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Identifying AFDC Regions

A Cluster Analysis Approach

Working Paper, Series One

Using cluster analysis, this report identifies six distinct Aid to Families with Dependent Children (AFDC) regions. Among the more striking results is the emergence of two regions—Central Cities and Hispanic Rural—with unique patterns of welfare usage and demographic characteristics. Also, rural Minnesota is divided into four separate regions with unique characteristics. This information is intended to help policymakers and others interested in the welfare system to better understand the geographic pattern of AFDC reciprocity. This report is the first in a series of working papers regarding welfare and welfare reform.

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Contents

Introduction	1
Six Regional Clusters	3
The Basic Six	4
Central Cities	5
Metro	7
Hispanic Rural	9
Rural: Longer Duration	11
Rural: Shorter Duration/Multiple Episodes	13
Rural: Shorter Duration/Single Episode	15
Limitations and Other Considerations	17
Conclusion	17
References	19
Appendix A - Data and Methodology	21
Appendix B - Summary Data	26
Appendix C - Listing of Counties by Region	28

Introduction

In 1996, the federal government replaced Aid to Families with Dependent Children (AFDC) with the employment-focused Temporary Assistance to Needy Families (TANF). To implement the reform, the State of Minnesota enacted the Minnesota Family Investment Program (MFIP). The program provides support to encourage work and sanctions for noncompliance. Besides the new law's effect on welfare recipients, it also changed county responsibilities. For example, counties must make available the choice of at least two employment and training service providers to each MFIP recipient, and county job counselors must develop an employment plan with each caretaker.

The tasks taken on by county administrators, caseworkers, job counselors, and others in the MFIP system may vary by region and may depend upon the characteristics of the local welfare population. For example, a county with many recipients staying on welfare for a short duration, but returning to the system for several times, may face different daily tasks than a county with a high proportion of recipients approaching the 60-month time limit.

Drawing from previous research, some have found regional differences in demographic characteristics and outcomes. This report attempts to more closely identify these regions, or groupings of counties, using cluster analysis. Each of these regions may be thought of as separate communities. All are grouped together based upon a simple commonality of welfare reciprocity.

The results may help policymakers, policy analysts, and others interested in the welfare system to better understand the welfare population and find better ways to administer welfare reform. By identifying like groupings of counties, county administrators, policymakers, and others may benefit by sharing information and problems with other like counties. For example, counties with a high percentage of migrant farm workers may benefit by sharing information with other like counties.

This study uses welfare data to group counties with similar profiles of caretakers. [A caretaker is the adult taking care of a family, but not necessarily the parent. Caretakers can be stepparents, extended family members, foster parents, or adoptive parents.] The data is from years shortly preceding implementation of MFIP—1987 to 1996—and does not include information on MFIP caretakers. However, there are considerable similarities between AFDC and MFIP. Both provide income assistance to low-income families and both decrease the amount of assistance as family income increases. At a minimum, the clusters may serve as a starting point that can begin the discussion on regional differences in welfare reciprocity.

This report is the first of a series of working papers regarding welfare and welfare reform. This series will provide information, updates, and summary reports.

Explanation of Outcome Statistics

The statistics used in this research help characterize a caretaker's stay on AFDC. The statistical characteristics may also relate to activities of county social workers and job counselors.

There are many ways to describe a caretaker's stay on AFDC. Some may enter the system and leave after two months of assistance. Another may enter once, but stay for more than three years. Still others may enter the system, leave after finding a job, and return several months later. The pattern of AFDC reciprocity can be as unique as the individual.

For this document, four statistics lend to the understanding of the different patterns of AFDC usage—total time on AFDC, time spent on the first episode, time spent away from AFDC after the first episode, and the number of episodes.

Total time on AFDC is the sum of all months that the caretaker is eligible for assistance. This includes months of assistance received after the caretaker returns from his or her first episode.

Time spent on the first episode is the number of months on AFDC from the very first time the person enters the system to the time he or she leaves that first episode.

Time spent away from AFDC after the first episode is the number of months away from AFDC. It is the difference between the month a recipient re-enters the system and the last month of his or her first episode. Of course, not everyone who leaves after the first episode will return again, but for those who do, the number of months are recorded.

Number of episodes is the number of times a person returns to AFDC. For example, some may enter and leave—cycling back and forth over a number of times. This statistic counts the number of times a caretaker returns to the system.

For the typical caretaker, estimates are constructed for the median number of months spent on or away from AFDC. For time spent on AFDC, the median implies that at least 50 percent of the caretakers will be on AFDC for the stated number of months or less. For time spent away from AFDC, the median states the number of months that at least 50 percent of the caretakers will stay off AFDC.

Under MFIP, county workers may face different daily tasks based upon differences in these statistical characteristics. For example, if a large number of caretakers have total times approaching 60 months, then county workers may disproportionately spend their time preparing these caretakers for leaving the system. Or another example are caretakers that stay on MFIP for short periods of time, but with multiple episodes; county workers in this region may consider different employment and training plans than in other regions.

Six Regional Clusters

This analysis identifies six AFDC regions. The regions were selected by finding clusters or groupings of counties based upon their characteristics. Counties within each grouping bear similar characteristics. Whereas, counties in separate regions tend to bear distinguishing characteristics that make them unique from one another.

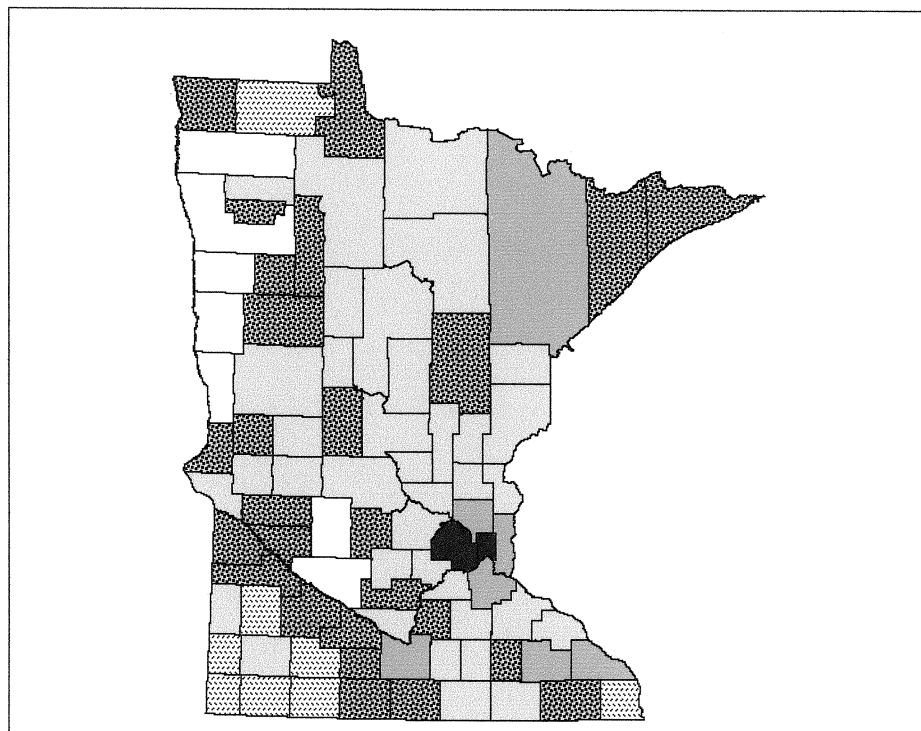
Among the more significant clusters are two regions—Central Cities and Hispanic Rural. These regions are unique in that they exhibit unusual patterns of welfare usage. Central Cities (Hennepin and Ramsey Counties) exhibits a tendency toward longer duration on AFDC. The Hispanic Rural region tends toward shorter times on AFDC and larger caseloads during summer months. This region is located in Western and Central Minnesota where sugar beet farming and, possibly, other agricultural-related industries are concentrated.







The report proceeds with a detailed description of the six regional clusters. A brief discussion of the limitations and exceptions to the study follows. The appendix lists the data and methodology in greater detail and also provides a set of tables for further analysis.

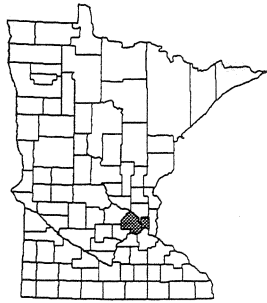
The Basic Six

Figure 1 depicts the six AFDC regions which are divided between metro and rural regions. The metro regions include the central cities—Hennepin and Ramsey Counties—and other selected metro counties. Rural regions comprise four groupings: the Hispanic Rural region, Rural: Longer Duration, Rural: Shorter Duration/Multiple Episodes, and Rural: Shorter Duration/Single Episode. These regions are scattered throughout the state and can be distinguished by the time a typical caretaker spends on AFDC and by the number of times a caretaker will return to the system.

Figure 1
The Six AFDC Regions



-  Central Cities - 2 Counties (Hennepin and Ramsey)
-  Metro - 7 Counties (Twin Cities, Duluth, Rochester, Winona, and Mankato)
-  Hispanic Rural - 7 Counties
-  Rural: Longer Duration - 37 Counties
-  Rural: Shorter Duration/Multiple Episodes - 26 Counties
-  Rural: Shorter Duration/Single Episode - 8 Counties



Central Cities

The Central Cities region, composed of Hennepin and Ramsey Counties, bears several striking characteristics worthy of mention. For this region, total caseload increased while other regions typically decreased and total time spent on AFDC is longer than any other region.

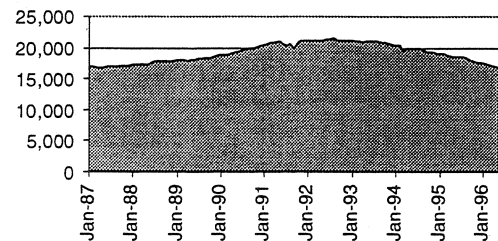
Total caseload for this region is unique in that it increases for almost six years beginning in winter of 1987. Most other regions depict either constant or declining caseloads throughout. Central Cities, however, increases until the summer of 1992 and then declines for the remainder of the period. The caseload size of these two counties is larger than any other region and oftentimes exceeds 40 percent of the entire statewide caseload.

A typical caretaker on AFDC qualifies for assistance for a longer period than any other region—36 months.¹ When a caretaker first enters AFDC, the time spent is slightly shorter at approximately 20 months. Not every AFDC recipient receives assistance for just one time. Approximately 45 percent of AFDC recipients from this region will return for at least one more episode. Time spent away from AFDC after the first episode is typical of other regions. At least 50 percent will be able to stay away from AFDC for more than 35 months.

In comparison to other regions, there is a larger percentage of single caretakers in Central Cities. The age of these caretakers is slightly younger, but there is little overall variation across regions. Along with the younger caretakers are slightly younger children, but again with little variation. Even with the younger ages, a slightly higher percentage of caretakers have slightly more children. The percentage of families with three or more children is 10 percent, which is larger than any other region except for the Hispanic Rural region.

Figure 2

**Total AFDC Caseload for
Central Cities Region**

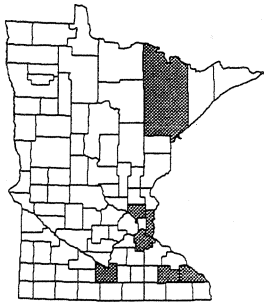


**Total Time on AFDC* - 36 mo.
Time Spent on First Episode* - 20 mo.
Time Spent Away From AFDC After the
First Episode* - 35 mo.
Percent with More Than One Episode -
44.9%
(*Time is the median for primary
caretakers in the region)**

¹ Median length of stay for all periods on AFDC. A statistical test finds Hennepin and Ramsey Counties significantly different from other counties.

The Central Cities are more racially diverse than most other regions, with a majority of caretakers being non-white. Approximately 61 percent are non-white, with 41 percent black and 12 percent Asian American.

Demographic Characteristics of Central Cities	
Average Age of Children	5.1
Average Age of Caretaker	30.4
Percent With Three or More Children	10.4
Race	
Percent Asian American	11.5
Percent Black	41.4
Percent Hispanic	3.8
Percent American Indian	3.9
Percent White	39.4
Percent with less than a High School Degree	32.7
Percent Single Caretakers	83.9
Total Number of Cases	34,074



Metro

The Metro region exhibits shorter times on AFDC in comparison to Central Cities, but longer than rural regions.

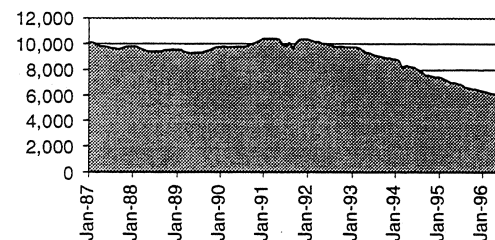
Not all counties with larger cities were selected in this cluster, because the county clusters or groupings were based upon several characteristics. The selected counties in the Metro region bear similar characteristics and are distinct from the remaining metro regions.

Total caseload for AFDC slightly declines from winter 1987 to summer 1989. In the following months, AFDC caseload increases and peaks at 10,408 in February of 1991. Afterwards, AFDC caseload steadily declines to 5,918 in June of 1996. Total caseload appears somewhat cyclical within the year peaking in the winter months and reaching its minimum in the summer.

With respect to outcomes, a typical AFDC caretaker from the Metro region stays on AFDC longer than a typical caretaker from rural regions, but shorter than a caretaker from the Central Cities. The median time on AFDC in the Metro region is 28 months. For the caretaker's first time on AFDC, the median length of stay is a shorter 11 months. About 50 percent of the caretakers will return to AFDC for more than one period.

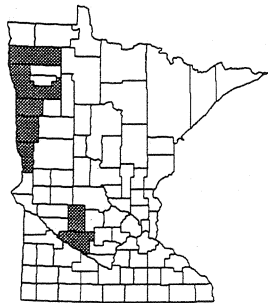
Like the Central Cities, there is a high percentage of single caretakers residing within the Metro region. The average age of both caretakers and children are younger. Unlike the Central Cities, the average family size is about the same as the other regions. There is a low percentage of non-whites, approximately 16 percent. The largest non-white population are blacks, making up 6 percent of all caretakers. Both Hispanics and Asian Americans make up approximately 4 percent each.

Figure 3
**Total AFDC Caseload for
Metro Region**



Total Time on AFDC* - 28 mo.
Time Spent on First Episode* - 11 mo.
Time Spent Away From AFDC After the First Episode* - 32 mo.
Percent with More Than One Episode - 50.3%
(*Time is the median for primary caretakers in the region)

Demographic Characteristics of Metro Region	
Average Age of Children	5.0
Average Age of Caretaker	30.1
Percent of Families with Three or More Children	5.8
Race	
Percent Asian American	3.8
Percent Black	6.2
Percent Hispanic	4.0
Percent American Indian	2.3
Percent White	83.8
Percent with less than a High School Degree	22.0
Percent Single Caretakers	81.4
Total Number of Cases	16,386

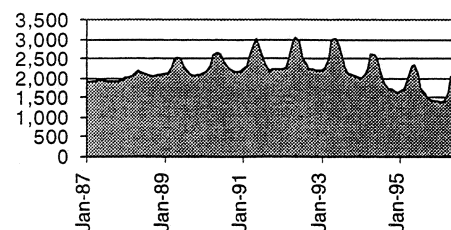


Hispanic Rural

The Hispanic Rural region is a unique set of counties exhibiting cyclical caseloads, short times spent on AFDC, and a higher percentage of Hispanics. The combination of characteristics leads to the suggestion that these are counties with high percentages of migrant farm labor. The counties are located along the Western border and within Central Minnesota.

Total caseload is strikingly unique taking on a marked cyclical pattern. Total caseload peaks in summer months and bottoms during the winter. Unlike any other region, the peak to bottom increases caseload by a substantial amount, oftentimes exceeding 25 percent of the pre-existing caseload.²

Figure 4
**Total AFDC Caseload for
Hispanic Rural Region**



Caretakers from the Hispanic Rural region exhibit the shortest times on AFDC. A typical AFDC caretaker living in the Hispanic Rural region will remain on AFDC for a total of 12 months. Single episodes are shorter in duration. For the first time on AFDC, a typical caretaker stays for five months. Slightly more caretakers return for more than one period—approximately 49 percent return to AFDC after their first episode.

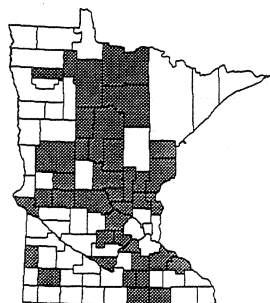
**Total Time on AFDC* - 12 mo.
Time Spent on First Episode* - 5 mo.
Time Spent Away From AFDC After the
First Episode* - 34 mo.
Percent with More Than One Episode -
49.0%**
(*Time is the median for primary caretakers in the region)

There are a number of unique demographic characteristics for this region. A high percentage of caretakers don't have a high school diploma. The low graduation rate is unlikely caused by caretakers being too young. Instead, the average age of caretakers within this region is slightly older than most other regions. Another unique characteristic is that the families tend to be larger with higher percentages of two-caretaker families and slightly more children. Corresponding to

² The percentage of new caretakers entering the system also follows a cyclical pattern peaking in April-May of every year. However, the maximum percentage of new cases is a relatively small proportion of total caseload in any given month and equals 11.3 percent.

the caretaker's older age, the children tend to be older than in other regions. Unlike any other region, Hispanics comprise the majority of recipients. Over the period of this data set, Hispanics equaled 60 percent. Whereas most regions rarely exceed 5 percent.

Demographic Characteristics of Hispanic Rural Region	
Average Age of Children	6.3
Average Age of Caretaker	31.9
Percent of Families with Three or More Children	14.8
Race	.
Percent Asian American	0.5
Percent Black	0.5
Percent Hispanic	59.6
Percent American Indian	4.6
Percent White	34.8
Percent With Less Than a High School Degree	52.7
Percent Single Caretakers	60.7
Total Number of Cases	8,820

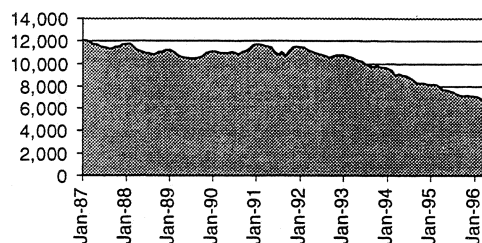


Rural: Longer Duration

Among the three remaining regions, this group of counties includes more caretakers that tend to stay on AFDC for longer periods of time. The region is scattered throughout the state, but is largely located on the eastern half.

Total caseload remains relatively constant or declines during the years of the data set. There is a slight increase in total caseload during the recession years of 1990-1991, but the long-term trend may be for fewer caretakers. There is a small annual cycle peaking in late winter-early spring and hitting its trough during summer months.

Figure 5
Total AFDC Caseload for Rural
Minnesota: Longer Duration Region



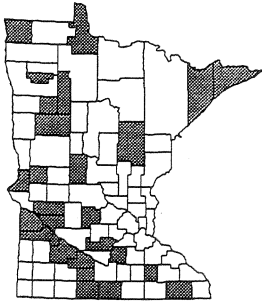
The most distinguishing characteristic is the typical caretaker's total length of stay on AFDC. Longer than the remaining rural regions, 50 percent of the caretakers stay on AFDC for 24 months or more. The time spent on their first episode is longer and time spent away from AFDC is slightly shorter. Not uncommon to caretakers with longer total times spent on AFDC, the region is characterized with a higher percentage of caretakers who return for more than one episode.³ More than 54 percent of the caretaker cases will return more than once.

Total Time on AFDC* - 24 mo.
Time Spent on First Episode* - 11 mo.
Time Spent Away From AFDC After the First Episode* - 26 mo.
Percent with More Than One Episode - 54.2%
(*Time is the median for primary caretakers in the region)

Most of the rural regions tend to have lower percentages of single caretakers. Approximately 78 percent of the caretakers are single, which is slightly lower than either metropolitan area. The caretakers tend to be slightly younger and there are slightly fewer children than other rural regions. With respect to race, the percentage of non-whites represents 16 percent of all caretakers. Examining individual races, 6 percent are Hispanic and approximately 5 percent are American Indian.

³ See the upcoming House Research working paper on the demographic characteristics of AFDC and MFIP caretakers.

Demographic Characteristics of Rural: Longer Duration Region	
Average Age of Children	5.3
Average Age of Caretaker	30.3
Percent of Families with Three or More Children	6.7
Race	
Percent Asian American	1.1
Percent Black	1.0
Percent Hispanic	6.2
Percent American Indian	4.5
Percent White	87.2
Percent with less than a High School Degree	23.5
Percent Single Caretakers	77.9
Total Number of Cases	20,415



Rural: Shorter Duration/Multiple Episodes

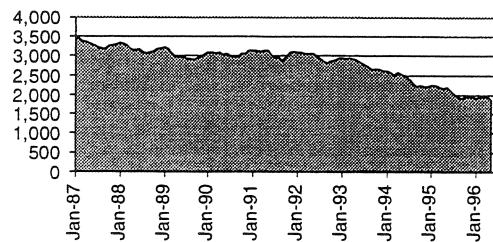
This region is one of three shorter duration regions in rural Minnesota. The characteristic that distinguishes this region from the other three is that caretakers are slightly more likely to return to AFDC more than once.

Total caseload steadily declines throughout the period. There is a slight cyclical nature that peaks in early spring and bottoms in mid-summer. However, the proportionate change in caseload from top to bottom of the cycle is small relative to the Hispanic Rural region.

For a typical caretaker, the entire time spent on AFDC is 19 months. The time is shorter than both metro regions and the Rural: Longer Duration region. Unlike the Hispanic Rural region, where entire length of stays are even shorter, the caseload for this region is less cyclical. A slightly higher percentage of caretakers return for more than one episode—53 percent—in comparison to the Hispanic Rural region at 49 percent.

The percent of single caretakers is small—72.7 percent. This is consistent with other research on the demographic characteristics of caretakers which suggests that multiple-caretaker families tend to stay on AFDC for shorter periods of time.⁴ Although the differences are small, caretakers and children tend to be older in this rural region. The only other region with, on average, older recipients is the Hispanic Rural region. The percentage of non-whites is 24, with Hispanics making up 19 percent of the population and American Indians making up 5 percent.

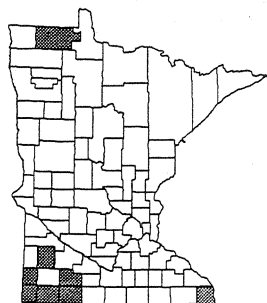
Figure 6
Total AFDC Caseload for Rural:
Shorter Duration/Multiple Episodes



Total Time on AFDC* - 19 mo.
Time Spent on First Episode* - 8 mo.
Time Spent Away From AFDC After the First Episode* - 30 mo.
Percent with More Than One Episode - 52.5%
(*Time is the median for primary caretakers in the region)

⁴ See the upcoming House Research working paper on the demographic characteristics of the AFDC and MFIP caretakers.

Demographic Characteristics of Rural: Shorter Duration/Multiple Episodes Region	
Average Age of Children	6.0
Average Age of Caretaker	31.3
Percent of Families with Three or More Children	8.8
Race	
Percent Asian American	0.5
Percent Black	0.2
Percent Hispanic	18.9
Percent American Indian	4.9
Percent White	75.6
Percent with less than a High School Degree	32.3
Percent Single Caretakers	72.7
Total Number of Cases	6,765



Rural: Shorter Duration/Single Episode

In many ways, this region is similar to the multiple episode region. What distinguishes this region is the higher percentage of caretakers that stay for fewer episodes. Also, likely related to that is a tendency for caretakers to stay away from AFDC for a longer period of time than any other region.

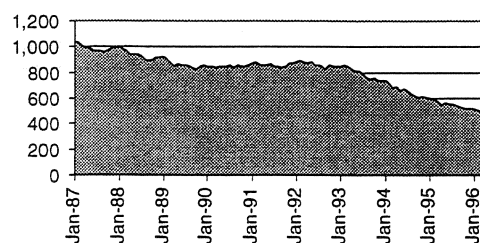
There is a general downward trend in caseload for this region. Unlike the Hispanic Rural region, this region does not have a noticeably strong cyclical pattern. There is a slight upward trend in caseload from the fall of 1990 to spring of 1993, but afterwards, the caseload resumes its downward trend.

The typical caretaker stays on AFDC for approximately 16 months. Caretakers from this region differ from the Rural: Shorter Duration/Multiple Episodes region in that slightly fewer caretakers return for more than one episode. Approximately 44 percent of the population returned for more than one episode. Consistent with that theme is the unusually long time spent away from AFDC after the first episode. Fifty percent of the caretakers stay away from AFDC for 72 months or longer.

The demographic characteristics provide little insight into why the length of stays are shorter for this region. The percentage of single caretakers in this region is the highest among the rural regions at 80 percent. The caretakers and children are slightly older than the Rural: Longer Duration region, but younger than the remaining rural regions. The percentage of non-whites is 26 percent, with Hispanics making up 12 percent and Asian Americans making up 8 percent.

Figure 7

Total AFDC Caseload Rural: Shorter Duration/Single Episode



Total Time on AFDC* - 16 mo.
Time Spent on First Episode* - 8 mo.
Time Spent Away From AFDC After the First Episode* - 72 mo.
Percent with More Than One Episode - 44.5%
(*Time is the median for primary caretakers in the region)

Demographic Characteristics of Shorter Duration/Single Episode Region	
Average Age of Children	5.7
Average Age of Caretaker	30.5
Percent of Families with Three or More Children	8.8
Race	
Percent Asian American	7.6
Percent Black	1.8
Percent Hispanic	12.0
Percent American Indian	4.0
Percent White	74.6
Percent with less than a High School Degree	31.8
Percent Single Caretakers	80.3
Total Number of Cases	2,317

Limitations and Other Considerations

Deciding upon a set of regions is subject to methodological choices. Like any cluster analysis, the method of clustering can result in different groupings of counties. For example, a non-hierarchical approach was chosen instead of a hierarchical approach, because the non-hierarchical approach seemed more directly relevant for policy purposes. The goal of the methodology was to construct a set of AFDC regions within the state. A hierarchical approach would produce a tree of AFDC regions grouping counties into smaller and smaller classifications. Albeit interesting, the additional groupings provide little additional information. However, by virtue of the method, the hierarchical approach can result in a different grouping of counties in comparison to the non-hierarchical approach.

Even though the regional classifications may persist for more than ten years, it may be useful to periodically update the clusters. When examining the total caseload, it was apparent that the AFDC population is changing over time. For example, total caseload changes from year to year and varies by region.

To test whether changes in the population will affect the cluster groupings, two separate cluster analyses were constructed. Using 1989-1990 and 1994-1995 data, AFDC regions were constructed for both time periods.⁵ The statistical analysis resulted in identical regions for both data sets which may indicate some stability over time. However, it is likely that regions will change and a periodic updating may be appropriate.

Finally, some Minnesota counties have small AFDC caseloads. For these counties, the classification may seem irrelevant. For example, a Hispanic Rural county may have only a few cases at a time and only a fraction of caretakers will have Hispanic backgrounds. The classification scheme may not reflect how the county portrays itself because there may be so few cases in any time period and the characteristics may vary substantially across time periods.

Conclusion

The recent welfare reform brought many changes, not only for caretakers, but also for the counties administering welfare. It is conceivable that the tasks taken on by counties will vary from region to region.

By conducting a cluster analysis, six distinct AFDC regions are identified. As noted in the introduction, among the more striking are two regions—Central Cities (Hennepin and Ramsey Counties) and Hispanic Rural. The Central Cities region exhibits a tendency towards longer times spent on AFDC. The Rural Hispanic region tends to include persons who stay on AFDC for a short period of time. Among the other regions are a set of rural regions which are divided based upon the time caretakers tend to remain on AFDC.

⁵ Only demographic data was used, since there is too little information to construct statistics on the entire time spent on AFDC for those present in 1994-1995.

Each region may be a community. By definition, a community is a group of individuals who share some commonality. In this case, the community may be of caretakers finding their way off of AFDC; as well as county administrators, caseworkers, job counselors, state employees, and others helping them to do so. Each one of these communities may be distinct enough that the lifestyle of caretakers and the tasks of counties may differ from one region to another.

At a minimum, the six regions may help policymakers to better understand the separate communities. Moreover, understanding regional differences in welfare reciprocity will help them understand the impacts of various policies upon different regions within the state.

The analysis may also help counties with similar characteristics in sharing information or finding ways to better reallocate resources. For example, the Hispanic Rural region may require tasks which are unique to other communities and may find it useful to share information with other counties within the Hispanic Rural region.

Ultimately, the information could help policymakers, county social workers, and others develop a set of policies and practices more consistent with the needs of each region. The development of this information could either be through the creation of regional organizations focused on helping specific sub-populations, or it could occur less formally through discussions of new ideas, policies, and practices.

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Appendix A - Data and Methodology

The data is from the Minnesota Department of Human Services and includes demographic information on every applicant deemed eligible for AFDC in Minnesota from November 1986 to June 1996. In order to simplify the data set, information on each household or AFDC case was written as one observation. Information on each household included characteristics of the caretakers, the adults who are typically the caretakers, and the dependents.⁶

To prepare the data for cluster analysis, the records were further collapsed into a record for each Minnesota county. Each record, post-aggregation, represents a county with summary statistics on eligible applicants over the ten-year period of the data set.

The analysis includes an estimate on the entire time spent on AFDC. That estimated time includes all months regardless of the number of times a caretaker may return. In order to construct this estimate, steps were taken to help assure that the first recorded period corresponds to the first episode. Otherwise, some caretakers may have been on AFDC before the first day or recording without anyone ever knowing about it. In order to help assure that the first recorded period was indeed the first, anyone recorded as receiving AFDC in the first year was dropped from the data set.

After considering several combinations, 11 variables were selected for the analysis. The variables are a combination of demographic and outcome variables, and are listed in Table 1A.

Table 1A Variables Selected for the Analysis
Average Age of Caretakers
Average Age of Dependents
Percent of Caretakers with Three or More Dependents
Percent Asian American
Percent Black
Percent Hispanic
Percent American Indian
Percent of Caretakers with less than a High School Diploma
Percent of Single Caretaker Cases
Expected Entire Length of Stay on AFDC
Expected Duration of First Episode on AFDC
Expected Recidivism Time Following First Episode on AFDC
Average Number of Periods
Total Number of Cases

⁶ Caretakers, instead of parents, more appropriately defines the adults in the AFDC household. For example, caretakers include relatives (uncles or aunts), stepparents, adoptive parents and foster parents.

The demographic variables were selected partly in consideration of current law and partly in consideration of past research. Current law makes separate provisions on several matters including those relating to single- and multiple-caretaker cases, caretakers under 20 years old, and caretakers with less than a high school diploma. It may be useful for welfare administrators, caseworkers, job counselors, and other observers of the welfare system to be aware of high concentrations of such individuals. Also, past research suggests that many of these demographic variables are significantly correlated to AFDC outcomes.⁷ For example, caretakers who are older than the average, younger, and with younger children tend to stay on AFDC for longer periods of time.

Instead of grouping all minorities into a non-white category, separate variables for each race were selected. Previous research finds significant differences in outcomes by race. In examining survival times, longer length of stays were found for Asian Americans, blacks, and American Indians. Whites and Hispanics tend to exhibit shorter length of stays. These differences might be masked if Hispanics were grouped with other minorities in a non-white variable.

The outcome variables—total time on AFDC, time spent on the first episode, and time spent away from AFDC after the first episode—are estimated using the Kaplan-Meier technique, a statistical technique used to estimate the time spent in a certain state (e.g., time spent on AFDC or time spent in remission from cancer).⁸ With the Kaplan-Meier technique, estimates of the probability of staying on AFDC is constructed using probability theory and considering that some caretakers may return to the system after the last day recorded in the data set.

The outcome variables were largely selected in consideration of policies that may affect counties. Many of the variables may signify the need for different day-to-day tasks for county workers. For example, if a high percentage of caretakers are expected to stay on MFIP for more than 60 months, then counties may disproportionately spend their time working with caretakers reaching their time limits. If, however, in any episode, caretakers tend to stay on MFIP for only a short period of time, then the counties may need to adjust their employment and training plans. Counties with caretakers that tend to stay for only one episode may consider a different type of employment and training plan than other counties.

The non-hierarchical, K-means, cluster analysis technique was selected. The technique derives a set of clusters based upon the similarity of the selected variables.⁹

⁷ O'Neill and O'Neill (1997), Fitzgerald (1995), Blank and Ruggles (1994 and 1996), Meyer and Cancian (1996), and Petersen (1995).

⁸ Median survival times were not used because of missing values. For some counties, 50 percent or more of the population is not expected to return to the AFDC system after their first episode. Under such cases, median recidivism times are missing. In a cluster analysis, missing values make it impossible to compute distance from a cluster and thus impossible to group these counties based upon recidivism times. See Collett (1994) for information on survival times.

⁹ More formally, the technique begins with a pre-specified number of starting points. It then assigns observations based upon their closeness to the starting point. Once the initial clusters are derived, the centroid, or average of the variables within each cluster is calculated. Counties are reassigned based upon their proximity to the new centroids. Afterward, a cycle begins where a new centroid is calculated and counties are continually

After working with several combinations of variables and several cluster sizes, the number of variables were minimized by dropping those which did not produce any difference in the clusters. Table 2A lists all the all variables considered for the analysis.

In conducting the cluster analysis, regardless of the number of pre-specified clusters or the combination of variables, two counties—Hennepin and Ramsey—consistently appeared as a separate cluster. To better identify clusters with the remaining counties, these counties were separated and a cluster analysis was conducted with the remaining counties.¹⁰

The following table lists all variables considered for the analysis. The variables selected are posted in the left hand column.

reassigned until there is a solution (Anderberg 1973, Norušis 1994).

¹⁰ Variables were standardized using the z-score to avoid placing too large of a weight on any single variable.

Table 2A Variables Considered for the Analysis				
Variable Chosen for Analysis	Percentage Variables	Numeric Variables	Variables Using Medians	Variables Using Averages
Average age of caretakers	Percent of caretakers less than 20 years old	Number of caretakers less than 20 years old		
	Percent of caretakers Between 20 and 25 years old	Number of caretakers between 20 and 25 years old		
	Percent of caretakers between 25 and 35 years old	Number of caretakers between 25 and 35 years old		
	Percent of caretakers over 35 years old	Number of caretakers over 35 years old		
Average age of dependents	Percent of dependents under 2 years old	Number of dependents under 2 years old		
	Percent of dependents between 2 and 5 years old	Number of dependents between 2 and 5 years old		
	Percent of dependents over 5 years old	Number of dependents over 5 years old		
	Percent of dependents under 5 years old	Number of dependents under 5 years old		
Percent of caretakers with three or more dependents			Median number of dependents	Average number of dependents
Percent of Asian Americans	Percent of non-whites	Number of Asian Americans		
Percent of Blacks		Number of Blacks		
Percent of Hispanics		Number of Hispanics		
Percent of American Indians		Number of American Indians		

Table 2A - cont. Variables Considered for the Analysis				
Variable Chosen for Analysis	Percentage Variables	Numeric Variables	Variables Using Medians	Variables Using Averages
	Percent of Whites	Number of Whites		
Percent of caretakers with less than a high school diploma	Percent of caretakers with a high school diploma	Number of caretakers with less than a high school diploma		
	Percent of caretakers with some post-secondary education	Number of caretakers with a high school diploma Number of caretakers with some post-secondary education		
Percent of single caretaker cases		Number of multiple and single caretaker cases		
Expected entire length of stay on AFDC		Total number of caretakers within the county		
Expected duration of first episode on AFDC			Median length of stay for all episodes on AFDC	
Expected recidivism time following first episode on AFDC			Median duration of first episode on AFDC	
Average number of episodes on AFDC	Percent with three or more periods		Median recidivism time following first episode on AFDC	
Total number of cases				

Appendix B - Summary Data

	Region					
	Central Cities	Metro	Hispanic Rural	Rural: Longer Duration	Rural: Shorter Duration/ Multiple Episodes	Rural: Shorter Duration/ Single Episode
Demographic Characteristics						
Age						
Average Age of Children	5.1	5.0	6.3	5.3	6.0	5.7
Average Age of Caretaker	30.4	30.1	31.9	30.3	31.3	30.5
Size of Household						
Percent of Households With One Child	76.6	82.1	65.5	79.5	74.1	75.8
Percent of Households With Two Children	13.0	12.2	19.7	13.8	17.1	15.4
Percent of Households With Three or More Children	10.4	5.8	14.8	6.7	8.8	8.8
Race						
Percent Asian American	11.5	3.8	0.5	1.1	0.5	7.6
Percent African American	41.4	6.2	0.5	1.0	0.2	1.8
Percent Hispanic	3.8	4.0	59.6	6.2	18.9	12.0
Percent American Indian	3.9	2.3	4.6	4.5	4.9	4.0
Percent White	39.4	83.8	34.8	87.2	75.6	74.6
Educational Attainment						
Percent with less than a High School Diploma	32.7	22.0	52.7	23.5	32.3	31.8
Percent with a High School Diploma	55.9	62.5	40.2	63.5	56.1	55.7
Percent with at Least Some Post-secondary Education	11.3	15.5	7.1	13.0	11.6	12.5

	Region					
	Central Cities	Metro	Hispanic Rural	Rural: Longer Duration	Rural: Shorter Duration/ Multiple Episodes	Rural: Shorter Duration/ Single Episode
Outcomes						
Total Time on AFDC (Mo.)						
25th Percentile	11.0	9.0	4.0	8.0	6.0	6.0
50th Percentile	36.0	28.0	12.0	24.0	19.0	16.0
75th Percentile	88.0	66.0	37.0	57.0	50.0	40.0
Time Spent on the First Episode (Mo.)						
25th Percentile	7.0	5.0	3.0	4.0	3.0	3.0
50th Percentile	20.0	14.0	5.0	11.0	8.0	8.0
75th Percentile	58.0	39.0	18.0	31.0	25.0	23.0
Time Spent Away from AFDC After the First Episode						
25th Percentile						
50th Percentile	35.0	32.0	34.0	26.0	30.0	72.0
75th Percentile	5.0	5.0	8.0	5.0	6.0	7.0
Number of Episodes						
Percent with One Episode	55.1	49.7	51.0	45.8	47.5	55.5
Percent with Two Episodes	23.9	24.7	22.3	24.4	23.7	22.7
Percent with Three Or More Episodes	21.0	25.6	26.7	29.8	28.8	21.8
Number of Cases						
Total Number of Cases	34,074	16,386	8,820	20,415	6,765	2,317
Minimum Percentage of New Cases in Any Given Month	0.9	0.7	1.3	1.0	1.2	1.3
Maximum Percentage of New Cases in Any Given Month	2.9	3.1	11.3	3.1	3.6	4.4

Appendix C - Listing of Counties by Region

Central Cities

Hennepin
Ramsey

Metro

Anoka
Blue Earth
Dakota
Olmsted
St Louis
Washington
Winona

Hispanic Rural

Clay
Kandiyohi
Marshall
Norman
Polk
Renville
Wilkin

Rural: Longer Duration

Beltrami
Benton
Big Stone
Carlton
Carver
Cass
Chisago
Crow Wing
Douglas
Freeborn
Goodhue
Hubbard
Isanti
Itasca
Kanabec
Koochiching
Lincoln
McLeod
Mille Lacs
Morrison
Mower
Murray

Rural: Longer Duration - cont.

Nicollet
Otter Tail
Pennington
Pine
Pope
Rice

Scott
Sherburne
Stearns
Steele
Stevens
Wabasha
Wadena
Waseca
Wright

Rural: Shorter Duration/Multiple Episodes

Aitkin
Becker
Brown
Chippewa
Clearwater
Cook
Dodge
Faribault
Fillmore
Grant
Kittson
Lac qui Parle
Lake
Lake of the Woods
Le Sueur
Mahnommen
Martin
Meeker
Red Lake
Redwood
Sibley
Swift
Todd
Traverse
Watonwan
Yellow Medicine

Rural: Shorter Duration/Single Episode

Cottonwood
Houston
Jackson
Lyon
Nobles
Pipestone
Rock
Roseau