

Social vulnerability of Brazilian metropolitan schools and teachers' absence from work due to vocal and psychological symptoms: a multilevel analysis

Supplementary Material

Extended Methods

Let Y_{ij} be 1 if the i^{th} teacher at the j^{th} FU missed school due to a voice/psychological symptoms and zero otherwise, then the log odds of the i^{th} teacher at the j^{th} FU missing school was modeled as follows:

$$Y_{ij} \sim \text{Bernoulli}(P(Y_{ij}=1))$$

$$\text{Logit}[P(Y_{ij}=1 \mid \beta, u_{0j})] = \beta_0 + \beta_1 \text{Sex} + \beta_2 \text{Age}_{(35-44)} + \beta_3 \text{Age}_{(45-54)} + \beta_4 \text{Age}_{(\geq 55)} + \beta_5 \text{SVI}_{(\text{Median})} + \beta_6 \text{SVI}_{(\text{High})} + \dots + u_{0j}$$

Where,

Sex = 1 if Woman; 0 otherwise

Age₍₃₅₋₄₄₎ = 1 if 35-44 years old; 0 otherwise

Age₍₄₅₋₅₄₎ = 1 if 45-54 years old; 0 otherwise

Age_(≥55) = 1 if ≥55 years old; 0 otherwise

SVI_(Median) = 1 if Median SVI median level; 0 otherwise

SVI_(High) = 1 if Median SVI high level; 0 otherwise

β_0 – is the intercept, represents the log odds of a teacher missing school in an average FU;

u_{0j} – is the random intercept for FU, describes the variation of the j^{th} FU intercept relative to the average FU, $u_{0j} \sim N(0, \sigma_{u0})$;

At an average FU (i.e. a FU whose random effect is equal to zero on the logit scale), the probability of $Y=1$ is $\frac{\exp(\beta_0 + \beta_1 \text{Sex} + \beta_2 \text{Age}_{(35-44)} + \beta_3 \text{Age}_{(45-54)} + \beta_4 \text{Age}_{(\geq 55)} + \beta_5 \text{SVI}_{(\text{Median})} + \beta_6 \text{SVI}_{(\text{High})} + \dots)}{1 + \exp(\beta_0 + \beta_1 \text{Sex} + \beta_2 \text{Age}_{(35-44)} + \beta_3 \text{Age}_{(45-54)} + \beta_4 \text{Age}_{(\geq 55)} + \beta_5 \text{SVI}_{(\text{Median})} + \beta_6 \text{SVI}_{(\text{High})} + \dots)}$.

$\beta_{1...}$ – are the fixed effects of teacher's demographic characteristics, working conditions and the SVI, conditional on the FU intercept and other covariates, represent log odds of missing school when comparing two teachers, one presenting that characteristic relative to the reference level of the characteristic, but who share identical values on the remaining covariates and who also share the same FU average risk (i.e., the value of the random effect).

... represents all other fixed effects listed in the table below.

Covariate	Categories
Sex	Male
	Female
Age (years)	≤ 34
	35-44
	45-54
	≥ 55
Working weeks longer than 40 hours	No
	Yes
Employment time (years)	<10
	10-20
	>20
Income from school in minimum wages	> three
	Up to three
Working in more than one school	No
	Yes
Working in another activity	No
	Yes
School administration	Private
	Municipal
	State
	Federal
School size by the number of teachers	≤ 10
	10 - 20
	21-30
	>30
Perception of intense noise at school	Never or almost never /Rarely
	Often/Sometimes
Student indiscipline	Never or almost never /Rarely
	Often/Sometimes
Roundtrip home-work commute	10 - 20
	21-50

(in minutes)	>51
Experiencing verbal violence in school	Never
	Once/twice or more
Experiencing physical violence in school	Never
	Once/twice or more
Excessive workload	Never or almost never /Rarely
	Often/Sometimes
Few opportunities to learn new things	Never or almost never /Rarely
	Often/Sometimes
Insufficient time to complete tasks	Never or almost never /Rarely
	Often/Sometimes
Limited autonomy	Never or almost never /Rarely
	Often/Sometimes
Low social support	Never or almost never /Rarely
	Often/Sometimes
SVI of the municipalities	Low
	Median
	High