

University of Chicago

MACS 30100

Problem Set # 1

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Problem:1

- (a) We are using a statistical model published in American Economic Review(December,2016). The paper evaluates the efficacy of the private health care providers in rural India.
- (b) Das, Jishnu, Alaka Holla, Aakash Mohpal and Karthik Muralidharan. 2016. "Quality and Accountability in Health Care Delivery: Audit-Study Evidence from Primary Care in India." American Economic Review, 106(12): 3765-99.
- (c) Statistical Model:

$$q_{i(sc)p}m = \beta_0 + \beta_1 \text{Private}_{ip} + \beta_2 X_p + \delta_s + \delta_c + \delta_m + \epsilon_{i(sc)p}m$$

- (d) (1) Exogenous variables
 - (i) Private: Type of Health Care Provider.
 - (ii) X_p : Whether the healthcare provider has MBBS degree or not, age of the healthcare provider, gender of the healthcare provider, patient load during visit.
 - (iii) δ_c : Case fixed effect.
 - (iv) δ_s : Standardized patient fixed effect.
 - (v) δ_p : Market(when representative sample is used for the regression)/district(when dual practice sample is used for the regression) fixed effect.
 - (2) Endogenous variable: quality q (effort, diagnosis and treatment) which depends on interaction i between a standardized patient s having case c (in this case illness) and a provider p in market/district m.
- (e) This is a static, linear, stochastic model.
 - (f) Age of the healthcare provider is an independent variable of the model but ability of an individual also influences the quality of health care provided but the model does not capture this.

Problem:2

- (a) To estimate the life span of popular musician the following regression equation is to be estimated.

$$(\text{Life span of Musician})_i = \alpha + \sum_{k=1}^k \beta_k \times (X_k)_i + \epsilon_i$$

α is the constant term and ϵ_c is error term which follows normal distribution. X_k includes the set of independent variables that potentially affect the life span of a musician. The set of independent variables are genre of music(dummy variable for different genre of music), age when they got their first hit(continuous variable), lyrics score(continuous variable), income of the family(continuous variable), history of drug addiction in the musician's family(binary variable), divorces in the musician's family(binary variable), suicides in the musician's family(binary variable), annual income from regular tours or from royalty(continuous variable), currently active or not(binary variable), marital status(binary variable), has sought counseling or not(binary variable), criminal offense(binary variable), education level(binary variable), whether the musician has been to rehab (binary variable) and drug usage(binary variable). The endogenous variable life span of musician is a continuous variable.

- (b) Life span of musician is the dependent variable.
- (c) The above regression equation is a data generating process when the full equation is estimated.
- (d) The key factors would be genre of music, age when musicians attain the first hit, lyrics score, whether the musician has sought counseling or not, criminal offense, income of the musician's family, drug addiction in the musician's family, whether the musician has been to rehab and drug usage by the musician.
- (e) Genre of music has been shown to be related to musician's life span: excess suicides and liver related deaths have been observed in country, metal and rock musicians, homicides are observed more for hip hop and rap musicians.

Age when they attain first hit would be significant because a younger person might not be emotionally capable to handle the stress and lifestyle changes that come with sudden fame of a first hit and might veer towards depression, anxiety or substance abuse.

Lyrics score which is determined by a textual analysis of the musicians' works would reflect the emotional state of the musician which can indicate a propensity towards suicide or substance abuse which in turn can lead to lifestyle disease that influence mortality.

Income of the musicians' family, drug addiction in the musician's family would be reflective of the early years of the musicians' life that are instrumental in lifestyle choices and mental well-being which are decisive factors for a person's lifespan.

- (f) Genre, age when the musician got the first hit are knowledge available in the public domain. Lyrics score has to be coded. The other key factors need to be gathered from interviews with people close to the musicians and media reports. Then we will run OLS regression of the set of independent variables on the life span of a musician to figure out which variables will be significant.