

Development of a Substance Abuse Problem Severity Index for Determining Treatment Need in Rural and Frontier Conditions

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Introduction

This poster describes the development of a substance abuse problem severity index (SA-PSI) using social indicators. Several social indicators were assessed for their utility in determining substance abuse treatment needs in rural and frontier counties. These broad indicator categories included alcohol consumption, alcohol and drug-related criminal activity, alcohol and drug-related morbidity, and alcohol and drug-related mortality.

Study Purpose

The purpose of this study was to develop three substance abuse treatment need indices based on reliable and valid social indicators that would represent the statewide distribution of relative treatment need in Wyoming. The indices included an alcohol problem severity index, the A-PSI; a drug problem severity index, the D-PSI; and a combined alcohol and drug problem severity index, the SA-PSI. A second purpose was to determine absolute treatment need using NHSDUH data by creating synthetic estimates of the number of persons in need of substance abuse treatment. The final purpose was to establish the relationship between the problem severity indices and the synthetic estimates.

Methods

Four years worth of data (1999-2002) were gathered for each indicator. Each indicator category was examined for normality, reliability, and convergent and divergent validity. Mean rates were then created for each reliable, valid indicator. The mean rates were later rescaled into the SA-PSI.

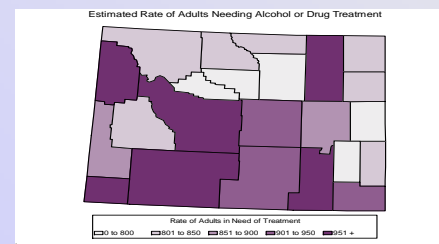
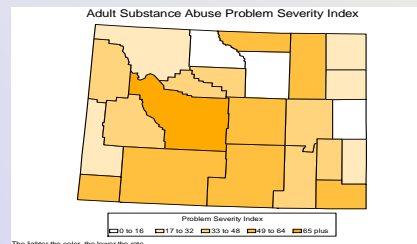
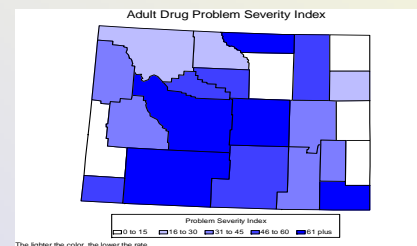
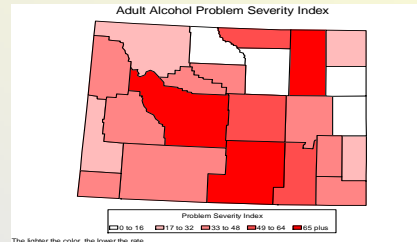
The final set of alcohol indicators included direct (100% attributable) and indirect alcohol-related arrests (weighted for their alcohol-attributable portion), and alcohol-related hospital discharges. The final set of drug indicators included direct (100% attributable) and indirect drug-related arrests (also weighted for their drug-related attributable portion), direct drug-related hospital discharges, Hepatitis B and C cases, and STD cases.

Synthetic estimates were created by weighting the non metropolitan statistical area NHSDUH prevalence rates by Wyoming's county-level age, race, and gender characteristics.

We converted the absolute values of the synthetic estimates to rates and then conducted a canonical correlation to examine the relationship between the problem severity indices and the synthetic estimates.

Results

The first two maps are the results of the final set of valid indicators for alcohol and drugs. They show the distribution of these two problems throughout the state. The third map shows the statewide distribution of the combined alcohol and drug problem. The fourth map shows the results of the synthetic estimation analysis. This maps shows the distribution of the rates of alcohol or drug abuse or dependence. A comparison of this map with the third map shows similar results across the two needs assessment methods.



Testing the Canonical Correlations

Canonical Variable	Eigenvalue	Difference	Proportion	Cumulative	Likelihood Ratio	Approximate F Value	Num DF	Den DF	Pr > F
1	1.4250	1.4208	0.9971	0.9971	0.4106	3.36	6	36	0.0098
2	0.0042	0.0042	0.0029	1.0000	0.9958	0.04	2	19	0.9609
3	0.0000	0.0000	0.0000	1.0000	1.0000				

Correlations between Variables and Canonical Variables. Redundancy Analysis.

Canonical Correlation			
Correlation between PSI and Synthetic Estimate Canonical Variables	0.7666		
Redundancy Analysis			
PSI Variance Accounted for by Synthetic Estimate Canonical Variable	0.4902		
Synthetic Estimate Variance Accounted for by PSI Estimate Canonical Correlation	0.3048		
Variable	Correlations With PSI Canonical Variable	Correlations With Synthetic Estimate Canonical Variable	Standardized Coefficient
Rate of adults with alcohol or drug-related DSM-IV diagnoses (natural log)			
Alcohol dependence or abuse	0.6115	0.7977	-8.1049
Drug dependence or abuse	0.4572	0.5964	-3.1601
Alcohol or drug abuse or dependence	0.6010	0.7840	11.9254
Adult alcohol or drug-related problem severity indices (rescaled)			
Drug	0.8186	0.6275	-0.1233
Alcohol	0.9979	0.7650	1.1032
Substance Abuse	0.9377	0.7188	0.0000

Discussion

This study sought to identify social indicators that represent substance abuse treatment need, create synthetic estimates that can be used for planning substance abuse treatment, and ascertain the relationship between the two.

The data show that it is possible to identify reliable, valid substance abuse indicators in a frontier state. Researchers must be prepared to sacrifice the use of many indicators, especially for low frequency occurring events such as fatal accidents. Using indicators that are stable across years is also important because unusual events (e.g., a fatal crash involving numerous deaths in a sparsely populated county) cause spikes in the data that may not necessarily represent a "true" trend and can be misinterpreted as an emerging problem.

We were also able to use national data to construct synthetic estimates of absolute treatment need. These data are extremely useful for planning and policy because they allow a more comprehensive, concrete picture of the substance abuse problem to be seen. Moreover, they account for members of the general population that may not always be fully represented by the social indicators as the indicators are often dominated by criminal activity.

The canonical correlation shows a strong, positive relationship between the social indicators and the synthetic estimates. This is good news and encouraging for planners who may have limited resources and may not be able to use primary data collection methods for conducting needs assessments. The two bottom maps show how closely the two types of data match. While it is not one-to-one, the two data sets clearly point to similar levels of substance abuse problems across counties in the state. The indicators appear to contribute state-specific information that the national data is missing, as there are a couple of counties that show no or minor need in the national data but show relative need according to the indicators.