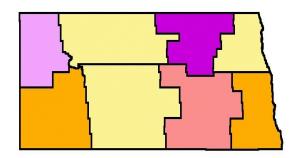
A Drug & Alcohol Abuse Indicator Chart Book for North Dakota



Prepared for the State of North Dakota Department of Human Services Division of Mental Health and Substance Abuse Services

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SAMHSA

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EXECUTIVE SUMMARY

This Chart Book describes the results of an analysis of substance abuse indicators to determine how North Dakota compares to other states and how North Dakota's counties and regions compare to one another. The analysis is important because substance abuse and the substance abuse treatment system are partially statewide in scope and partially unique to each of North Dakota's communities. The Chart Book presents the study's results in a relatively nontechnical format meant to be accessible to citizens, local officials, and other interested parties.

The study employed existing substance abuse indicator data available from state and national sources. The investigators obtained interstate data for 1994-1996 and county-level data for North Dakota from 1991 to 1998. The primary county variables included four years of mortality data, five years of arrest data, three years of hospital reimbursement claims data, and seven years of treatment client data. After reviewing each data set for indications of clerical, coding, or programming errors, the study team extracted relevant information, created a series of count and rate variables at the county and regional levels, and combined them in a data base. Published research and statistical analyses of the reliability and validity of the indicators established their relevance for the study.

To summarize these data at the interstate and regional levels, the study team created composite indexes of alcohol and drug indicators: The Drug Treatment Need Index (DNI), the Alcohol Treatment Need Index (ANI), and the Substance Abuse Need Index (SNI). The interstate ANI included alcohol mortality and alcohol-defined arrest rates (driving under the influence and liquor law violation arrests), and the regional ANI also included hospital claims rates. The interstate DNI included drug mortality and drug possession and sale arrest rates. The interstate SNI included unduplicated alcohol and drug mortality rates and combined alcohol- and drug-defined arrest rates that were employed in the ANI and DNI. Due to data limitations regarding drug problems, the authors did not construct DNI and SNI indexes at the regional level of analysis.

The results consist of a series of charts and maps of the need indexes, their components and other relevant measures. The maps described the distribution of drug and alcohol problems throughout North Dakota. The charts focused on state, regional, and county differences in the number of cases, rates per 100,000, and index scores. Appropriate caution should be employed to avoid over-interpretation of the county rates, especially with regard to mortality statistics. Many of North Dakota's counties have relatively small populations. In counties with small populations, infrequently occurring events such as alcohol- and drug-related deaths can produce average rates for four years that are poor estimates of the long-term substance abuse treatment needs in the area. Consequently, the county mortality charts include both the mean rates for four years and the number of deaths during the four years. Readers should view high rates in small areas with appropriate caution and place greater reliance on the composite indexes, the actual number of events (e.g., deaths) that produced the rates, and the consistency of rates among contiguous areas. Also, these findings should be viewed in the context of the results of the other members of North Dakota's family of needs assessment studies and other information extant regarding a particular county.

The study found that counties and regions varied substantially with regard to the rates of drug and alcohol abuse problems. The findings confirmed that alcohol problems are the State's major substance abuse problem. Alcohol rates were often highest in small rural counties, while drug abuse rates were frequently high in larger, urban areas. There were of course obvious exceptions to each of these general trends. The exceptions were often in small areas, and their high rates may be reflections of random statistical variations rather than alarming indications of severe problems. Confirmation from other sources should always be sought for any finding based on a relatively small number of indicators over a relatively brief period of time.

Between 1993 and 1998, alcohol hospital claims and treatment client rates were down in North Dakota, while alcohol arrest, alcohol death, and alcohol-related motor vehicle fatality rates were up. The Alcohol Need Index (ANI) indicated the Lake region as having the most severe alcohol problem in North Dakota. In particular, Rolette and Benson Counties in that region had high rates of alcohol hospital claims and alcohol morality. The Lake region area also has a high poverty rate and a high concentration of American Indians. The Northwest region also had a high ANI score.

Because the counts for drug deaths and arrests are low at the substate level, it is difficult to identify areas with especially severe drug problems with a high degree of confidence. However, drug problem indicators are up at the state level. Between 1993 and 1998, drug arrests, hospital claims, treatment client rates, and drug mortality rates were up in North Dakota. The chapter on intrastate variations in the recently completed report, "An Integrated Substance Abuse Treatment Needs Assessment for North Dakota," has more in depth analysis at the substate level, identifies gaps in treatment, and makes specific recommendations on how to fill those gaps in service.

INTRODUCTION

This Chart Book describes the results of a study of how North Dakota compares to other states and how North Dakota's counties and regions compared to each other regarding major substance abuse indicators. The analyses focus on learning which counties and regions have the greatest relative need for substance abuse treatment services.

The Family of Studies

This investigation is part of the North Dakota family of treatment needs assessment studies. With funding and technical support from the Center for Substance Abuse Treatment (CSAT), the State has undertaken a family of studies to assess the extent of its substance abuse problems and to plan the State's response to them. The family of studies seeks to assess the State's treatment service needs, identify gaps in service, and make recommendations for the future resource allocations and modifications of the treatment system's design. The studies include a statewide telephone household survey of adults and a survey of Native Americans on reservations. The family of studies also incorporates a drug and alcohol indicator system that uses existing data to supplement the survey data collected in the family of studies. This Chart Book describes results from interstate, regional, and county substance abuse indicator analyses.

Role in the Family of Studies. The indicator analysis plays a special role in the family of studies. The study takes a comparative perspective, whereas the other studies in the family of studies focus on the absolute level of the State's treatment service needs and its response to them. The analysis is important because substance abuse and the substance abuse treatment system are partially statewide in scope and partially unique to each county and region. As this report will show, North Dakota ranked in the middle of the states (24th) with regard to combined alcohol and drug problems (deaths and arrests). The overall problem index was the result of combining a relatively severe alcohol problem and a relatively less severe drug problem. North Dakota ranked 14th in the country with regard to alcohol problems. The state had the lowest Drug Need Index (DNI) score in the country. Most of the drug-related problems were associated with marijuana. North Dakota had the highest proportion of drug arrests that were marijuana-related. These findings were consistent with an earlier study based on 1991-1993 data. In that time period, North Dakota ranked 50th on severity of drug problems and 20th on alcohol problems. These findings are an important context for judging the variations within the State.

Each county's response to its mix of substance abuse problems depends partly on its own history, population, and policies. The county's response also depends on clinical developments, regulations, and funding available for substance abuse services from a range of sources, including state and federal programs. By examining how a county differs from its counterparts regarding both its substance abuse problems and treatment services, the study will help reveal the county's need for substance abuse services.

Readers should bear in mind that a county's or region's relative status may say surprisingly little about the absolute severity of its substance abuse problems or the area's absolute success in meeting its substance abuse service goals. Previous needs assessment studies

have shown that even states which have provided relatively high levels of treatment services compared to other states may nevertheless have a substantial amount of unmet demand for services.

METHODS

Data Sources

This study employs existing substance abuse indicator data that the study team gathered from state and national sources. Before using them, the analysts examined each data set for the presence of outliers and other sources of error. An example of an outlier would be an annual count that is many times higher (lower) than the previous (subsequent) year for the county, especially when the annual change is not consistent with the usual annual variations in the data for that county and other counties. In such cases, the study team alerted State officials who contacted the responsible state or local officials about the outlying values. If corrected values or comparable figures were available, the authors used them. As a general protection against undetected or uncorrected random errors, the study combined multiple years of data to obtain more reliable composite indicators.

Indicators varied with regard to the number of years that were available for analysis. The study used available data between 1991 and 1998. Drug and alcohol arrest statistics covered the period from 1994-1998, while county-level treatment client data covered 1991 to 1997. The mortality data covered the period 1993 to 1996. The rates are average annual ("mean") rates per 100,000 residents. The denominators for each annual rate were state population projections for the relevant years.

Measurements and Index Construction

To summarize the information from multiple indicators, the authors created composite indexes of controlled drug and alcohol treatment needs at the interstate and regional levels: The Drug Need Index (DNI), the Alcohol Need Index (ANI), and the Substance Abuse Need Index (SNI). The interstate composite indexes include measures of alcohol- and drug-related rates of deaths and arrests. The regional Alcohol Need Index also included hospital reimbursement claims per 100,000. Because of the drug mortality data was so sparse, the authors did not create regional DNI and SNI indexes.

The drug mortality indicator counted only deaths with codes that explicitly mentioned drugs of abuse as one of the causes listed on the death certificate. The diagnostic codes included accidental drug overdoses, drug dependence, nondependent drug abuse, and drug psychoses (including drug withdrawal syndrome). The drug-related hospital claims measure used a similar set of explicit-mention diagnoses. The drug arrest statistics included possession and sale/manufacturing arrests for controlled drugs. The study used a drug-related contagious disease index that included acute hepatitis B and C, early syphilis, HIV infection, tuberculosis, gonorrhea, and chlamydia. The analysts selected these indicators for study because they were linked theoretically to drug abuse, had been empirically validated in the literature, and were

available at the county level.

The regional ANI included alcohol mortality, alcohol-defined arrests, and alcohol hospital claims. The alcohol mortality measure employed 12 explicit-mention diagnoses widely employed as a measure of alcoholism. Examples were alcohol dependence, non-dependent alcohol abuse, alcohol psychoses, alcoholic cirrhosis of the liver, and alcohol cardiomyopathy. The hospital claims measures used a similar set of diagnostic codes that explicitly mentioned alcohol. The alcohol-defined arrest measure included liquor law violations and disorderly-conduct arrests. The primary purpose of the indexes is to assess a state or region's drug and alcohol treatment needs.

An index score of 100 equals the combined highest observed mortality, arrest, and hospital claims rates during the study period. A scale score of zero indicates that there was no evidence of treatment need, as shown by there being no deaths, arrests, or hospital claims in the region or state during the study period.

Analysis and Presentation

When describing these indicators, the report focuses on the comparative nature of the analysis by reporting the county's average annual rate per 100,000 and in some cases, its rank in the State or the State's rank in the country. In all cases, the county or state with the most severe drug or alcohol abuse problem is ranked 1st, and the county or state with the least severe problem is ranked 53rd or 50th respectively. The analysis begins with the alcohol indicators, and then turns to the controlled drug indicators. In the presentation of results for each substance, the report begins with the composite index, and then it describes the components of the index and other supplementary indicators. The charts describe the State's ranking in the country and then describe the counties or regions within the State.

The Chart Book seeks to make the results of the indicator analyses accessible to local officials and citizens, state officials, and other interested individuals. By use of maps and charts, the authors sought to minimize the technical requirements for understanding and utilizing the analyses. The bar charts present the index scores, counts, or rates per 100,000, and in some cases, the county or state rankings.

Readers should exercise substantial caution when interpreting the results for individual indicators, especially the mortality, contagious disease, and the traffic fatality rates. Many of the counties are relatively small. As a result, even rates based on four or five years of data can be volatile. Some of the very high or very low rates may be poor estimates of long-term treatment needs in the area. For those variables, the charts include the actual number of cases that occurred during the study period. The treatment indexes are based on several indicators and are therefore more reliable predictors of long-term need. Also, the maps provide a context for interpreting the rates. When there are clusters of small areas with similar rates, it is likely that the rates are more stable estimates. Confirmation from other sources should always be sought for any finding based on a relatively small number of indicators over a relatively brief period of time.

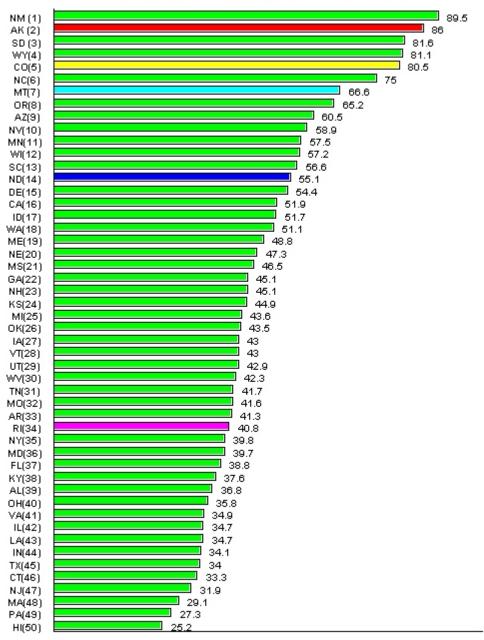
Regions Used in Analysis

Regions	Human Service Center	Counties In Region
I	Northwest	Williams, Divide, McKenzie
II	North Central	Ward, Burke, Mountrail, Renville, Bottineau, McHenry, Pierce
III	Lake Region	Ramsey, Rolette, Towner, Cavalier, Benson, Eddy
IV	Northeast	Grand Forks, Pembina, Walsh, Nelson
V	Southeast	Cass, Steele, Traill, Ransom, Richland, Sargent
VI	South Central	Stutsman, Wells, Foster, Griggs, Barnes, Logan, LaMoure, McIntosh, Dickey
VII	West Central	Burleigh, McLean, Mercer, Sheridan, Oliver, Morton, Kidder, Grant, Sioux, Emmons
VIII	Badlands	Stark, Dunn, Billings, Golden Valley, Slope, Hettinger, Bowman, Adams

ALCOHOL INDICATORS

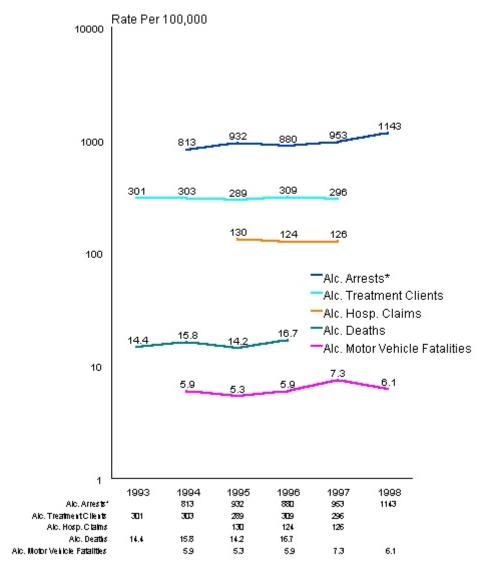
Alcohol Problems Compared to Other States

Alcohol Need Index, 1994 - 1996



Index Scores

Alcohol Indicators in North Dakota

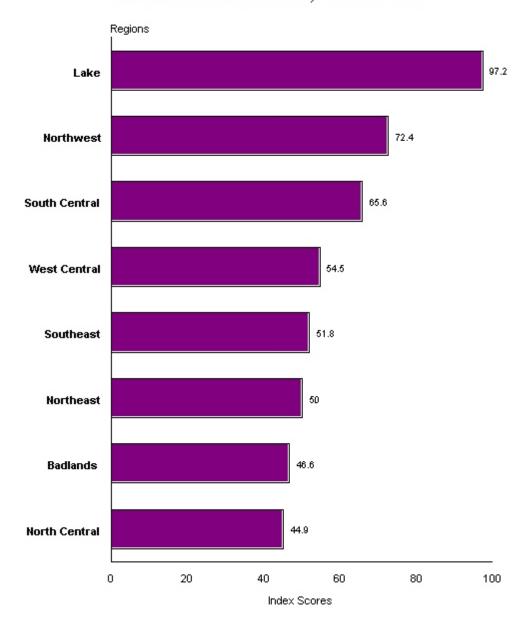


^{*}Liquor law violations and disordely conduct

North Dakota Regional Comparison

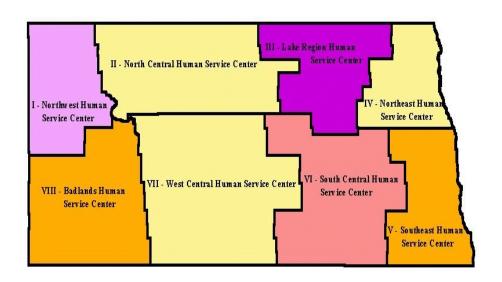
Alcohol Treatment Need Index

Alcohol Need Index, 1993-1998



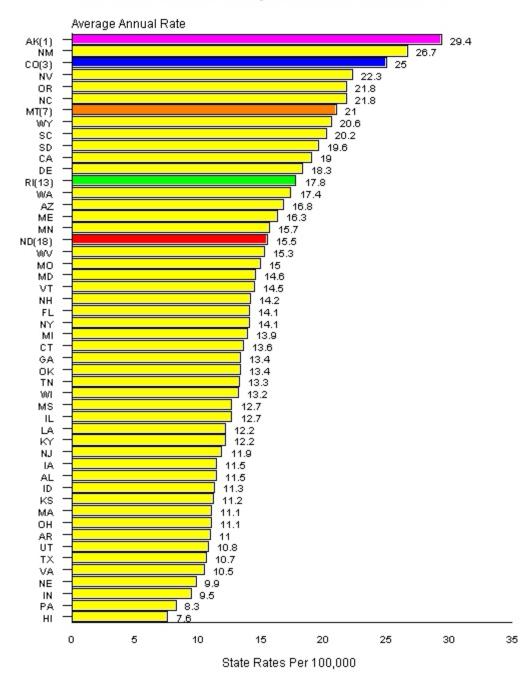
Alcohol Treatment Need Index

Alcohol Need Index (Region Level)





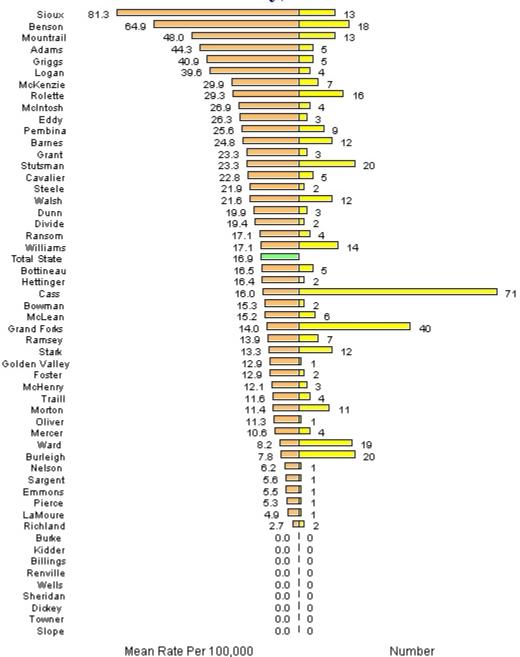
Alcohol Mortality Rate, 1994-1996



North Dakota County-Level Comparison

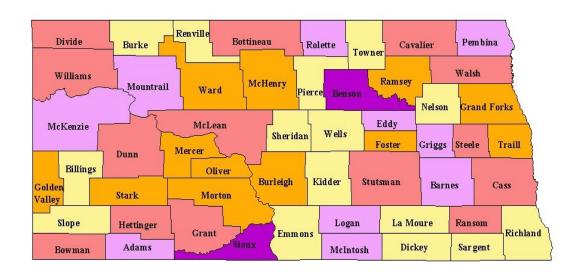
Alcohol Mortality

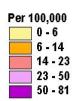
Alcohol Mortality, 1993 - 1996



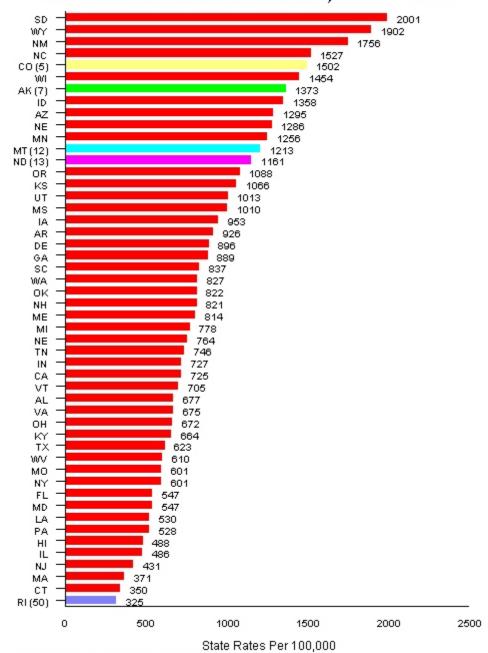
Alcohol Mortality

Alcohol Mortality Mean Rate, 1993-1996



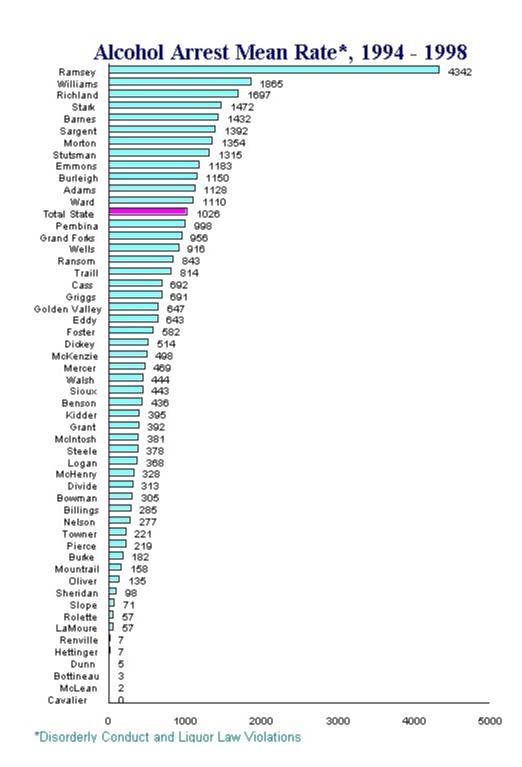


Alcohol Arrest Mean Rate*, 1994 - 1996



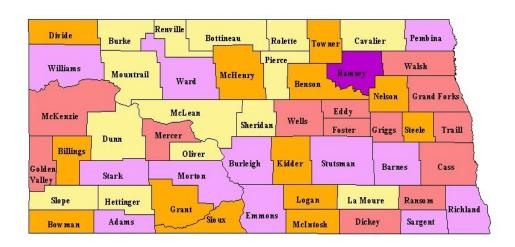
*DUI and liquor law violations

Alcohol Arrest: Disorderly Conduct and Liquor Law Violations



Alcohol Arrests: Disorderly Conduct and Liquor Law Violations

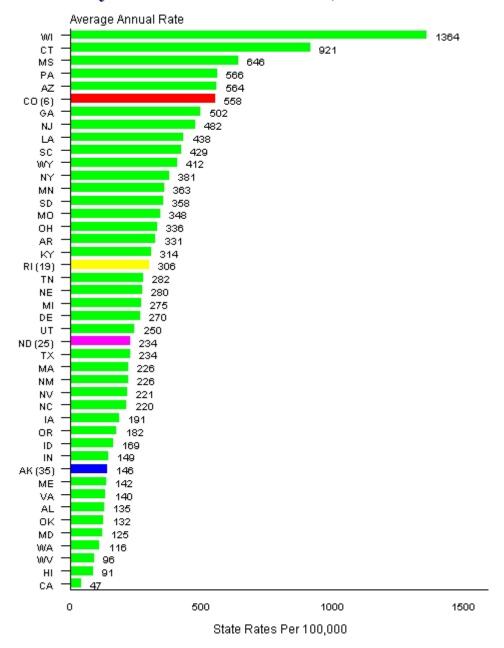
Alcohol Arrest Mean Rate*, 1994-1998



* Includes disorderly conduct and liquor law violation arrests.



Disorderly Conduct Arrest Rate, 1994-1996

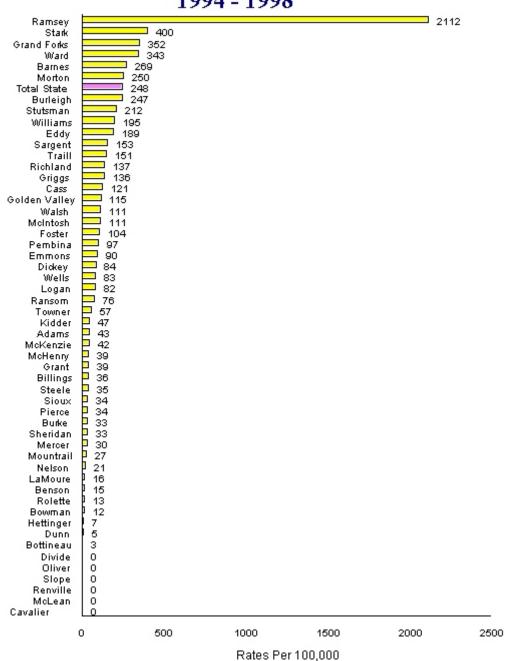


Missing data for MT, KS, NH, VT, FL, IL

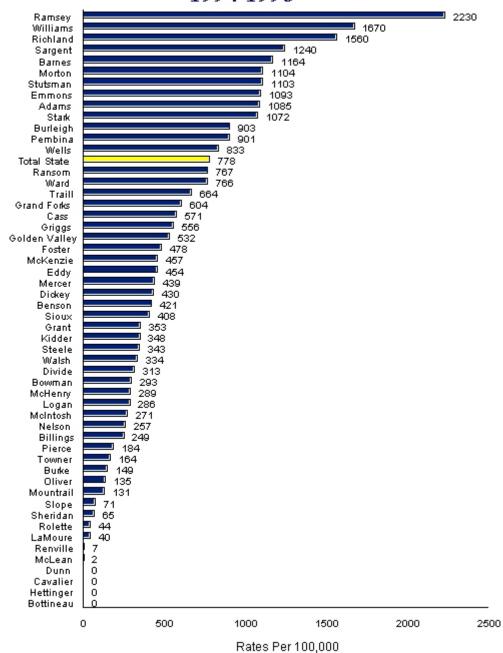
North Dakota County-Level Comparison

Disorderly Conduct

Disorderly Conduct Arrest Mean Rate, 1994 - 1998

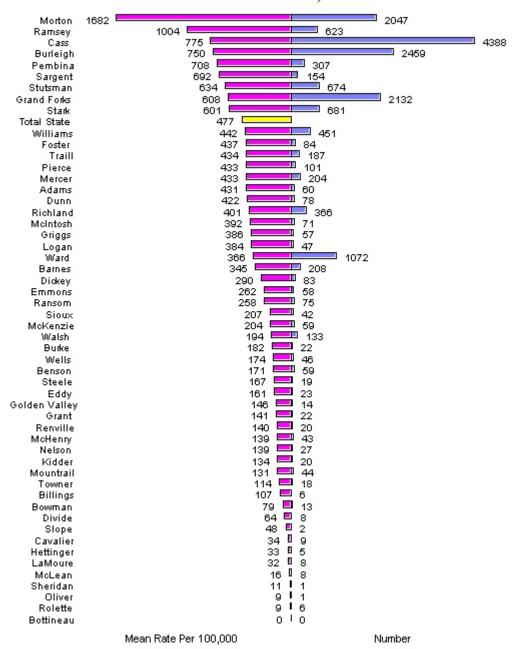


Liquor Law Violation Arrest Mean Rate, 1994-1998



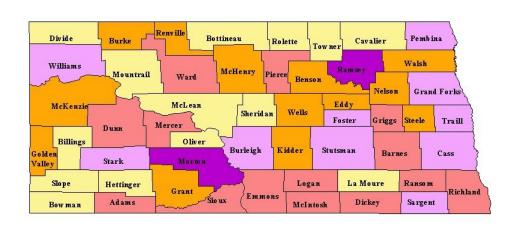
Driving Under the Influence

DUI Arrest Mean Rate, 1994-1998



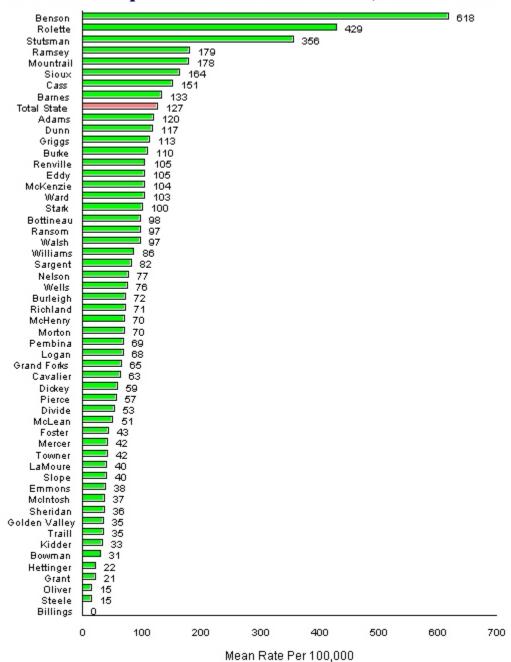
Driving Under the Influence

DUI Arrest Mean Rate, 1994-1998



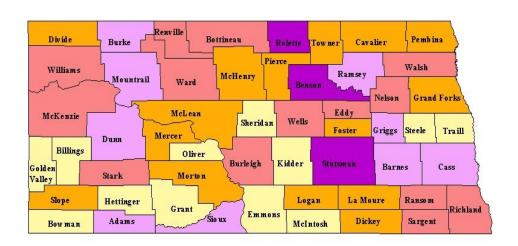


Alcohol Hospital Claims Mean Rate, 1995 - 1997



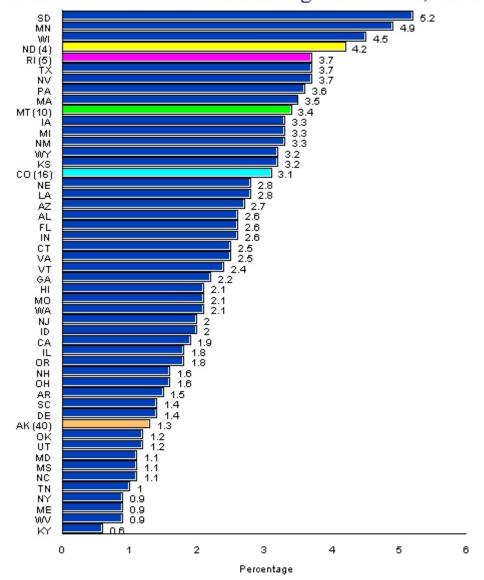
Alcohol Hospital Claims

Alcohol Hospital Claims Mean Rate, 1995-1997



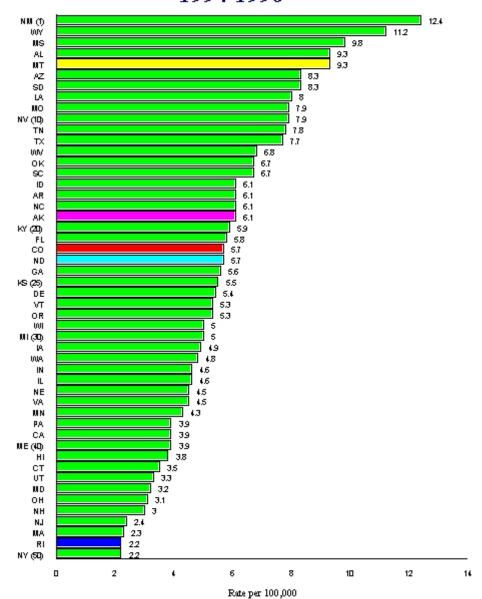


Percent Drove After Drinking Too Much, 1995



Source: Behavioral Risk Factor Surveillance System (BRFSS)

Alcohol-Related Traffic Fatalities Mean Rate, 1994-1996

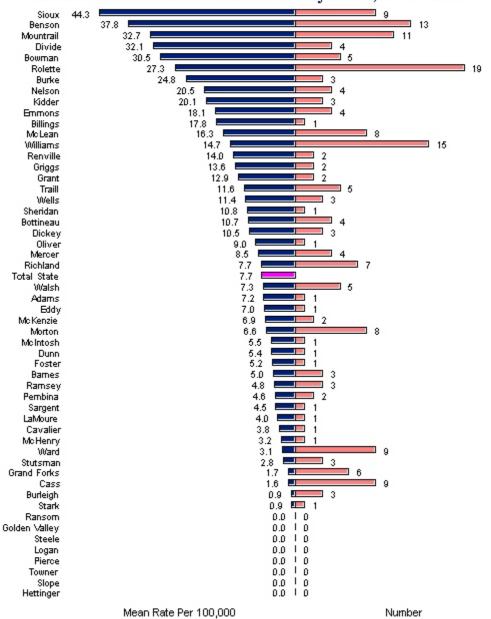


Blood alcohol concentration of driver or non-occupant > or = .10

North Dakota County-Level Comparison

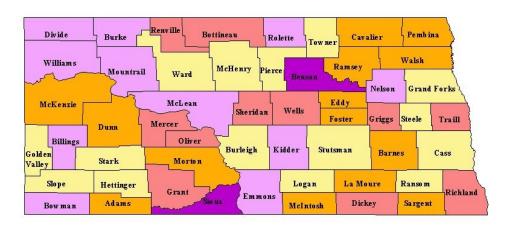
Alcohol-Related Motor Vehicle Fatalities

Alcohol-Related Motor Vehicle Fatality Rate*, 1994 - 1998



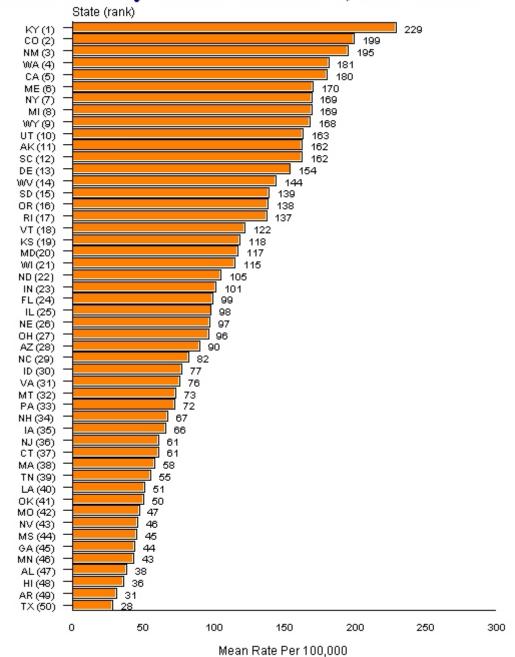
^{*}Blood Alcohol Concentration of Driver or Nonoccupant > or = .10

Alcohol-related Traffic Fatalities Mean Rate, 1994-1998





Alcohol-Only Treatment Clients, 1994-1996

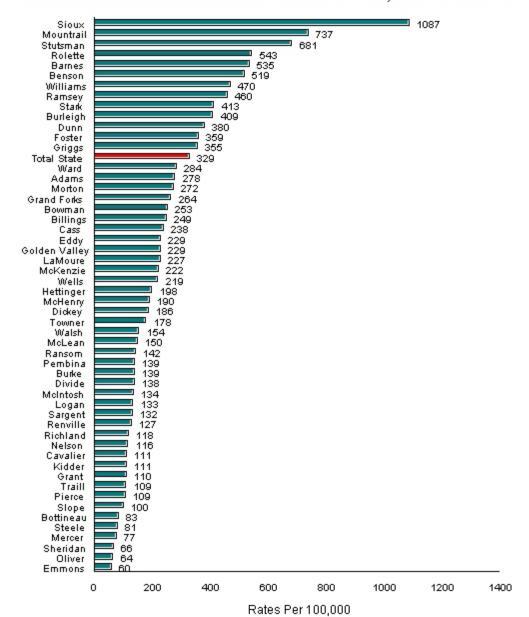


Source: Uniform Facilities Data Set (UFDS)/ National Survey of Substance Abuse Treatment Services (N-SSATS)

North Dakota County-Level Comparison

Alcohol Treatment

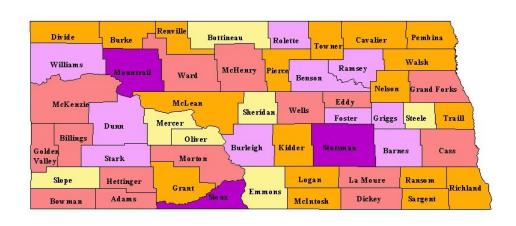
Alcohol Treatment Client Mean Rate, 1991 - 1997



Source: Division of Mental Health and Substance Abuse Services, NDDHS

Alcohol Treatment

Alcohol Treatment Clients Mean Rate, 1991-1997

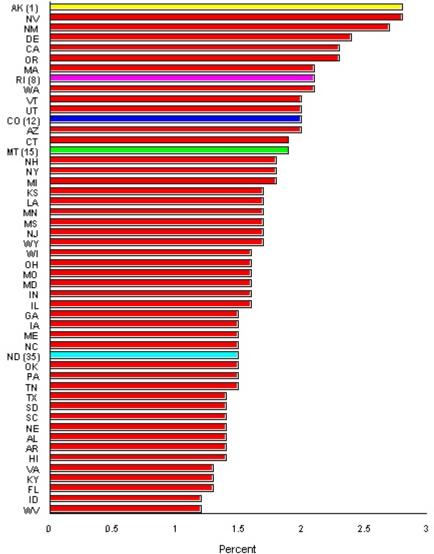




CONTROLLED DRUG INDICATORS

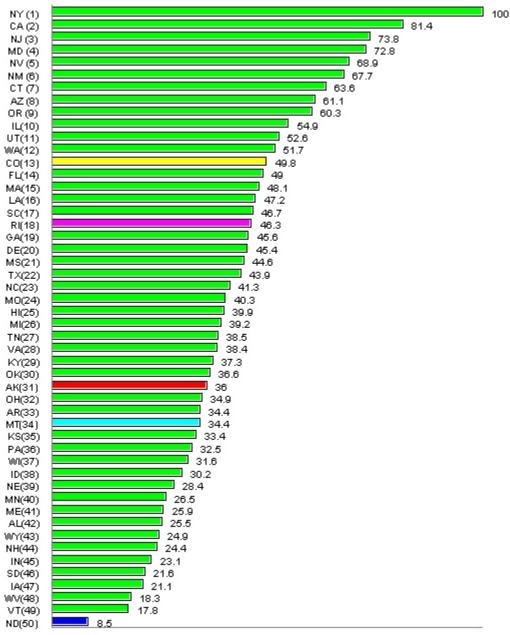
Drug Problems Compared to Other States

Past-Year Drug Dependence, 1999



Source: National Household Survey on Drug Abuse (2000)

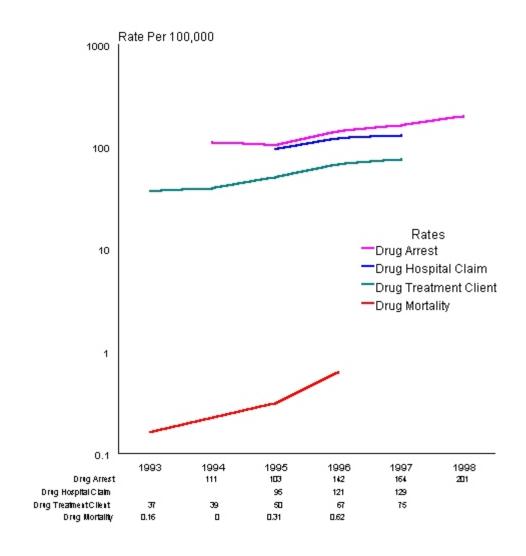
Drug Need Index, 1994 - 1996



Index Scores

Drug Indicators in North Dakota

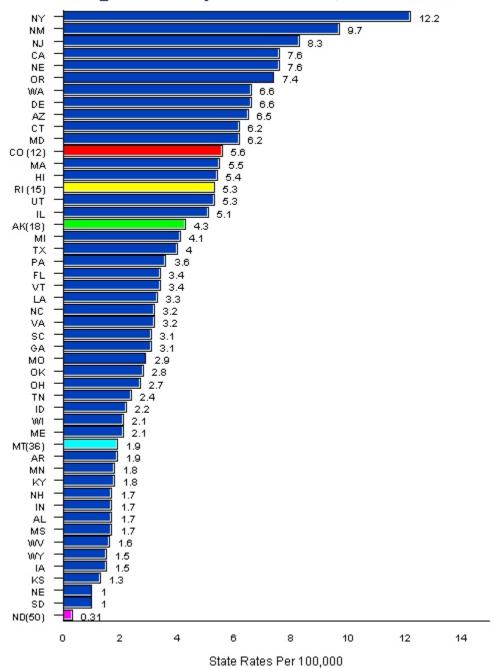
Drug Indicators in North Dakota



31

Drug Mortality

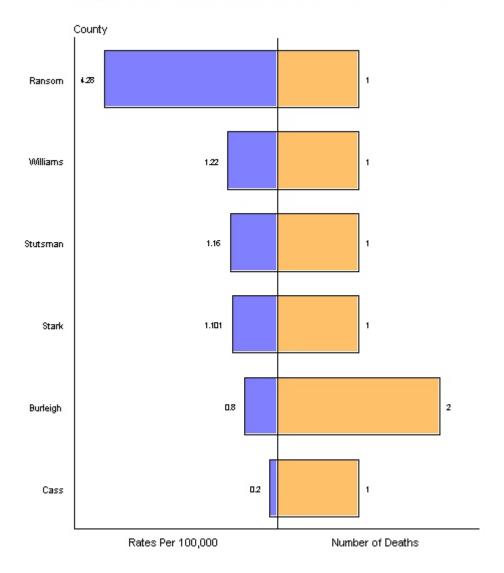
Drug Mortality Mean Rate, 1994-1996



North Dakota County-Level Comparison

Drug Mortality

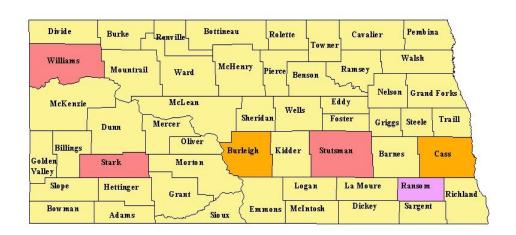
Drug Mortality Mean Rate*, 1993 - 1996



^{*} All other counties had no drug-related deaths

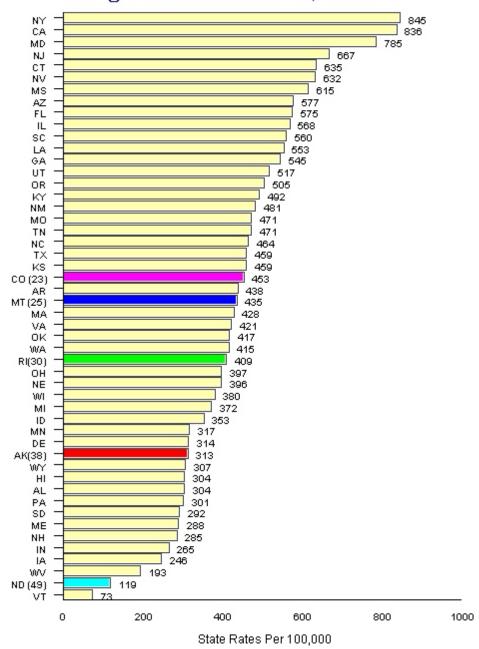
Drug Mortality

Drug Mortality Mean Rate, 1993-1996

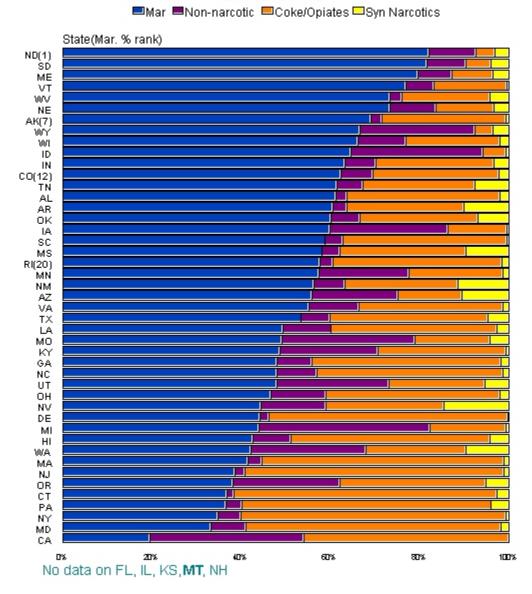




Drug Arrest Mean Rate, 1994 - 1996



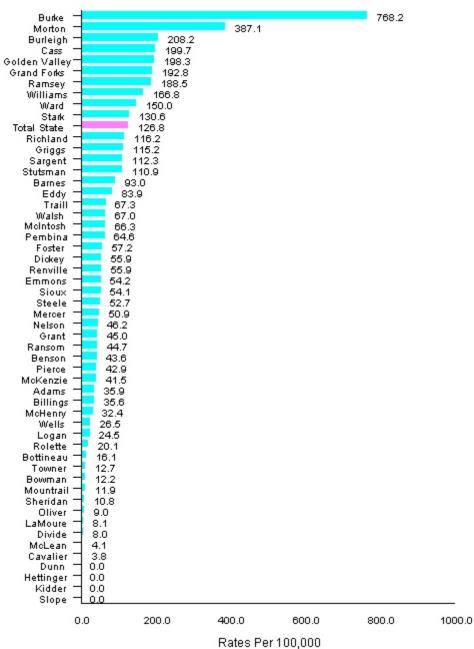
Percent of Drug Arrests Associated with Marijuana, Cocaine-Opiates, Synthetic Narcotics, Other Nonnarcotics, 1994-1996



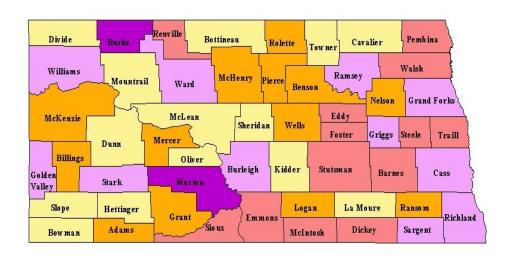
North Dakota County-Level Comparison

Drug Arrests: Sales and Possession

Drug Arrest Mean Rate, 1994-1998

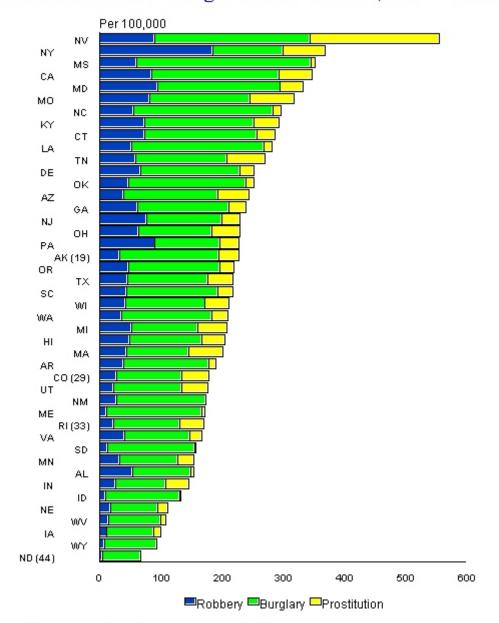


Drug Arrest Mean Rate, 1994-1998



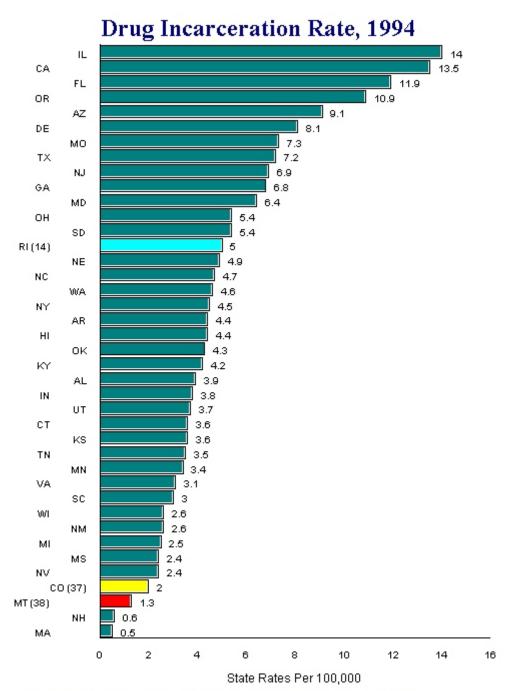


Arrest Rates for Drug-Related Crimes, 1994 - 1996



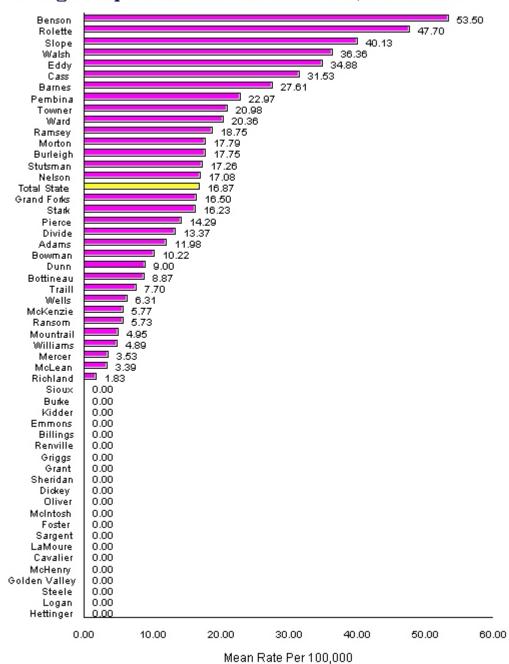
Data missing for FL, IL, KS, MT, NH, VT

Drug Incarceration Rate



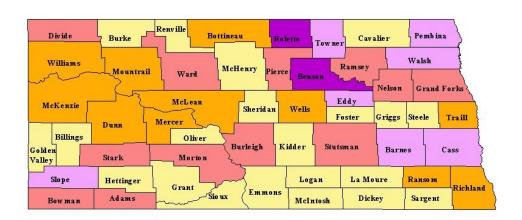
Source: Bureau of Justice, National Corrections Reporting Program. Data missing for LA, PA, ND, ME, VT, WV, AK, WY, ID, IA.

Drug Hospital Claims Mean Rate, 1995 - 1997



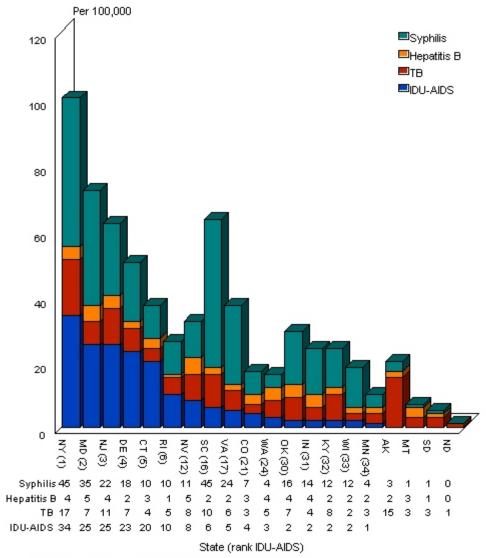
Drug Hospital Claims

Drug Hospital Claims Mean Rate, 1995-1997





Contagious Diseases Associated with Drug Abuse Mean Rates, 1994-1996

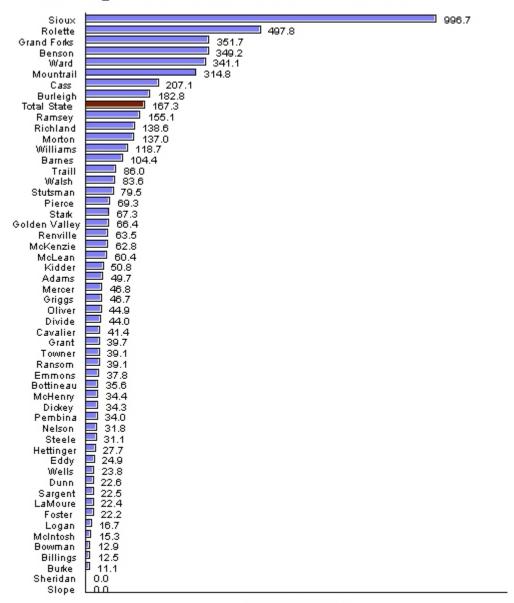


Source: Centers for Disease Control and Prevention

North Dakota County-Level Comparison

Drug-Related Diseases

Contagious Diseases Mean Rate, 1991 - 1997

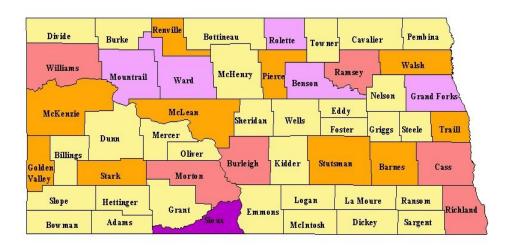


Rates Per 100,000

Source: North Dakota State Department of Health. Total of Acute Hepatitis B, Acute Hepatitis C, Tuberculosis, Early Syphilis, Gonorrhea, and Chlamydia.

Drug-Related Diseases

Contagious Diseases Mean Rate*, 1991-1997

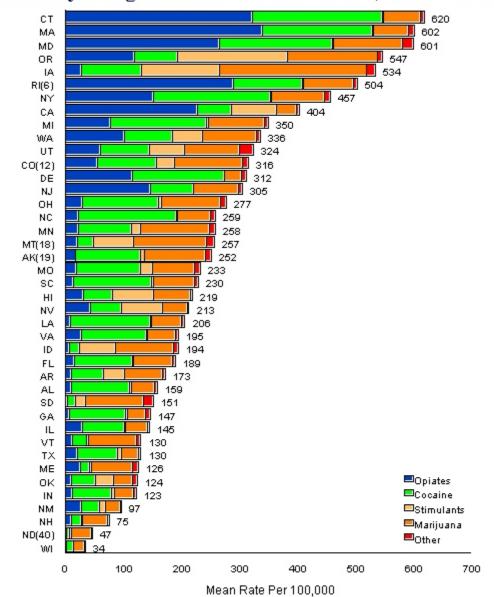


^{*} Total of acute hepatitis B, acute hepatitis C, tuberculosis, early syphilis, gonorrhea, and chlamydia



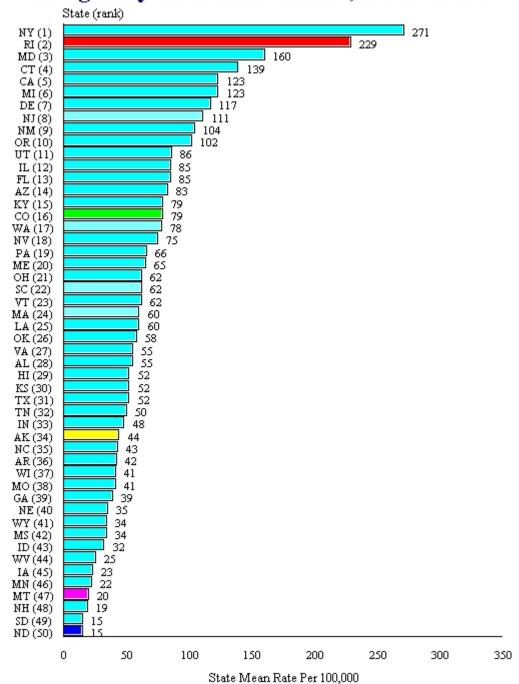
Drug Treatment

Primary Drug Admission Mean Rate*, 1994 - 1996



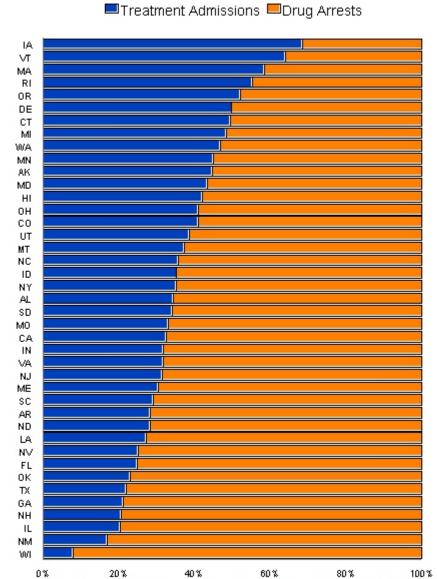
Source: Treatment Episode Data Set (TEDS) *No data AZ, NE, KY, KS, TN, MS, PA, WV, WY.

Drug-Only Treatment Clients, 1994 - 1996



Source: Uniform Facilities Data Set (UFDS)/ National Survey of Substance Abuse Treatment Services (N-SSATS)

Responses to Drug Abuse: 1994-1996 Treatment Admissions and Drug Arrests

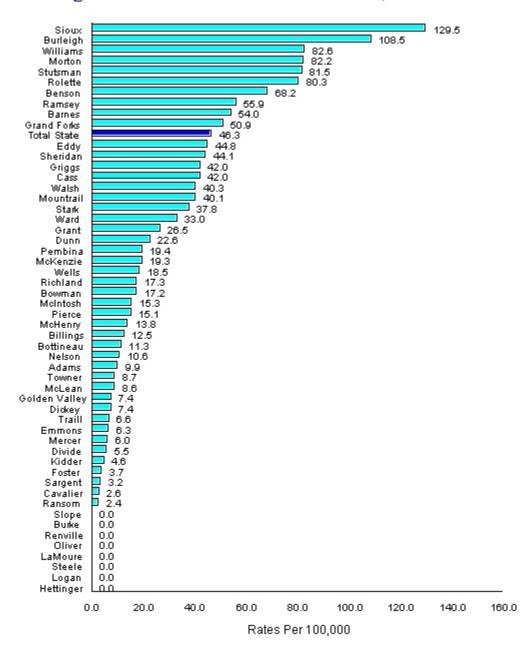


Sources: Uniform Crime Reports, Treatment Episode Data Set (TEDS) Data missing for MS, AZ, NE, KY, TN, KS, WY, PA, WV

North Dakota County-Level Comparison

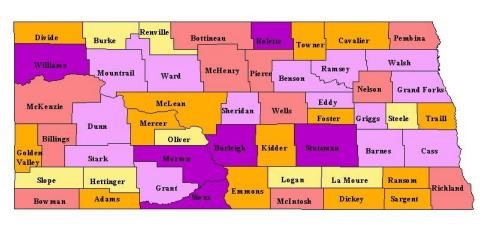
Drug Treatment

Drug Treatment Client Mean Rate, 1991-1997



Drug Treatment

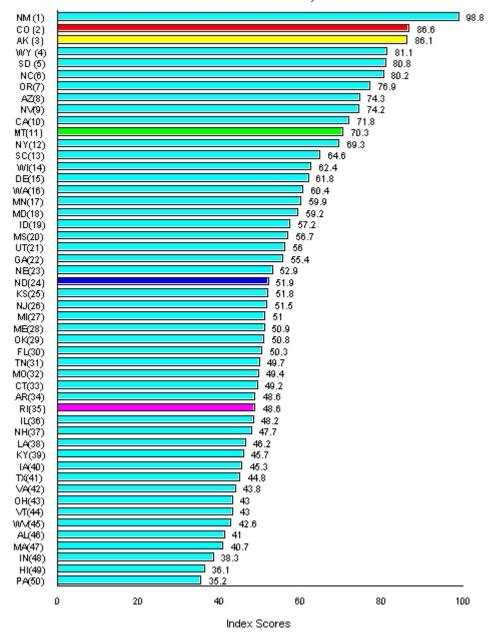
Drug Treatment Client Mean Rate, 1991-1997



SUBSTANCE ABUSE INDICATORS

Substance Problems Compared to Other States

Substance Abuse Need Index, 1994 - 1996



APPENDIX

Table 1. Sources of Substance Abuse Indicators

Substance	Indicators	Source
Alcohol	Arrests for DUI, Disorderly Conduct, Liquor Law Violations	Uniform Crime Reports; Interuniversity Consortium for Political and Social Research (ICPSR); North Dakota Bureau of Criminal Investigation.
Alcohol	Motor Vehicle Fatalities, with BAC>.10	Fatal Accident Reporting System, National Highway Traffic Safety Administration.
Alcohol	Alcohol-related Deaths	National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention
Alcohol	Liquor Licenses	North Dakota Tax Commissioner's Office.
Drug	Drug-related Deaths	National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention
Drug	Arrests for Drug Offenses	Uniform Crime Reports; Interuniversity Consortium for Political and Social Research (ICPSR); North Dakota Bureau of Criminal Investigation.
Drug	Incarceration Rates	Bureau of Justice's National Corrections Reporting Program
Drug, Alcohol	Population 1990-2000	Bureau of the Census
Drug, Alcohol	Clients in Treatment	Uniform Facilities Data Set (UFDS), Office of Applied Studies (OAS), Center for Substance Abuse Treatment (CSAT)
Drug, Alcohol	Treatment Admissions	Treatment Episode Data Set (TEDS), Office of Applied Studies (OAS), Center for Substance Abuse Treatment (CSAT); State Client Data System, North Dakota Division of Mental Health and Substance Abuse Services
Alcohol	Drunk Driving Survey Estimates	Behavioral Risk Factor Surveillance System (BRFSS), Centers for Disease Control and Prevention
Drug, Alcohol	Hospital Claims	Division of Health Statistics, North Dakota Department of Health

Table 1. Sources of Substance Abuse Indicators

Substance	Indicators	Source
Drug	Contagious Diseases	North Dakota State Department of Health, Centers for Disease Control and Prevention (CDC) summaries of notifiable diseases