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MACS 30100
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1 Problem Set 1

1.1 Problem 1

1.a

I found a theoretical model for penal transformation, describing how state- and federal-level forces are hypothesized to affect correctional volume at the state level over time.

1.b

Campbell, Michael C. & Heather Schoenfeld, "The Transformation of America's Penal Order: A Historicized Political Sociology of Punishment," *American Journal of Sociology* 118, no. 5 (March 2013): 1375–1423. https://doi.org/10.1086/669506

1.c

Variable	Type	Symbol
National-level background factors	exogenous	B
State-specific context	exogenous	C
National influences	endogenous	I
State developments	endogenous	D
Changes to dominant penal ideology, actors, & policy	endogenous	P

$$\begin{aligned} \mathrm{D} &= \beta_1 B + \beta_2 C + \beta_3 I + \beta_4 P \\ \mathrm{I} &= \beta_5 B + \beta_6 D + \beta_7 P \\ \mathrm{P} &= \beta_8 I + \beta_9 D \end{aligned}$$

1.d

The exogenous variables are *national-level background factors* (identified as "socio-structural changes" and "political institutions") and *state-specific context* (identified as "political field", "political institutions", and "socio-economic structure").

The endogenous variables are *national influences* (identified as "presidential policies", "federal crime control policy" and "federal court behavior"), *state developments* (identified as "political innovation", "interest group activity", and "legislative experimentation"), and *changes to dominant penal ideology, actors, and policy.*

1.e

The model is dynamic because two of the endogenous variables, I and D, affect one another.

The model is linear because each of the variables in the equations used to express the model are all raised to an integer power (1 in all cases), not to the power of a variable.

The model is stochastic in that there is some degree of randomness between state-level conditions (C and D).

1.f

The model could perhaps be improved by the addition of international-level variables, such as cross-border trafficking, neighboring countries' policies, and perceptions of international crime influences on national- and state-level conditions. Such additions would make the model much more complex, perhaps with diminishing returns with regard to model fit and state-level variance in correctional volume explained.

1.2 Problem 2

1.a

Variable	Type	Symbol
Rock	exogenous	R
Pop	exogenous	P
Hip hop or rap	exogenous	H
Country	exogenous	C
Gun ownership	exogenous	G
Years elapsed (signing record contract, producing hit single)	exogenous	Y
Albums released	exogenous	A
National concert tours attended	exogenous	T
Cumulative album sales	exogenous	S
Narcotic abuse	exogenous	N
Alcohol abuse	exogenous	E
Predicted life span	endogenous	L

$$L = \beta_1 E + \beta_2 N + \beta_3 S + \beta_4 T + \beta_5 A + \beta_6 Y + \beta_7 G + \beta_8 C + \beta_9 H + \beta_{10} P + \beta_{11} R$$

1.b

The endogenous variable is predicted lifespan (in years) of recording artists.

1.c

The model is a complete data-generating process.

1.d

I think that they key factors that predict a shorter life span are narcotic abuse, alcohol abuse, and a small value for years elapsed between signing a record contract and producing a hit single.

1.e

In the absence of a literature review or any domain knowledge, the exogenous variables and key factors were chosen arbitrarily.

1.f

It would be challenging to test whether these factors are significant in real life, largely because there is not enough data available to determine the relationships and parameters. For example, while we can figure out how many recording artists died of heroin overdoses in the 1990s, this tells us nothing about the lifespans of recording artists who did not die of heroin overdoses in the 1990s. In short, because social conditions change over time, we do not have enough data on the lifespans of contemporary recording artists who did not suffer untimely deaths.

A simpler model to test would be to predict untimely death related to substance abuse, instead of total lifespan. This would allow us to examine the factors that lead to the average substance-related untimely death of recoding artists in order to predict such events.