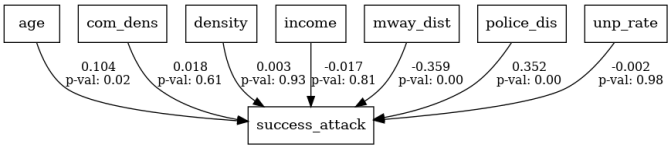

Fig. 1. SEM Model

In Figure 1, directional relationship from the predictor variables to the outcome variables is shown. The tilde symbol ˜, indicates a directional relationship from the predictor variables to the outcome variable. Essentially, it specifies that success_attack is regressed on the other variables listed on the right-hand side of the formula.

Name of objective: (ULS) unweighted least square
Optimization method: SLSQP
Objective value: 0.000
Number of iterations: 50

Equation used

$$\begin{aligned} \text{success\_attack} \sim\ & com\_dens + \\ & age + income + \\ & unp\_rate + density + \\ & police\_dis + mway\_dist \end{aligned} \tag{1a}$$

TABLE I
Parameter Estimates

Parameter Variable	Estimate	Std. Error	z-value
success_attack ⟶ com_dens	0.000337	0.000 656	0.513 490
success_attack ⟶ age	0.003073	0.001 354	2.270 089
success_attack ⟶ income	-0.000414	0.001 723	−0.240 056
success_attack ⟶ unp_rate	-0.000102	0.004 123	−0.024 623
success_attack ⟶ density	0.000084	0.000 998	0.083 945
success_attack ⟶ police_dis	0.000324	0.000 032	10.049 766
success_attack ⟶ mway_dist	-0.000111	0.000 014	−8.217 081

In Table 1, The values shown helps in assessing the goodness of fit of the model. The values present in Table 1 convey that the model fits effectively on the dataset. In Figure 1, it can be observed that no latent variable has been defined which might be the reason for such compatible model.
Based on the p_values of predictor variable we can conclude only age, police and motorway distance are statistically significant. This might be due to because they share a linear relationship with the outcome variable.