An Analysis of the Association of Poverty and Mental Health

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Abstract

In poor communities we tend to underplay the importance of Mental Health. For lack of resources, individuals have failed to seek the help that they desperately need to overcome their adversity. This analysis focus on the correlation between mentally unhealthy days and poverty. For our communities to do better, their need to be investment in their mental well-being as well as their physical and economical. Mental disorders affect families as whole, therefore it is important to create policies and programs that cater to those needs and encourage affected individual to seek help.

This Analysis was prepared as an Assignment for my Capstone project, and was not sent out to the Director of Population and Health.

MEMORANDUM

TO: Yannai Kranzler, Director of Population Health

FROM: Reneve R Jeanty

DATE: November 17, 2020

SUBJECT: The Association of Poverty and Mental Health

I- Purpose

Mental health and poverty are common issues in all countries in the world. In the United States, approximately 46.2 million people (15.1) live below the federal poverty line (Santiago et al., 2013). According to research, the living conditions the poor are subject to put them at risk of psychological disorders. Although not a leading factor, poverty and the hurdles that come with certainly take a toll on mental health.

In turn, poor mental health puts an individual at greater risk of poverty and disadvantage. Depression and mental illness hinder an individual's capacity to function normally and complete everyday tasks. But the biggest issue with individuals who live below the poverty line is that those mental disorders often go untreated and become worse over the years, affecting family dynamics. Unfortunately, the most affected by mental illness are often children who depend on those individuals.

This study will examine the association between the percentage or level of poverty and mental health in US cities.

II- Analysis of Data

Using data from the 2019 US Cities Sustainable report, this study will analyze the relationship between the rate of poverty and mental health, measured as the average number of days of poor mental health (in the last 30 days). The correlation table below shows us that there is a moderately strong

positive relationship (r = 0.578) between poverty and poor mental health days. Specifically, it indicates that for every standard deviation increase in poverty, there is an increase of nearly .6 standard deviations in mentally unhealthy days.

Table 1 Pearson's Correlation table

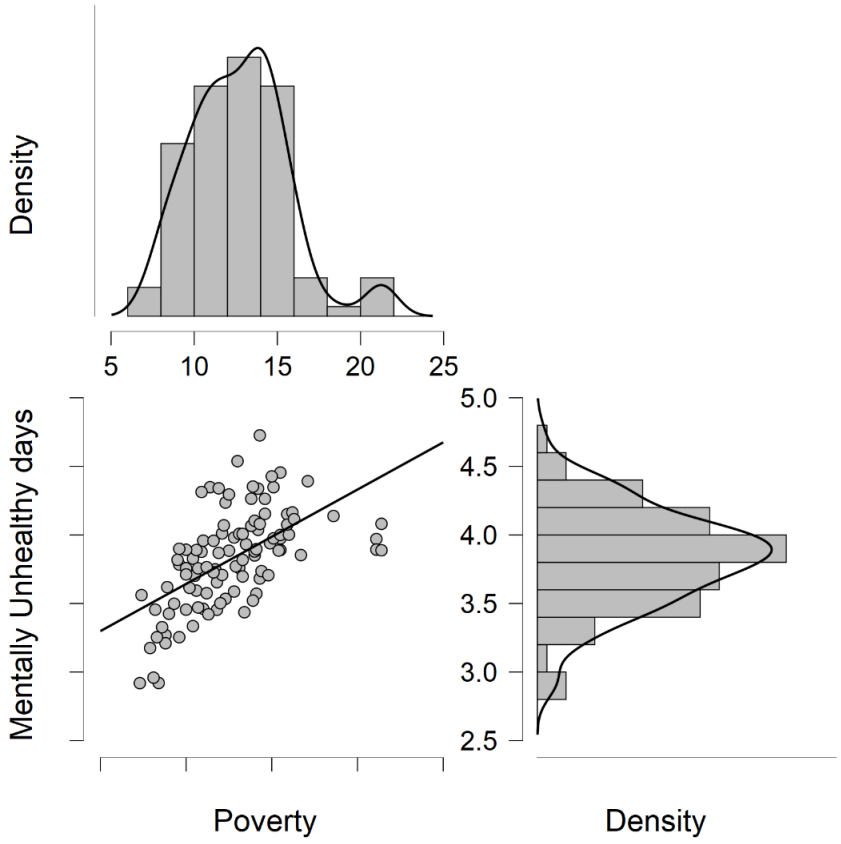
Pearson's Correlations

	Pearson's r	p
Poverty - Mentally Unhealthy days	0.578	< .001

Scatter Plot

Figure 1 shows a scatter plot of the relationship between poverty and poor mental health, as well as the distributions of each variable.

Figure 1- Scatter plot and histograms of Poverty Vs. Mentally unhealthy days



Simple Linear Regression

A linear regression was conducted to examine how well poverty could predict mentally unhealthy days. Table 2 presents the results. Overall, with F (1,103) = 51.56 and p <0.001, these results show that poverty statistically significantly predicts mentally unhealthy days. Poverty also explained 33.4 percent of the variability in mentally unhealthy days. The confidence interval for the slope to predict mentally unhealthy days from poverty is [0.050,0.088].

Table 2 - Simple linear Analysis

Model Summary - Mentally Unhealthy days

Model	R	R^2	Adjusted R^2	RMSE
H_o	0.000	0.000	0.000	0.353
H_1	0.578	0.334	0.327	0.289

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H_1	Regression	4.315	1	4.315	51.561	< .001
	Residual	8.619	103	0.084		
	Total	12.934	104			

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

							95% CI	
Model		Unstandardized	Standard Error	Standardized	t	p	Lower	Upper
H_o	(Intercept)	3.831	0.034		111.328	< .001	3.763	3.900
H_1	(Intercept)	2.954	0.125		23.570	< .001	2.706	3.203
	Poverty	0.069	0.010	0.578	7.181	< .001	0.050	0.088

The regression equation for predicting mentally unhealthy days is, therefore,

$$y = 2.95 + 0.07x \text{ (poverty)}.$$

In sum, this equation means that if the level of poverty were zero, the average mentally unhealthy days would be 2.95. In comparison, a one percentage-point increase in poverty would increase the average mentally unhealthy days by 0.07. Thus, a 10 percentage-point increase in poverty is associate with an increase of .7 mentally unhealthy days, on average.

Multiple Linear Regression

To further the analysis, unemployment with be introduced as another variable in the model. The premise is the same. We ought to determine the effect of both poverty and unemployment on the incidence of mentally unhealthy days. Table 3 presents the results.

For this enhanced analysis, in which $F(2,102) = 30.79$ and $p<.001$, it was found that the model was statistically significant, with the variables explaining 36.4 percent (Adjusted $R^2 = 0.36.4$) of the variance in mentally unhealthy days.

As for the variables used in this multiple regression, we have found that both poverty and unemployment have a statistically significant relation with mentally unhealthy days with respectively t-test = 7.4 and a p-value <0.001 and t-test = -2.64 and p-value = 0.009..

The regression equation for predicting unhealthy days with both variables is:

$$y = 3.09 + 0.09\ X1(\text{poverty}) - 0.08\ X2\ (\text{unemployment}).$$

Linear Regression

Table 3\ - Multiple linear Analysis

Model Summary - Mentally Unhealthy days

Model	R	R^2	Adjusted R^2	RMSE
H_o	0.000	0.000	0.000	0.353
H_1	0.614	0.376	0.364	0.281

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H_1	Regression	4.869	2	2.435	30.792	< .001
	Residual	8.065	102	0.079		
	Total	12.934	104			

Note. The intercept model is omitted, as no meaningful information can be shown.

Coefficients

							95% CI	
Model		Unstandardized	Standard Error	Standardized	t	p	Lower	Upper
H_o	(Intercept)	3.831	0.034		111.328	< .001	3.763	3.900
H_1	(Intercept)	3.086	0.132		23.455	< .001	2.825	3.347
	Poverty	0.089	0.012	0.746	7.398	< .001	0.065	0.113
	Unemployment	-0.082	0.031	-0.267	-2.648	0.009	-0.143	-0.020

This equation could be interpreted as follow. If the level of poverty and unemployment were to drop to zero, the average mentally unhealthy days would be 3.09. But if the level of poverty increases by 1 percent, while the unemployment level remains unchanged, the average unhealthy

days would increase by 0.09. Whereas, if the level of unemployment rises by 1 percent, while poverty remains intact, the average mentally unhealthy days will decrease by 0.08.

III- Summary of Findings

The result from the data analysis from the 2019 US Cities Sustainable Development Report sheds light on the association between poverty and mental health. Although numerous factors may influence mental health issues in adults and young adults, this analysis reinforces the idea that poverty and unemployment could be critical external factors. Therefore, the results suggest a focus on policies that will work toward reducing the level of unemployment and poverty and programs that target marginalized communities' mental health, which would help remove the stigma that exists and encourage them to seek help when needed. When mental health problems persist, they hinder an individual's capacity to provide for their family and take care of them. It also affects children's cognitive ability and behavior, perpetuating the cycle of poverty within those communities. Thus, mental health and poverty issues must be tackled together to bring positive change and reach the ambitious goals put forth in fulfilling the goals of building sustainable communities.

We must keep in mind, however, that such an analysis has limitations. Regression analyses reveal relationships among variables but do not prove that the relationship is causal. A strong relationship between variables could stem from many other causes, including the influence of other unmeasured variables. The variables in regression analysis, in addition, may contain measurement error that can influence the findings.

References

Lynch, A., LoPresti, A., & Fox, C. (2019). The 2019 US cities sustainable development report. *Sustainable Development Solutions Network (SDSN): New York, NY, USA*.

Elliott, I. (2016). Poverty and Mental Health: A review to inform the Joseph Rowntree Foundation's Anti-Poverty Strategy. Retrieved 6 2017, 2017**.**

Santiago, C. D., Kaltman, S., & Miranda, J. (2013). Poverty and mental health: How do low-income adults and children fare in psychotherapy? *Journal of clinical psychology*, *69*(2), 115-126.