COUNTY ALCOHOL AND DRUG PROBLEM
COMPOSITE INDICATORS: 2000

FORWARD

Much like an area's air quality is measured by concentrations of carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, and particulate matter in the air, so too can concentrations of arrests, hospitalizations, traffic crashes, and deaths be used as measures of an area's alcohol and drug health.

This County Alcohol and Drug Problem Composite Indicators Report: 2000 is the ***second*** in a series of county indicators reports. The original report was written by the University of Wisconsin-Madison Center for Health Policy and Program Evaluation and the Bureau of Substance Abuse Services and was submitted to the State Council on Alcohol and Other Drug Abuse in March, 1998.

This report continues the analysis of the 1998 indicators work by including two additional years of data and by omitting the data from one county with extreme values which may have distorted the earlier analysis.

Funding for this study comes from a federal Center for Substance Abuse Treatment contract #270-98-7057 administered by the Wisconsin Division of Supportive Living. In accordance with the purpose of the federal contract, it has been the goal of these reports to provide decision-makers with a tool to guide resource allocation decisions.

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REPORT SUMMARY

This County Alcohol and Drug Problem Composite Indicators Report: 2000 replicates analysis in the earlier composite indicators report released jointly by the Center for Health Policy and Program Evaluation and the Bureau of Substance Abuse Services in February 1998. It updates the annual coverage of the indicators to incorporate data collected through 1998, and it makes some minor changes in the method of the analysis.

This report summarizes 16 available indicators of county alcohol and other drug abuse spanning five years (1994-1998). None of the indicators included in this study, alone, is a very useful measure of overall local substance abuse. Through factor analysis, however, the study combines and distills the indicators into two distinct composite factors that can be used as proxies to help better understand the magnitude of the substance abuse problem among counties. The two factors are a *Substance Abuse Law Enforcement Factor* and an *Alcohol Consumption and Related Problems Factor.* Both of these factors were found in the earlier composite indicators study.

The *Substance Abuse Law Enforcement Factor* includes the following strongly associated indicators:

- Operating While Intoxicated Arrests
- Drug Violations
- Liquor Law Violations
- Alcohol-Related Hospitalizations

This factor includes indicators driven mostly by local law enforcement activity related to the particular alcohol or drug problem area.

The *Alcohol Consumption and Related Problems Factor* includes indicators of local levels of alcohol availability, consumption and associated issues. The highly correlated indicators include:

- Alcohol Traffic Crashes
- Alcohol Fatalities
- Liquor Licenses
- Alcohol-Related Deaths
- Drug-Related Deaths

The analyses presented in this report have many possible interpretations and uses, but the report will have its greatest value as a local and statewide planning and resource allocation tool. The following applications are stressed:

1. The data can be used to identify the course or direction of alcohol and other drug abuse problems for individual counties. The data can show which counties have diminishing, stable, or increasing problems.
2. State or county decision-makers can examine individual county's data to identify those areas that can serve as a model for other areas or those that may need special technical assistance.
3. Based upon the strong correlation found between the law enforcement factor and treatment need, and the importance of the alcohol problems factor, the report can serve as a tool for

resource allocation decisions.

The report presents the indicator scores for each county, along with discussion of the major findings. These may be summarized:

- In comparison with the County Composite Indicators report published in 1998, the county rankings and composition of indicators are mostly unchanged for the Alcohol Consumption and Related Problems Factor.
- There is some change, however, in the county ranking for the Law Enforcement factor. While the 1998 report found this to be a mostly “urban” factor, the current study found both urban and rural counties that scored high on this factor. Menominee County, which would rank highest on this factor, was removed from the analysis due to its extreme scores, which would skew the analysis too much if included.
- This change (the removal of Menominee County) and the updated data contributed to different overall county rankings. The counties ranking highest on both indicators are mostly small, rural counties in the northern half of the state, although there are a few exceptions. Milwaukee, Walworth, Manitowoc and Rock Counties ranked high on the Law Enforcement factor but not on the Alcohol Consumption and Related Problems factor.
- The composite factor indicators, in general, provide support for the existing Block Grant funding formula. In particular, the law enforcement factor is highly correlated with the funding formula. While the alcohol problems factor did not correlate with the funding formula indicating that some counties may be "under-funded." It was determined through further analysis that actual treatment needs in these counties, overall, were no greater than in other counties.
- A factor that measures a county's ability to pay for treatment services should be considered for inclusion in the formula. In part, the public assistance and unemployment factors attempt to measure this variable, and these could be retained, although with the elimination of "welfare" in Wisconsin these two indicators may be less viable in the future. Measures such as average household income and the number of persons/families earning wages or having incomes below a certain level, may be a more accurate measure of the local tax base and clients’ ability to pay for services.
- When developing RFP’s, the composite factor scores could be included in proposal review criteria. For example, proposals from counties having higher factor scores could receive additional points.
- This series of indicators studies will continue into the future focusing on updating the data and seeking additional uses for the data.

INDICATORS INCLUDED IN THE FINAL DEVELOPMENT OF THE COMPOSITE FACTORS

COUNTY INDICATOR	SOURCE	YEARS INCLUDED	DESCRIPTION
Alcohol Indicators			
Liquor Licenses	Department of Revenue	1996-1998	Licenses issued to establishments for the sale of any type of alcohol beverage; this indicator is highly correlated with alcohol consumption, heavy drinking, and driving while intoxicated.
Adult Arrests for Operating While Intoxicated (OWI)	Office of Justice Assistance	1994-1998	Taken into legal custody and cited for intoxicated driving
Adult Liquor Law Violations	Office of Justice Assistance	1994-1998	Violations of state and local liquor laws such as underage possession, serving to a minor, etc.
Alcohol-Related Traffic Crashes	Department of Transportation	1994-1998	The investigating officer perceived that the driver had been drinking
Alcohol-Related Traffic Fatalities	Department of Transportation	1994-1998	Persons who died within 30 days of a crash involving alcohol
Alcohol-Related Deaths	Division of Health	1994-1997	From death certificates including liver cirrhosis, alcohol dependency, etc.
Alcohol-Related Hospitalizations	Division of Health	1994-1997	Inpatient hospital discharges coded as alcohol abuse, liver cirrhosis, etc.
Other Drug Indicators			
Drug Arrests	Office of Justice Assistance	1994-1998	Arrests for possession, sale, or manufacture of a controlled substance
Drug-Related Deaths	Division of Health	1994-1997	From death certificates including overdose, suicide, etc. Includes aspirin as well as mood altering drugs.
Drug-Related Hospitalizations	Division of Health	1994-1997	Inpatient hospital discharges coded as drug dependency, drug abuse, etc. Includes aspirin as well as mood altering drugs.

Note: All indicators were converted to per capita statistics (per 1000 population) before analyses were performed.

THE STATISTICS BEHIND THE COMPOSITE INDICATORS

An Introduction to Scaling

One of the distinctive features of the Composite Indicator report is its use of common statistical methods to construct scales measuring AODA treatment need in Wisconsin counties. This section will provide a simple explanation of these concepts.

In scaling the analyst is interested in a group of indicators because these indicators measure some other, larger and presumably more important variable. Here, we are interested in the level of alcohol abuse among the population of a county. Now, alcohol abuse as a concept is very broad and has many facets. We also have a fairly large group of indicators, each of which, we hope, measures one of these facets. We need some way of linking these indicators to the broader concept of county-level alcohol abuse.

The simplest approach takes one of these indicators and uses it to stand in for the alcohol abuse concept variable. The analyst might, arbitrarily or on the basis of careful reasoning, assume that OWI arrests is going to be the measure of alcohol treatment need in a county. The analyst then proceeds by ranking each county by the number of OWI arrests, probably after adjusting them for population. The counties with the highest proportion of OWI are the counties with the greatest alcohol problem. Presumably, these counties would then receive greater state assistance and block grant funding.

The chief virtue of this method is its simplicity. It is easy to do and easy to explain. However, anyone can find obvious problems with using OWI as the indicator of county treatment need. This is a law enforcement measure, and presumably some counties devote more resources to the apprehension of intoxicated drivers than do others. In part, OWI arrests reflect a county's problem with alcohol abuse, but in part OWI also reflects that county's response to that problem. Other single indicators could be chosen, but they have the same problem. A high number of alcohol-related deaths may be due in part to a larger population of older males. Per capita liquor licenses measure local consumption but also may reflect local cultural or economic factors. In other words, no single measure can do the job.

The alternative is to use all the indicators, or at least the best subset of indicators. By doing so, we are relying on the fundamental principle of scaling, which is that each indicator has two parts. One part is caused by circumstances unique to each indicator (for example, the law enforcement effort aspect of OWI arrests, or the age aspect of alcohol mortality). The other part is caused by something that each indicator has in common. In this case, the common factor would be alcohol treatment need. We can take several indicators of alcohol abuse and combine them (by addition or by a somewhat more sophisticated process) and by doing so we can increase the likelihood that those unique circumstances will cancel each other out, leaving us with a scale that will measure only alcohol abuse. We can make a better measure of alcohol abuse by selecting the right indicator variables and combining them. To illustrate how this can be done, we need to discuss two statistical techniques, correlation and factor analysis.

Correlation

Correlation is simply the extent to which two indicators are associated. Take a sample of 100 individuals and record their weight in January. Do the same, with the same 100 individuals, in February. For good or bad, weight doesn't change quickly and people who are a given weight in

January are likely to be around the same weight a month later. Here we would expect the correlation to be very high.

Take another 100 individuals, aged 40, and measure their income and years of schooling. There is a relationship, of course, but it becomes diluted over time due to any number of factors. We would expect this correlation to be moderate.

Finally, ask 100 individuals their weight and income. One can find overweight and underweight individuals at all levels of income. Here we would expect the relationship, and the correlation, to be very small.

Correlation is measured with a statistic known as a correlation coefficient. A correlation coefficient can range between 1.00 and -1.00. A value of 1.00 indicates that two variables are perfectly correlated. As one goes up, the other goes up. A value of zero indicates no correlation. A negative 1.00 shows that two variables are perfectly correlated, but in an inverse fashion. As one goes up, the other goes down. In our example, we would expect the correlation between January weight and February weight to be around .9. The correlation between years of schooling and income at age 40 will be much smaller, around .3 or .4. The correlation between weight and income will be tiny, hardly differing from zero.

Correlation is important for two reasons. First, the correlation coefficient is used, somehow, in almost all commonly employed statistical techniques. Second, and more important for our purposes, the correlation coefficient is a measure of the extent to which our indicators share a common meaning. If our OWI measure correlates well with our liquor license indicator, say at the level of .7, then we have some confidence that they are measuring a common factor. If a third variable, say alcohol mortality, also correlates at .7 or more with the other two, then we have more confidence that these indicators are measuring the same construct. Throw in another, such as liquor law violations, with the same high level of correlation, and we are well on our way to constructing a scale of alcohol abuse. There are several ways to build such a scale. The next section will discuss the most important.

Factor Analysis

There are two problems in developing a scale from a group of indicators that are correlated. First, the analyst has to identify which indicators are the best from all of those available. The simple fact is that a variable that seems like an obvious measure of alcohol abuse will not work out in practice, for any number of reasons. The analyst needs some method to eliminate these indicators. The second problem is how to combine the indicators into a single scale of alcohol abuse, or whatever it is that we wish to measure. The obvious approach is to simply combine the indicators, after first standardizing them. Standardization is necessary because the indicators are measured in different ways. This approach is fine as far as it goes, but it doesn't take into account the fact that some indicators will be more important than others, because they are simply better measures of alcohol abuse. As such, the analyst would not wish to treat each one as equal. Instead, the ideal is to first multiply each indicator by a number called a weight. For example, the most important indicator would be multiplied by 1.0 and the others by smaller numbers related to their importance.

Instead of a summation that looks like this:

Alcohol Abuse = OWI + Liquor Licenses + Mortality

which treats each indicator as equally important, the analyst wants to sum the variables in something like the following:

Alcohol Abuse = 1.0 * OWI + .7 * Liquor Licenses + .5 * Mortality

This reflects the likelihood that some indicators are more important or more useful than others. A common technique known as Factor Analysis can address both these problems. Factor analysis looks at a group of correlation coefficients and identifies the variables that "hang together" as a measure of alcohol abuse. This group of related indicators is known as a "factor." After that, it calculates the weights assigned to each indicator, and it sums the indicators. That sum is known as a "factor score" and this score is what will be used and presented as a measure of county level alcohol abuse or treatment need.

Development of the Factors

The first stage of the analysis incorporated all 16 indicators into a factor analysis model. Four factors were extracted (all with an eigenvalue greater than 1.0). As in the previous analysis, the first and most important factor was strongly related to so-called "social problem" indicators. The indicators that loaded highly on this factor included: Homicide; property crime; sexually transmitted diseases; low weight births; domestic abuse; high school dropouts; and drug hospitalizations. With the exception of the last indicator, none of these variables are on their face closely related to county level AODA problems and consumption. Rather, these are indicators of the kinds of problems that characterize urban areas with large poor populations. They are important social indicators, to be sure, but are only remotely associated with AODA. As such, these indicators are considered to be beyond the scope of this report and are ignored, as in the previous report.

After these variables were deleted, the analysis was run again. Extracting components with an eigenvalue greater than one yielded two factors. Nine variables remained in the analysis by this point: Alcohol-related traffic crashes, OWI offenses, alcohol fatalities, liquor law violations, drug violations, liquor licenses, alcohol hospitalizations, alcohol deaths, drug hospitalizations and drug deaths. This stability is remarkable, given that two new years of data have been introduced, and that Menominee County, with its extreme values, was removed from the analysis. This finding gives us confidence that the factors uncovered in the previous analysis are real and that the analysis performed there was appropriate. The first factor featured the traffic crashes and alcohol fatalities indicators. The second factor featured the OWI, drug violations and alcohol hospitalizations indicators. Liquor licenses and alcohol deaths loaded moderately well on both composite indicators.

The first factor can be described as equivalent to the ***"Alcohol Consumption and Related Social Problems"*** factor described in the first report, as the traffic crashes and fatalities variables were found loading on this variable in the earlier report. The second factor is very similar to the earlier ***"Law Enforcement"*** factor. The major difference in this model is that the liquor license variable loads moderately well on both factors; in the earlier analysis it was more characteristic of the alcohol problems factor.

Index scores for each factor can be computed from the factor loadings according to the following formulas:

Alcohol Consumption and Related Problems Factor Score *= .802*Traffic Crashes + .806*Alcohol Fatalities+.714 Alcohol Deaths+.667* Liquor Licenses+.406*Alcohol Hospitalizations+.361*Drug Deaths*

Law Enforcement Factor Score =*.771*Drug Violations+ .758*OWI+.596*Alcohol Hospitalizations+.577*Liquor Law Violations*

Composite indicator scores for each county are found in Tables 1 and 2. For ease of presentation, the factor scores are scaled so that the highest score is set to 100 and the lowest score 0. Also reported are the five-year average values of the constituent indicator variables, presented as incidents per 1,000 population.

The "Five Year Trend" column in each table is a summary of the change in the indicators between 1994 and 1998. The percentage change for each indicator during this period was computed. A plus sign (+) in this column indicates that two or more of the indicators increased by at least 50 percent between 1994 and 1998. A minus sign (-) indicates that two or more of the indicators decreased by 50 percent during this period. It should be noted that some of the percentage changes are based on very small totals and therefore that some changes in smaller counties may not indicate a true five year trend.

NARRATIVE FOR THE ALCOHOL CONSUMPTION AND RELATED PROBLEMS COMPOSITE TABLE

The Alcohol Problems Factor Table which follows presents the composite factor scores and rank derived from the five indicators included in the last five columns of the table. Higher scores are associated with higher concentrations of alcohol problems. Lower scores are associated with lower levels. The Factor Rank column is each county's rank on the factor score. A rank of 1 represents highest problems and a rank of 71 is lowest problems. Menominee County was omitted from the analysis for statistical reasons but would be ranked highest if it had been included. Menominee County is included in the map, however. The data in columns 3 through 7 are rates per 1,000 population on the various indicators. The "Five Year Trend" column in the table is a summary of the change in the indicators between 1994 and 1998. The percentage change for each indicator during this period was computed. A plus sign (+) in this column indicates that two or more of the indicators increased by at least 50 percent between 1994 and 1998. A minus sign (-) indicates that two or more of the indicators decreased by 50 percent during this period. It should be noted that some of the percentage changes are based on very small totals and therefore that some changes in smaller counties may not indicate a true five year trend.

Table 1: Alcohol Problem Factor and Indicator Variables by County, 1994-1998

	Alcohol Problems Factor	Factor Rank	Alcohol Traffic Crashes	Alcohol Fatalities	Liquor Licenses	Alcohol Deaths	Drug Deaths	Five Year Trend
Adams	52	17	3.06	.06	5.10	.11	.08	
Ashland	28	40	1.26	.07	7.16	.08	.18	
Barron	47	22	2.07	.12	3.25	.11	.13	
Bayfield	73	6	2.03	.13	9.37	.18	.28	
Brown	19	53	2.04	.04	2.64	.10	.09	
Buffalo	44	24	2.45	.10	5.99	.12	.05	
Burnett	98	2	3.07	.22	6.75	.25	.11	
Calumet	14	58	1.29	.04	3.08	.09	.17	
Chippewa	37	30	1.87	.06	3.98	.14	.13	
Clark	18	55	1.60	.05	4.12	.04	.13	-
Columbia	21	46	2.12	.05	4.23	.08	.13	
Crawford	37	32	2.50	.05	5.20	.11	.14	
Dane	17	56	1.79	.04	2.14	.09	.17	
Dodge	23	43	1.83	.08	3.64	.04	.07	
Door	58	13	2.40	.15	7.47	.13	.16	
Douglas	48	20	2.52	.09	4.98	.18	.20	+
Dunn	6	68	1.81	.07	2.40	.10	.07	
Eau Claire	0	71	1.47	.03	2.51	.09	.15	-
Florence	95	3	2.91	.19	9.71	.29	.14	-
Fond du Lac	24	41	1.95	.06	3.11	.09	.17	
Forest	73	5	2.78	.13	8.83	.24	.08	
Grant	19	52	1.81	.08	4.00	.07	.16	
Green	30	37	2.15	.09	2.91	.10	.17	
Green Lake	16	57	2.22	.02	4.55	.04	.05	
Iowa	50	18	2.54	.14	4.56	.07	.14	-
Iron	49	19	2.04	.09	18.28	.08	.27	
Jackson	64	10	2.93	.15	5.09	.12	.09	-
Jefferson	21	47	1.77	.06	3.34	.09	.15	
Juneau	66	9	2.22	.14	5.54	.13	.48	+
Kenosha	32	34	2.41	.09	2.50	.09	.09	
Kewaunee	12	62	1.56	.05	5.24	.04	.03	-
La Crosse	18	54	1.56	.03	3.17	.17	.21	
Lafayette	36	33	2.21	.11	3.78	.08	.15	
Langlade	37	31	1.97	.09	6.50	.09	.15	
Lincoln	43	25	1.97	.14	5.17	.07	.17	
Manitowoc	11	63	1.63	.05	3.71	.07	.08	
Marathon	31	35	1.91	.07	3.05	.12	.07	+
Marinette	42	27	2.45	.10	5.41	.08	.06	
Marquette	64	11	2.57	.17	5.30	.14	.11	
Milwaukee	20	49	1.44	.02	2.33	.21	.17	
Monroe	39	29	1.86	.10	3.33	.16	.19	
Oconto	59	12	2.22	.19	6.10	.12	.08	
Oneida	48	21	2.40	.06	8.06	.14	.26	
Outagamie	8	65	1.50	.04	2.51	.09	.11	
Ozaukee	2	70	1.23	.04	2.25	.03	.03	-
Pepin	13	61	1.49	.03	5.19	.04	.07	
Pierce	20	51	1.74	.12	3.06	.08	.15	
Polk	54	15	2.35	.16	3.96	.10	.12	
Portage	20	50	1.79	.06	3.44	.09	.15	+
Price	24	42	1.76	.03	6.99	.11	.06	-
Racine	31	36	2.01	.06	2.60	.14	.12	
Richland	22	44	1.78	.04	2.85	.10	.10	
Rock	28	39	2.26	.06	1.95	.10	.13	+
Rusk	41	28	1.84	.10	5.65	.08	.28	
St. Croix	8	66	1.98	.07	2.52	.07	.12	+
Sauk	45	23	2.75	.10	4.69	.08	.22	+
Sawyer	100	1	2.93	.16	12.69	.22	.14	
Shawano	57	14	2.89	.10	5.57	.14	.13	
Sheboygan	13	59	1.57	.03	3.03	.09	.12	
Taylor	28	38	1.86	.06	5.29	.13	.08	
Trempealeau	53	16	2.46	.14	5.20	.09	.12	-
Vernon	22	45	1.67	.05	3.35	.07	.16	
Vilas	90	4	2.81	.07	11.93	.26	.24	
Walworth	10	64	2.18	.10	3.43	.11	.08	
Washburn	68	8	2.04	.12	6.14	.32	.12	
Washington	13	60	1.75	.05	2.52	.07	.05	
Waukesha	4	69	1.30	.03	1.81	.08	.05	
Waupaca	70	7	2.41	.15	4.02	.16	.49	
Waushara	43	26	2.29	.11	4.66	.07	.05	
Winnebago	7	67	1.68	.03	2.59	.06	.09	
Wood	21	48	1.75	.05	2.85	.11	.10	+

NARRATIVE FOR THE LAW ENFORCEMENT COMPOSITE TABLE

The Law Enforcement Factor column presents the composite score derived from the four indicators included in the remaining columns of the table. Higher scores are associated with higher concentrations of alcohol and drug-related law enforcement activity. Lower scores are associated with lower levels. The Factor Rank column is each county's rank on the factor score. A rank of 1 represents highest problems and a rank of 71 is lowest problems. Menominee County was omitted from the analysis for statistical reasons but would be ranked highest if it had been included. Menominee County is included in the map, however. The data in columns 3 through 6 are rates per 1,000 population on the various indicators. The "Five Year Trend" column in the table is a summary of the change in the indicators between 1994 and 1998. The percentage change for each indicator during this period was computed. A plus sign (+) in this column indicates that two or more of the indicators increased by at least 50 percent between 1994 and 1998. A minus sign (-) indicates that two or more of the indicators decreased by 50 percent during this period. It should be noted that some of the percentage changes are based on very small totals and therefore that some changes in smaller counties may not indicate a true five year trend.

Table 2: Law Enforcement Factor and Indicator Variables by County, 1994-1998

	Law Enforcement Factor	Factor Rank	OWI	Liquor Law Violations	Drug Violations	Alcohol Hospitalizations	Five Year Trend
Adams	15	65	5.50	.43	1.08	2.70	
Ashland	59	9	7.27	7.23	2.17	6.90	
Barron	15	63	3.98	1.39	1.14	4.38	
Bayfield	43	20	6.60	3.41	1.16	6.70	+
Brown	40	24	6.06	7.00	2.82	2.98	
Buffalo	18	57	6.70	4.37	.84	1.28	
Burnett	23	54	7.22	.52	1.41	4.51	+
Calumet	11	68	2.50	3.18	.97	1.83	
Chippewa	29	46	5.45	2.82	1.09	4.63	
Clark	13	66	5.11	2.38	.76	1.64	+
Columbia	53	12	9.65	7.82	3.33	2.16	+
Crawford	18	56	3.22	3.87	1.74	2.16	
Dane	35	30	6.07	4.06	3.10	2.00	
Dodge	16	61	4.62	3.38	1.24	2.69	+
Door	31	40	7.46	4.09	2.35	1.95	
Douglas	30	44	6.46	5.73	2.26	1.02	
Dunn	50	14	6.42	13.82	3.28	1.85	
Eau Claire	58	10	7.30	14.15	2.41	3.31	
Florence	12	67	5.20	.04	1.88	1.00	
Fond du Lac	49	16	9.61	8.21	1.87	3.57	
Forest	77	5	11.05	2.67	6.51	4.70	+
Grant	29	45	5.80	9.74	1.12	1.82	
Green	23	53	6.00	6.46	1.67	1.04	+
Green Lake	39	25	8.87	5.78	2.19	1.76	
Iowa	17	58	6.20	1.90	1.75	2.30	+
Iron	80	3	8.21	14.81	3.62	3.97	
Jackson	31	41	8.08	3.65	1.30	4.68	+
Jefferson	52	13	9.47	6.04	3.58	2.44	+
Juneau	31	39	7.29	2.23	2.02	2.79	
Kenosha	34	31	4.88	4.49	3.47	3.36	
Kewaunee	27	47	7.49	4.86	1.49	1.26	+
La Crosse	55	11	6.22	11.25	2.03	4.69	
Lafayette	1	70	2.05	4.43	.55	1.51	
Langlade	31	42	4.27	3.37	2.90	3.10	-
Lincoln	33	32	6.27	3.77	2.82	3.51	+
Manitowoc	72	7	12.05	8.97	4.11	3.63	
Marathon	33	34	5.79	3.72	1.63	4.77	+
Marinette	26	49	7.82	2.75	1.69	2.35	
Marquette	16	62	5.56	.07	2.43	2.28	+
Milwaukee	62	8	5.53	3.86	6.13	3.69	
Monroe	41	23	7.31	4.06	3.41	2.54	
Oconto	4	69	4.45	1.63	.99	1.67	
Oneida	76	6	9.24	6.13	5.54	4.58	
Outagamie	42	21	7.65	8.28	2.11	2.37	+
Ozaukee	20	55	5.61	2.76	1.69	1.74	
Pepin	23	52	7.13	2.81	.98	1.82	+
Pierce	31	36	7.09	11.25	1.47	.99	
Polk	45	19	11.47	1.83	3.22	3.46	
Portage	31	38	6.15	7.22	1.49	2.33	
Price	35	29	5.71	4.21	2.37	2.53	+
Racine	25	50	4.54	2.05	2.64	2.45	
Richland	17	59	3.97	1.97	1.74	2.29	+
Rock	50	15	5.88	5.04	4.17	4.75	
Rusk	27	48	6.36	5.00	.84	3.09	
St. Croix	42	22	4.83	13.06	3.28	1.43	
Sauk	38	27	5.78	5.92	3.42	3.00	
Sawyer	83	2	15.07	3.12	3.05	8.40	
Shawano	47	17	12.93	5.92	1.42	2.92	
Sheboygan	39	26	6.57	6.46	1.76	3.45	
Taylor	31	43	6.09	5.25	1.90	2.13	
Trempealeau	17	60	6.29	1.63	1.41	2.60	
Vernon	15	64	4.35	1.76	1.60	1.71	
Vilas	80	4	14.28	.89	3.00	7.18	
Walworth	100	1	11.59	20.83	6.16	3.69	+
Washburn	37	28	5.34	1.09	3.04	4.06	
Washington	31	37	5.52	5.25	2.31	2.82	
Waukesha	32	35	6.78	4.36	2.35	2.07	
Waupaca	23	51	7.26	2.25	1.28	2.37	
Waushara	0	71	3.22	.03	.75	2.19	
Winnebago	45	18	7.63	8.75	1.95	3.43	
Wood	33	33	5.42	5.54	1.85	3.48	

THE COMPOSITE INDICATORS AND RESOURCE ALLOCATION

Having established that the composite indicators are valid measures of local substance abuse treatment need, and correlate, to a certain extent, with poverty (see the 1998 report, p. 29), the next logical step is to utilize the factors for decisions pertaining to how block grant and other funds are distributed.

The simplest way to proceed is to analyze the association between the two composite factors and current indicators of funding. County substance abuse expenditure and treatment admission data for the combined years of 1997 and 1998 were divided by their county's respective 1998 population estimate to transform the data into per capita statistics. For the counties that were part of a multi-county public AODA agency (Grant/Iowa, Forest/Oneida/Vilas, Northern Pines, and Langlade/Lincoln/Marathon), the expenditures and admissions were prorated to each county within the cluster based on 1998 county population estimates.

Correlations between the composite indicators and the treatment need measures are shown in the next table.

	Alcohol Problems Factor	Law Enforcement Factor	Public Expenditures	Public Admissions
Alcohol Problems Factor	1.000			
Law Enforcement Factor	.000	1.000		
Public Expenditures	.193	.610**	1.000	
Public Admissions	.274*	.396**	.565**	1.000

* Correlation is significant at p = .05

** Correlation is significant at p = .001

The table shows that the Law Enforcement factor is significantly related to both the per capita treatment admissions and public expenditures. The .610 correlation is especially strong and shows that the distribution of treatment money is to a large extent responding to indicators relating to the law enforcement impacts of substance abuse (Operating While Intoxicated Arrests, Drug Violations, Liquor Law Violations and Alcohol-related Hospitalizations). To find a close similarity in strength of correlation between the law enforcement factor and the expenditure indicator is particularly helpful in determining the usefulness of the factor for resource allocation decisions.

The alcohol problems factor is not strongly associated with the admissions indicator and has an even lower association with expenditures. Currently, funding is not targeted to counties based on the Alcohol Problems factor, which includes such indicators as alcohol- and drug-related deaths and alcohol-related traffic crashes and traffic fatalities. However, these are important consequences of substance abuse and a strong argument can be made that resource allocation should follow these indicators as well.

Part of the reason for the low association between treatment need and the Alcohol Problems factor lies in the current community aids and block grant allocation formulas

and other mechanisms of resource allocation such as competitive RFP's, county overmatch, third party payment collections, and the like. The block grant and other state administered funding are a significant source of county revenue for substance abuse services comprising about 24 percent of the total revenue available for county substance abuse services.

The current block grant formula is based on five factors that were determined by the Department of Health and Family Services and the State Council on Alcohol and Other Drug Abuse back in the late 1970's. Counties receive allocations based on population, poverty level (income maintenance caseload), minority population, unemployment and a criminal justice composite. Thirty percent of the money is allocated by the population measure, thirty percent by the poverty measure, fifteen percent each by minority population and criminal justice, and ten percent by the unemployment factor. It should be noted that this formula is not set in statute or administrative code although it has been approved by the federal government.

There are good rationales for each of these current block grant formula factors. However, the fact remains that none of them are direct measures of substance abuse treatment need. As we have seen, there is a good association between the law enforcement composite factor and expenditures. That relationship is most likely due to the law enforcement factor being high in urban areas that are also characterized by higher levels of poverty and population size. The block grant formula also favors areas with a higher arrest rate, which would be expected to correlate with the variables that make up the law enforcement factor.

Yet there is not a strong association between the treatment need indicators and the alcohol problems composite factor. What this means is that there appear to be "hot spots" (high concentrations) of alcohol problems in areas that are not addressed by current resource allocation methods. But let's take a closer look at these areas.

There were 21 counties that scored relatively high on the alcohol problems factor and relatively low on the law enforcement factor. It would appear then that these counties are under-funded using the current Block Grant funding formula. However, 6 of these counties are border counties, another 6 are high tourism/recreation counties, and 2 are both border and tourism counties. Of the remaining 7 counties, only 2 (Barron and Iowa) scored extremely low on the law enforcement factor. Furthermore, only two of the remaining 7 counties (Racine and Iowa) indicated any treatment funding shortfalls in the treatment capacity survey. It is therefore recommended that the Block Grant funding formula not be changed to accommodate the high alcohol problems factor counties at this time.

The following actions are recommended:

- A factor that measures a county's ability to pay for treatment services should be considered for inclusion in the formula. In part, the public assistance and unemployment factors attempt to measure this variable, and these could be retained, although with the elimination of "welfare" in Wisconsin these two indicators may be less viable in the future. Measures such as average household income and the number of persons/families earning wages or having incomes below a certain level, may be a more accurate measure of the local tax base and clients' ability to pay for services.
- When developing RFP's, the factor scores could be included in proposal review criteria. For example, proposals from counties having higher factor scores could receive additional points as follows (next page):

	Points
Range 1	10
Range 2	7
Range 3	3
Range 4	0