

Hennepin County – Family Homeless Shelter Seasonality Study

Summary of Findings

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Executive Summary

For over ten years, the family homeless shelter system in Hennepin County, Minnesota has experienced persistent surges in occupancy in the summer and fall months. This surge in population places significant demands on the shelter system, requires families to use lower quality, overflow shelter capacity, and imposes significant financial costs on the County. Given the consistent and troubling nature of this demand surge, Hennepin County funded this study in order to develop a greater understanding of this phenomenon. Therefore, this study seeks to answer the following questions:

1. Is there a statistically significant surge in family shelter usage in Hennepin County during the summer and fall months?
2. Is the summer and fall surge in family shelter usage in Hennepin County a unique event or is the same phenomenon present in other communities around the nation?
3. What factors explain the surge in family shelter usage in Hennepin County during the summer and fall months?

In this study, data from the State of Minnesota MAXIS system, Hennepin County, and other jurisdictions were used to answer the research questions. The analysis suggests that there is a statistically significant surge in family shelter demand and usage in Hennepin County during the summer and fall months. In addition, there is evidence that other municipalities around the country (Massachusetts, Memphis, and Ramsey County) experience a similar phenomenon. The presence of this phenomenon in other settings is important because it suggests causes that are not specific to Hennepin County.

There are four key takeaways from the analysis of potential causes of the surge. First, it appears that increased entries into shelter, rather than a reduced level of exits, explain the increase in shelter population. Second, non-resident entries into shelter during the summer and early fall are not the cause of the surge, but non-resident families appear to exacerbate its severity. Third, a significant percentage of families seeking shelter in Hennepin County do so following a spell in a doubled-up housing situation. Finally, and most notably, families with school-aged children are a primary driver of the increased shelter population during the summer and early fall.

This analysis suggests that there are multiple potential causes of this phenomenon, including other unidentified causes that were not investigated. Although the causation may be complex, there is strong evidence that increased entries into the shelter system by families with school-aged children are a significant factor. Given this fact, Hennepin County may choose to target resources and energy on families with school-aged children prior to the end of the school year. County staff have already begun discussions with homeless and highly mobile student liaisons at both the Minneapolis Public Schools and the State of Minnesota. There is a great opportunity to intervene with unstably housed families prior to the end of the school year, which may help the county reduce the severity of the family shelter surge. Additional research could be conducted to understand why families with school age children enter shelter at increasing rates during the summer and early fall.

Introduction

For over ten years, the family homeless shelter system in Hennepin County, Minnesota has experienced persistent surges in occupancy in the summer and fall months. This surge in population places significant demands on the shelter system, requires families to use lower quality, overflow shelter capacity, and imposes significant financial costs on the County. Given the consistent and troubling nature of this demand surge, Hennepin County funded this study in order to develop a greater understanding of this phenomenon. The following three research questions guided the research agenda for this study:

1. Is there a statistically significant surge in family shelter usage in Hennepin County in the summer and fall months?
2. Is the summer and fall surge in family shelter usage in Hennepin County a unique event or is the same phenomenon present in other communities around the nation?
3. What factors explain the surge in family shelter usage in Hennepin County during the summer and fall months?

This report is split into multiple sections. First, a review of relevant literature is provided to offer context for this study. Second, the methods used in this study are summarized. The third section includes the findings of the study, while the fourth section summarizes the limitations of this research. Finally, program and policy implications are discussed.

The findings of this report are significant because understanding the nature and causes of the shelter surge phenomenon is the first step in developing responses to this problem. Given the significant consequences of shelter entry, especially for children (Bassuk & Rosenberg, 1990; Miller & Lin, 1988; Rescoria, Parker, & Stolley, 1991; Zima, Wells, & Freeman, 1994) greater knowledge about the causes of shelter entry is beneficial as our society seeks to address this

troubling social problem. Therefore, this research may inform policy and practice interventions that Hennepin County may implement to address this phenomenon.

Literature Review

A limited body of literature notes seasonal patterns in homeless shelter usage. Within that existing literature, there are three major observations that are relevant for this study. First, prior literature notes seasonal patterns in shelter use. Second, potential explanations for the seasonal patterns are proposed, and finally, the importance of entries into and exits from shelter are noted. While these observations provide helpful context for this study, none of these studies examine the causes of this phenomenon from an empirical perspective. Therefore, this study seeks to fill this gap in the literature by identifying causes of the Hennepin County family shelter surge using empirical data.

The first key finding from the literature is the consensus that there are seasonal patterns in shelter usage. A key distinction is drawn in the literature between patterns for individual shelters and those for family shelters. According to Culhane, Metraux, and Wachter (1999), “well-known seasonal trends cause daily census numbers to fluctuate, with the daily family shelter census peaking in the summer months while the daily adult shelter census peaks in the winter months” (p. 210). In their study of homeless adults in New York City and Philadelphia, Culhane and Kuhn (1998) noted an increase in individual shelter admissions during the winter months. In their study of the family shelter population in New York, O’Flaherty and Wu (2006) found a statistically significant increase in family shelter applications during the summer months of July and August. Although limited in number, these studies provide evidence of seasonal trends in homeless shelter usage.

The literature provides no empirically based explanations for the seasonal patterns identified in the preceding paragraph, but the authors do provide hypotheses about the potential causes. Culhane and Kuhn (1998) suggested that winter surges in adults shelters may be driven by people who have inadequate utilities or by typically unsheltered individuals who may seek temporary shelter due to harsh winter conditions. O’Flaherty and Wu (2006) provided the following potential explanations for the summer surge in family shelters: a) families may be willing to be more mobile when school is not in session, b) doubled-up families find that their hosts may be less accommodating during the summer when temperatures are higher and children are at home all day, or c) a reduction of exits from family shelters during the summer may lead to an increase in the summer population, which could be the result of families not wanting to leave an air conditioned shelter (p. 105). These hypotheses do not explain the surge in Hennepin County, but rather provide potential causes to explore in this study.

Finally, the existing literature provides important guidance for studies on shelter seasonality. Both Culhane and Kuhn (1998) and O’Flaherty and Wu (2006) noted the importance of considering both shelter entries and shelter exits as potential explanations for surges in shelter populations. O’Flaherty and Wu found that both increased demand for family shelter and reduced exits contributed to the significant growth in the family shelter population in New York City. This finding from the literature informed the analysis of the Hennepin County family shelter surge.

Methods

This quantitative study used empirical data to answer three research questions. The data came from a variety of different sources and multiple inferential statistical techniques were used.

Data Sources

The family shelter data on which this study is based comes from Hennepin County and the State of Minnesota. Details on family shelter usage, entry dates, exit dates, and demographic information on shelter families were collected from the State of Minnesota's MAXIS data system. The state uses MAXIS to determine eligibility for a variety of social welfare programs. The majority of the analyses rely on MAXIS information from January 2004 through March 2014. A second source of data is the Hennepin County shelter team that collects data on families in shelter during the application and admission process. Shelter data was used to analyze seasonality of requests for shelter and the residency status of families seeking shelter. A third source of data from Hennepin County was the intake interviews that are conducted when a family enters the family shelter system. In order to analyze the reasons for shelter entry, I coded 839 responses on the intake interview forms for the following question, "Reason for Homelessness Today."

Aggregate data was used to investigate the role of utility shut-offs and housing evictions on shelter entry. Eviction data was obtained from the Hennepin County court system on a monthly basis for 2006 through 2013. Data on utility shutoffs by Xcel Energy and Centerpoint Energy in Hennepin County from 2009 to 2013 was collected from the Minnesota Public Utilities Commission website. This data was aggregate in nature and therefore attempts to link it to the individuals within the shelter system were unsuccessful. The inability to link this data to the shelter data limited the utility of these data sources to help explain the phenomenon of family shelter seasonality.

An additional category of data came from municipalities around the country. Statistics on shelter populations and shelter requests and entries were provided by Ramsey County, Minnesota (2010-2013), Memphis, Tennessee (2009-2014), and the State of Massachusetts

(2009-2014). The data collected from other communities were aggregate and provided evidence of the total number of people (adults and children) living in family shelter on a daily or monthly basis. Given the aggregate nature of the data, specific analyses on family composition and demographics could not be performed.

Data Analysis

A range of analytical techniques were used to answer the three research questions. In all cases, the data described in the previous paragraphs were imported to Stata 12.0 for descriptive and inferential statistical analysis.

The first research question asks whether there is a statistically significant surge in family shelter usage in Hennepin County. To answer this question, descriptive statistics and an analysis of variance (ANOVA) were used to demonstrate the significance of the family shelter surge. In addition, an ordinary least squares regression was used to analyze monthly variations in shelter populations. In this regression, shelter population was the dependent variable and month and year dummy variables served as the independent variables. The coefficients for the month dummies provided evidence of the changes in the shelter population throughout the year.

To answer the second research question, ordinary least squares regressions were performed. In these regressions, requests for family shelter in different cities or states served as the dependent variables while month and year dummies were once again used as independent variables. Coefficients for the month dummy variables demonstrated the changes in demand for family shelter throughout the year.

Finally, to answer the third research question, both ordinary least squares regressions and binary logistic regressions were used to analyze potential causes of the surge. Most of the analyses for the third research question used basic regression models similar to those described

above. To analyze the role of the school on family shelter population, a binary logistic regression model was used to estimate the odds of a family having at least one school-aged child (defined as a child age five or older). In this model, families with school-aged children was the dependent variable while month and year dummy variables were the independent variables.

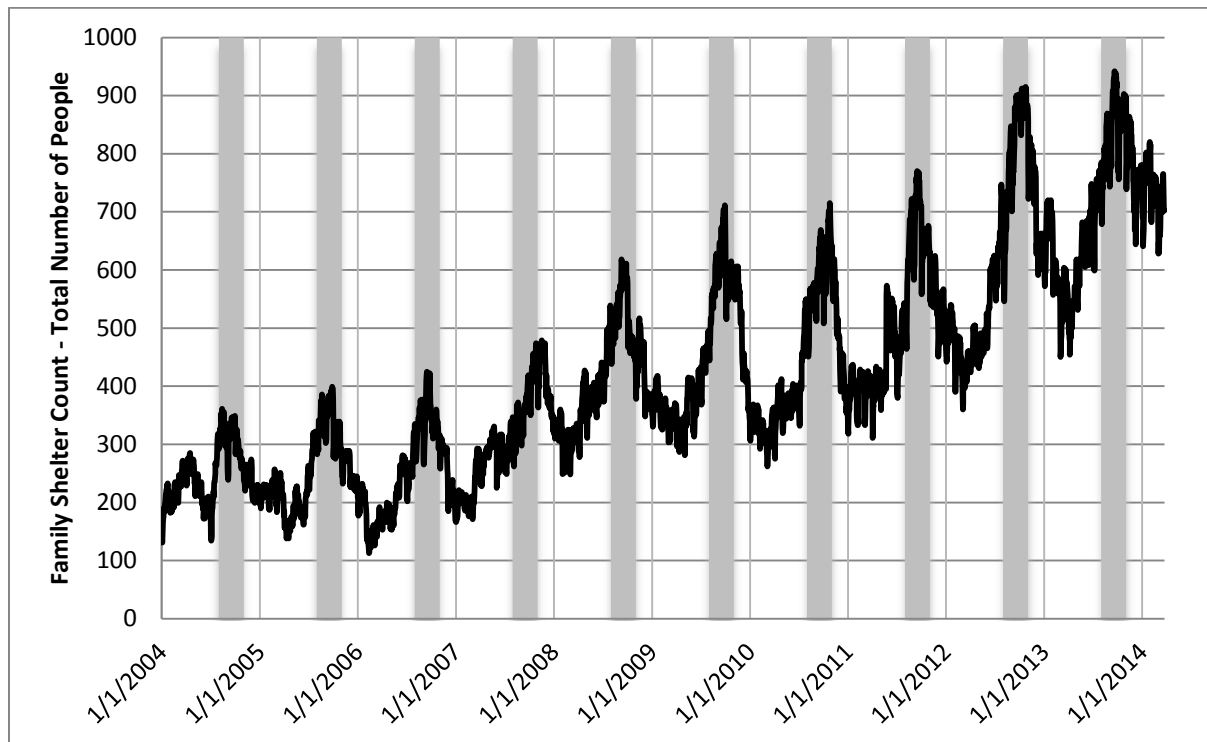
Findings

In this section, I provide answers to the three research questions that drove this study. First, I quantify and statistically prove the presence of a surge in family shelter population in Hennepin County during the summer and fall months. Second, using data from other cities and states, I demonstrate the presence of a summer/fall surge in other communities. Finally, potential causes of the surge are analyzed and discussed.

Research Question One: Is there a statistically significant surge in family shelter usage in Hennepin County in the summer and fall months?

The noticeable increase in family shelter population in Hennepin County during the late summer and early fall prompted the need for this study. Given the strength and persistence of the surge, basic descriptive statistics are effective in demonstrating the existence of this phenomenon. Figure 1 below charts daily family shelter population (total individuals) from 2004 until early 2014 in Hennepin County. This graphic provides visual evidence of the surge and the shaded regions in the graph represent the surge months of August, September, and October.

Figure 1: Daily Shelter Population, 2004-2014
 Source: Hennepin County and State of Minnesota MAXIS Database



While Figure 1 provides strong visual evidence of the surge, additional analysis is required to demonstrate the statistical significance of the surge. Table 1 below provides the monthly means for family shelter counts from January 2004 through March 2014 in the first column. In the columns to the right, an ANOVA for each monthly mean is provided. For example, the difference between the September and January mean shelter counts is 185.3 people and the difference is statistically significant ($p < .01$). The ANOVA demonstrates that there are statistically significant differences between the late summer/early fall and the remainder of the year, thus providing statistical evidence of the surge.

Table 1
Analysis of Variance (ANOVA) of mean family shelter population

	Analysis of Variance (ANOVA)											
	Mean	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Jan	381.6											
Feb	353.8	(27.5)										
Mar	347.3	(34.4)	(6.5)									
Apr	332.3	(49.3)	(21.5)	(14.9)								
May	354.8	(26.9)	1.0	7.5	22.5							
Jun	382.5	0.8	28.7	35.2	50.1	27.7						
Jul	425.2	43.5	71.4**	77.9**	92.9**	70.4**	42.7					
Aug	505.0	123.4**	151.3**	157.8**	172.7**	150.3**	122.6**	79.9**				
Sep	566.9	185.3**	213.1**	219.7**	234.6**	212.1**	184.5**	141.7**	61.9*			
Oct	542.3	160.6**	188.5**	195.0**	210.0**	187.5**	159.8**	117.1**	37.2	(24.6)		
Nov	497.0	115.4**	143.3**	149.8**	164.7**	142.3**	114.6**	71.9**	(8.0)	(69.9)**	(45.2)	
Dec	412.1	30.5	58.3	64.8*	79.8**	57.3	29.6	(13.1)	(92.9)**	(154.8)**	(130.2)**	(84.9)**

** p<.01; * p<.05

Note: Difference in means calculated by subtracting column mean from row mean.

Based on data from 2004-2014.

Source: Hennepin County and State of Minnesota MAXIS database.

Finally, a simple regression model with family shelter population serving as the dependent variable is another tool to provide statistical evidence of the surge. Month and year dummies are created to help identify changes over time and within the year. Therefore, the coefficients for each month, detailed in Table 2, describe the predicted family shelter population for a particular month, relative to the reference month, February, after controlling for year. This model demonstrates that the September family shelter population is predicted to be about 250 people higher than the shelter population in February, after controlling for year.

Table 2
Monthly regression coefficients for family shelter population

	Dependent Variable	
	Shelter Population	
	Coefficient	SE
January	27.6**	4.28
February	-	-
March	1.0	4.30
April	15.3**	4.45
May	37.7**	4.42
June	65.4**	4.45
July	108.1**	4.42
August	188.0**	4.42
September	249.9**	4.45
October	225.2**	4.42
November	180.0**	4.45
December	95.1**	4.42
F Statistic	1,892.8	
Adj. R Squared	0.914	

* p value < .05; ** p value < .01

Based on data from 2004-2014.

Source: Hennepin County and State of Minnesota MAXIS database.

Research Question Two: Is the summer/fall surge in family shelter usage in Hennepin County a unique event or is the same phenomenon present in other communities?

As noted in Culhane, Metraux, and Wachter (1999), there are “well-known” seasonal trends in individual and family shelters (p. 210), and O’Flaherty & Wu (2006) provided empirical evidence for such a seasonal surge in family shelter admissions in New York City. In order to bolster the findings from the literature, additional settings were analyzed to determine whether the surge is a function of policies and circumstances that are unique to Hennepin County, or whether this is a phenomenon that is found in other settings around the country.

Clean comparisons to other communities are challenging given the different policy and program frameworks that are in place around the country. Hennepin County is unique because it is a “right to shelter” county that guarantees shelter to any person or family that meets the eligibility requirements for a homeless shelter. The right to shelter policy requires Hennepin

County to expand shelter capacity to meet demand. Counties without right to shelter policies and fixed shelter capacity may not experience a surge in shelter population due to the capacity constraints of their shelter systems. In such cases, requests for shelter may be a better variable to identify seasonal changes in the demand for family shelter services.

As part of this study, I contacted fourteen communities around the country to ask for data regarding family shelter usage. The purpose of this request was to determine whether surges in shelter usage were evident elsewhere. I received data and feedback from five communities, which included conversations with staff members from those municipalities. The facts and circumstances in each setting are unique therefore, one should use caution before generalizing any single finding. Although it is difficult to draw clean comparisons, this analysis, combined with the assertions from literature, suggest that a summer/fall surge is a broader phenomenon that exists elsewhere in the country.

Of the communities that responded to the request for data, two had no evidence of a summer surge. Based on conversations with staffers, family shelter usage in Washington, D.C. and Portland, Oregon is greater in the winter months than in the summer months. In both cases, these municipalities have right to shelter policies during the cold months which means that shelter capacity expands to meet the need during the winter months. In the case of Washington, D.C., shelter populations are purposefully kept low during the fall months to ensure that sufficient vacancies exist once the winter season arrives. Therefore, these two communities experience family shelter usage patterns that are opposite of those experienced in Hennepin County, but there are obvious policy explanations for this variation.

Table 3
Monthly regression coefficients for shelter requests by community

	Dependent Variables: Requests or Applications for Shelter Entry					
	Ramsey County ^a		Massachusetts ^b		Memphis ^c	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
January	116.8	110.2	37.0	50.0	95.2	71.3
February	-	-	-	-	347.9**	83.7
March	69.8	110.2	50.4	50.0	110.4	73.6
April	127.8	110.2	40.4	50.0	-	-
May	192.3	110.2	71.9	50.0	106.8	71.3
June	296.3*	110.2	95.0	50.0	372.1**	76.4
July	429.8**	110.2	160.0**	52.4	295.6**	76.4
August	453.5**	110.2	113.6*	52.4	84.0	71.3
September	436.3**	110.2	82.1	52.4	193.8*	71.3
October	370.5**	110.2	67.1	52.4	136.4	73.6
November	229.8*	110.2	50.9	51.4	149.6*	73.6
December	140.8	110.2	50.9	51.4	209.9*	83.7
F Statistic	4.2		2.6		5.2	
Adj. R Squared	0.489		0.264		0.558	

* p value < .05; ** p value < .01

a Source: Ramsey County Community Human Services, 2010-2013.

b Source: Massachusetts Department of Housing and Community Development, 2009-2014.

c Source: Community Alliance for the Homeless, Memphis, Tennessee, 2009-2014.

Three other communities responded to our request for data. Regression models that use shelter requests as dependent variables for Ramsey County, Minnesota, Massachusetts, and Memphis, Tennessee are summarized above in Table 3. First, Ramsey County, Minnesota, provided detail on shelter requests by month. Unlike Hennepin County, Ramsey County does not have a right to shelter policy. As a result, a spike in demand for shelter services may not result in an increase in shelter population due to the constraint of fixed shelter capacity. Therefore, the analysis of requests for shelter in Ramsey County provides insight into the seasonality of shelter demand. Second, Massachusetts agreed to share state-level shelter statistics for this study. Massachusetts is a right to shelter state, which makes it a good comparison to Hennepin County. After analyzing the shelter population or caseload, there was little evidence of seasonality in those numbers. On the other hand, an analysis of shelter requests

showed statistically significant signs of a summer/fall surge in shelter demand in Massachusetts. Based on conversations with the research staff at the Massachusetts Department of Housing and Community Development, the family shelters in Massachusetts have very long average stays – over seven months – therefore monthly variations in demand have a relatively small impact on shelter population (W. Bartosch, personal communication, September 25, 2014). In comparison, Hennepin County family shelter stays average only about 47 days (Hennepin County, 2014); therefore, monthly changes in entries have a major impact on shelter population. Finally, Memphis, Tennessee shared data regarding requests for family shelter. According to staff members, Memphis experiences an increase in demand for shelter services in the summer months (K. Kitchin, personal communication, June 26, 2014). An analysis of shelter requests in Memphis does demonstrate the presence of a demand surge in June and July, but it also shows a bump in demand in February which remains unexplained in this study.

Research Question Three: What Factors Explain the Summer/Fall Surge in Family Shelter Usage in Hennepin County?

Having demonstrated the statistical significance of the family shelter surge in Hennepin County and finding preliminary evidence of similar surges in other communities, attention turns to the potential causes of the surge. While the potential causes outlined in this section may have individual explanatory power, literature suggests that general housing mobility is greater during the summer months. Goodman (2001) conducted a study on seasonality of the housing market. In his study, Goodman found that housing mobility is much higher in the summer months. Notably, Goodman found that this housing mobility was evident across demographic groups, throughout the country, and present over the past quarter century. While Goodman's research

does not explain the Hennepin County shelter surge, the phenomenon of increased summer mobility may contribute to the shelter surge that is the focus of this study.

The first step in determining the causes of the surge is to assess the role of entries and exits on the shelter population. Second, a list of potential causes was identified after understanding how entries and exits contribute to the phenomenon. I developed the list of causes based on conversations with Hennepin County employees and from the hypothesized causes outlined in the literature. The potential causes of the shelter surge that I analyze include: increased evictions during the summer, utility shutoffs, an increase in families moving into Hennepin County during the summer months, impact of the school calendar, and the inability to maintain doubled-up living situations during the summer months.

Increased entries and reduced exits. To begin, I first assess whether the shelter surge phenomenon is a function of increased entries, decreased exits, or both. O’Flaherty and Wu (2006) noted that the “common wisdom” is that increased entries are the cause of the surge in family shelter populations during the summer, but O’Flaherty and Wu proceeded to argue that a reduction in exits could be an alternative explanation. As referenced earlier, Culhane and Kuhn (1998) and O’Flaherty and Wu noted the importance of considering both the rate of entries into and exits from shelter on the number of families in shelter. In order to understand the drivers of the surge, ordinary least squares regression models were used to generate coefficients for each month of the year for a range of dependent variables including total family shelter population, requests for shelter, entries into shelter, and shelter exits. This regression model uses year as a covariate in order to control for the impact of changes on a year-to-year basis.

Table 4
Monthly regression coefficients for shelter population, requests, entries, and exits

	Dependent Variables							
	Population ^a		Requests ^b		Entries ^a		Exits ^a	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
January	27.6**	4.3	48.8**	17.6	69.5**	21.1	15.8	25.5
February	-	-	-	-	-	-	-	-
March	1.0	4.3	41.8*	17.6	38.0	21.1	64.0*	25.5
April	15.3**	4.5	73.0**	17.6	73.0	21.8	57.3*	26.4
May	37.7**	4.4	67.0**	17.6	96.6**	21.8	62.4*	26.4
June	65.4**	4.5	99.0**	18.2	128.4**	21.8	110.2**	26.4
July	108.1**	4.4	152.9**	18.2	194.6**	21.8	108.7**	26.4
August	188.0**	4.4	173.7**	18.2	240.9**	21.8	192.1**	26.4
September	249.9**	4.5	175.5**	18.2	219.8**	21.8	168.8**	26.4
October	225.2**	4.4	124.0**	18.2	155.3**	21.8	191.7**	26.4
November	180.0**	4.5	73.4**	18.2	87.6**	21.8	151.5**	26.4
December	95.1**	4.4	37.9**	18.2	33.3	21.8	113.1**	26.4
F Statistic	1,892.8		44.1		21.6		14.5	
Adj. R Squared	0.914		0.891		0.780		0.699	

* p value < .05; ** p value < .01

a Based on data from 2004-2014, total number of people.

b Based on data from 2006-2014, total number of households.

Source: Hennepin County and State of Minnesota MAXIS database.

Table 4 provides additional detail on the scope and nature of the family shelter surge in Hennepin County. Each column lists the regression coefficients that represent the number of people (or family units in the case of Requests), relative to the reference month February after controlling for year, for the following dependent variables: individuals in family shelter (Population), number of requests for shelter (Requests), number of entries into shelter (Entries), and number of exits from shelter (Exits). Because families enter and exit shelter with great frequency, shelter spells were established to help mark entries and exits from shelter. A spell, as constructed in this study, is complete if a family exits shelter and does not return within seven days.

When analyzing family shelter population, the three months with the highest coefficients are August, September, and October. During these three months, the occupancy within the shelter system is greatest. The second and third columns of Table 4 list coefficients for

regression models in which requests for shelter and entries into shelter serve as the dependent variables. Therefore, these regression models seek to provide a better understanding of the demand for shelter services and the flow of families into shelter over the course of a year. As noted in the shaded boxes, the three highest months for shelter requests and entries are July, August, and September. Therefore, the increase in entries precedes the surge in shelter population by one month, which is consistent with the roughly 45 day average stay in Hennepin County family shelters (Hennepin County, 2014). Finally, the fourth column of Table 4 analyzes the rate of exit from shelter by month. The months in which exits from shelter are the greatest include August, September, October, and November. Unlike the findings in O’Flaherty and Wu (2006), in Hennepin County, there is not a decreasing level of exits in the summer months that contribute to the increase in family shelter population.

This analysis suggests that the Hennepin County family shelter surge is driven by increased entries into the shelter system during July, August, and September, and not a reduction in exits. The increased entries in July, August, and September produce the surge in shelter counts that peak in August, September, and October. The surge conditions begin to diminish in October as exits from shelter begin to exceed entries. This pattern holds until the end of the year and shelter counts reach their lowest levels during the first quarter of the year.

Evictions and utility shutoffs. Prior studies have drawn a link between evictions and shelter entry (Shinn et al., 2013; Bassuk et al., 1997) so an examination of this potential cause of the surge is warranted. Unfortunately, due to data limitations, attempts to link eviction and utility data to the Hennepin County micro data for individuals were unsuccessful. The eviction and utility data lacked the individual details needed to match the data to the shelter database.

Therefore, only general observations about the seasonality of evictions and utility shutoffs were made.

The first general observation is that evictions in Hennepin County do increase once the weather warms in the spring. Using data from the Hennepin County court system over eight years, I found that evictions are greatest during January, June, July, and August. January evictions appear to be an attempt to catch-up for a dearth of evictions in November and December, which may be the result of landlords who may be reluctant to evict over the holiday season. Following the January peak, evictions quickly decline for the remainder of the winter months until there is a significant pickup in evictions during the summer.

Table 5
Monthly regression coefficients for evictions and utility shutoffs

	Dependent Variable					
	Evictions ^a		Xcel Energy Shutoffs ^b		Centerpoint Shutoffs ^b	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
January	269.6**	34.6	15.4	242.1	61.0	281.9
February	-	-	-	-	-	-
March	100.1**	34.6	(27.6)	242.1	232.8	281.9
April	143.5**	34.6	702.4*	242.1	973.5**	281.9
May	195.9**	34.6	1,530.6**	242.1	2,244.0**	296.2
June	281.1**	34.6	1,820.6**	242.1	3,661.2**	296.2
July	271.4**	34.6	2,051.8**	242.1	4,559.4**	296.2
August	282.6**	34.6	1,790.0**	242.1	5,230.0**	296.2
September	162.1**	34.6	1,438.6**	242.1	4,755.4**	296.2
October	149.3**	34.6	295.4	242.1	1,949.6**	296.2
November	75.8*	34.6	132.0	242.1	696.4*	296.2
December	65.8	34.6	(106.4)	242.1	83.4	296.2
F Statistic	29.0		22.3		75.1	
Adj. R Squared	0.842		0.844		0.946	

* p value < .05; ** p value < .01

a Source: Hennepin County court system; based on data from 2006 - 2013

b Source: Minnesota Public Utility Commission; based on data from 2009 - 2014

Second, policy significantly influences the seasonality of utility shutoffs in Minnesota. The State of Minnesota Cold Weather Rule provides households with opportunities to prevent their utilities from being shut off during the cold winter months. The Cold Weather Rule takes effect on October 15 and lasts until April 15. The impact of the Cold Weather Rule is evident in the regression results in Table 5 as shutoffs are greatest during May through September. Like with eviction data, the utility data is aggregate in nature and therefore it is impossible to link that data to the individuals in the shelter system. While neither the eviction nor the shutoff data explains the surge, this data does support the overall thesis, outlined by Goodman (2001), that housing mobility is greater in the summer months.

Non-resident families drive summer shelter demand. One potential explanation of this surge is that non-resident families move to Minnesota during the summer to take advantage of more favorable social services and guaranteed access to shelter. Hennepin County shelter staff determine residency status for families during shelter intake interviews; a family is determined to be a resident if they have lived in Minnesota for over thirty days. Table 6 below summarizes regression models that predict the level of shelter requests and shelter entries for both residents and non-residents.

Table 6
Monthly regression coefficients for shelter requests and entry by residency status

	Dependent Variables							
	Residents - Requests		Residents - Entries		Non-residents - Requests		Non-residents - Entries	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
January	52.7**	18.9	16.7*	6.7	6.4	6.2	3.8	3.4
February	-	-	-	-	-	-	-	-
March	31.7	18.9	10.7	6.7	17.6**	6.2	8.0*	3.4
April	69.7**	18.9	21.6**	6.7	16.1**	6.2	7.6*	3.4
May	55.4**	18.9	15.9*	6.7	18.6**	6.2	7.0*	3.4
June	84.4**	18.9	28.0**	6.7	34.4**	6.2	17.4**	3.4
July	127.6**	18.9	39.9**	6.7	46.7**	6.2	20.3**	3.4
August	133.6**	19.8	41.6**	7.0	63.0**	6.5	30.2**	3.5
September	145.4**	19.8	42.8**	7.0	55.5**	6.5	24.5**	3.5
October	103.8**	19.3	33.4**	6.8	21.6**	6.4	6.9*	3.4
November	72.1**	19.3	20.5**	6.8	18.5**	6.4	7.2*	3.4
December	49.5*	19.3	11.9	6.8	5.6	6.4	3.7	3.4
Constant	217.5**	18.2	89.9**	6.4	22.3**	6.0	9.0**	3.3
F Statistic	28.2		16.4		19.4		9.5	
Adj. R Squared	0.858		0.773		0.803		0.653	

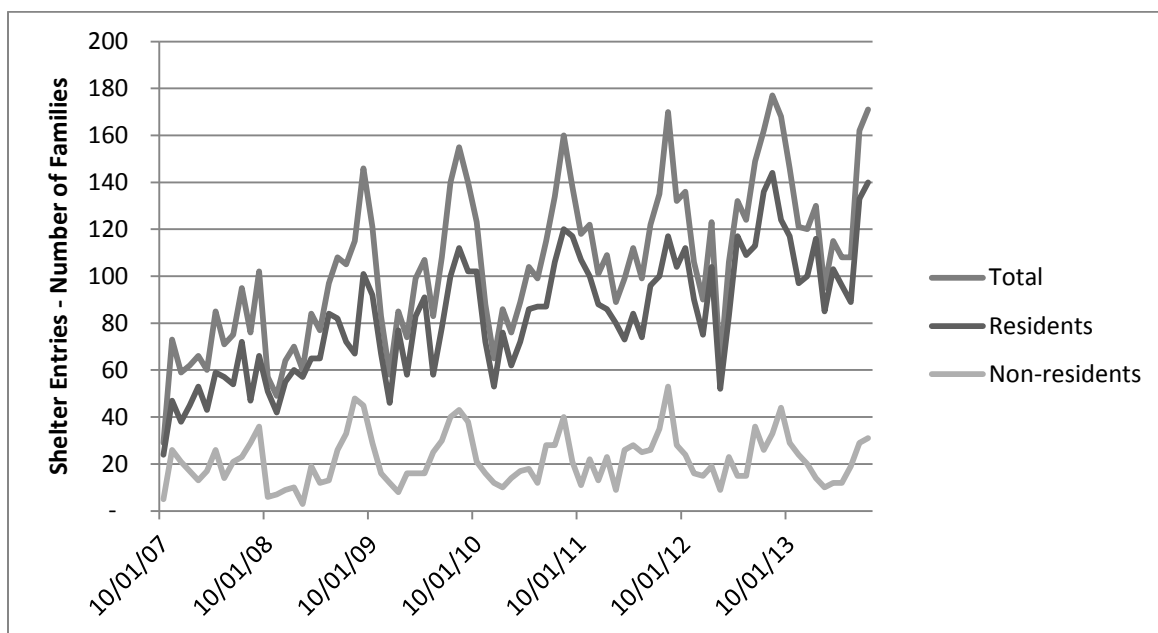
* p value < .05; ** p value < .01

Based on data from 2007 - 2014, number of family units

Source: Hennepin County Shelter Statistics

This analysis suggests that there is a summer/fall surge among both residents and non-residents. Entries into shelter peak in July, August, and September for resident families, and the same phenomenon exists for non-resident families. Figure 2 below provides visual evidence of the impact on non-resident families on the summer/fall surge. While a strong surge exists among residents, the addition of non-residents during the summer months exacerbates the severity of the surge. Given the relative lack of non-resident entries during the non-surge months, the effect of non-residents is primarily evident during the summer surge months.

Figure 2 – Shelter Entries by Residency Status
Source: Hennepin County



School calendar. Another potential explanation for the summer and fall surge in family shelter population is the impact of the school calendar on family decision-making. One potential theory is that families in difficult housing circumstances struggle to maintain stability through the remainder of the school year and then choose to enter shelter once school is out of session. Another hypothesis is that many unstably-housed families rely on doubled-up situations with friends or family that become increasingly difficult once children are out of school and around the home during the summer. The impact of the school calendar on family shelter usage was noted in both the literature as well as in discussions with Hennepin County staff. Therefore, the following analysis attempted to identify the role of the school calendar on family shelter usage.

In order to isolate the impact of the school calendar on shelter population, families in the Hennepin County shelter database were broken out into two categories: those families with at least one school-aged child (defined as a child five years old or older) and those families without

any school-aged children. After splitting families into these two categories, the shelter population was split into the two groups to assess whether the overall seasonal patterns were evident in both sub-populations. The findings are stark and strongly suggest that families with school-aged children drive the seasonal surge in family shelter usage during the summer and fall.

Table 8
Monthly logistic regression odds ratios for the odds of a family in shelter having school aged children

	Dependent Variables	
	Odds of School Aged Family	
	Odds Ratio	SE
January	1.28**	0.024
February	1.18**	0.023
March	1.04*	0.019
April	1.07**	0.020
May	-	-
June	1.33**	0.024
July	1.35**	0.023
August	1.47**	0.025
September	1.57**	0.027
October	1.63**	0.028
November	1.48**	0.026
December	1.26**	0.023
Pseudo R Squared	0.007	

* p value < .05; ** p value < .01

Based on data from 2004 - 2011.

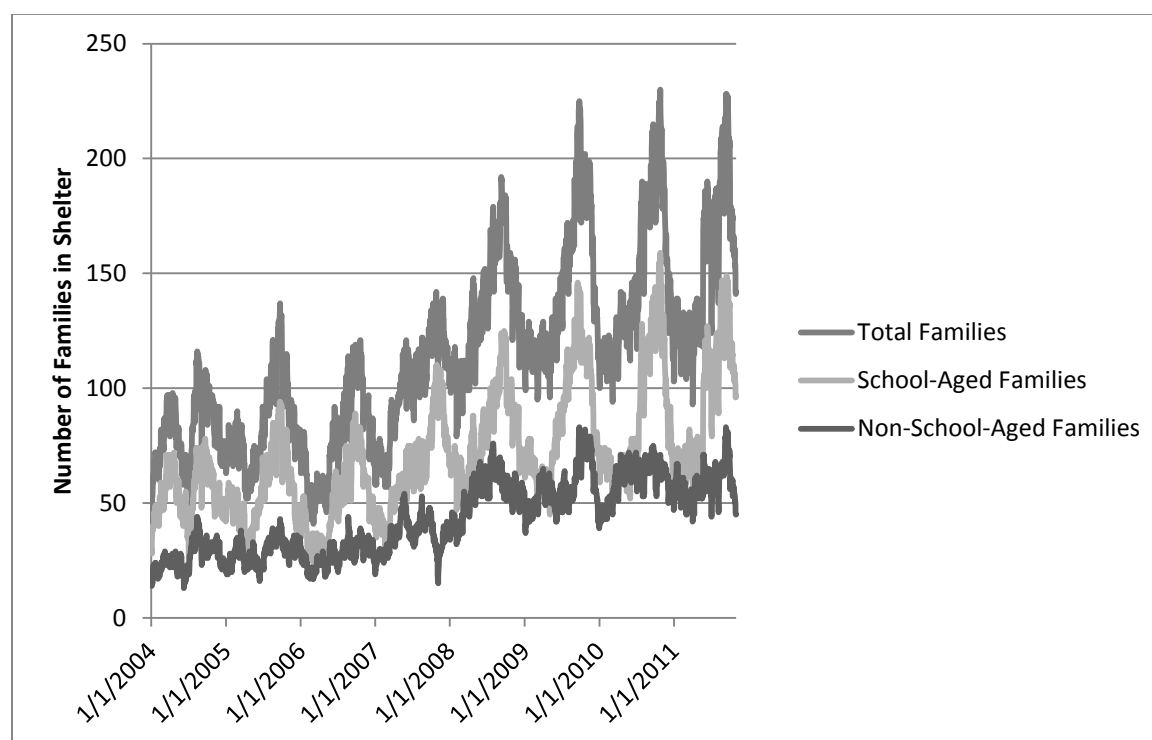
Source: Hennepin County and State of Minnesota MAXIS database.

The results of the binary logistic regression outlined in Table 8 suggest that the odds of a family in shelter having school-aged children are lowest in May. This would lend credence to the hypothesis that families seek to maintain stability through the end of the school year (which ends in early June in Minnesota). The odds of a family in shelter having school-aged children increases substantially after May with the odds being 33% greater in June relative to May and 63% greater in October relative to May. It is important to note that these figures represent the odds of a family being in shelter, not entering shelter. Unfortunately, due to data limitations, I was unable to break out the families requesting shelter and entering shelter into those with school-aged children and those without school-aged children. Therefore, an open question

remains as to whether the flow of family with school-aged children entering shelter slows when school starts up again in early September. This would be an area for future research attention.

Another way to demonstrate the importance of school calendar on the family shelter population is by splitting the shelter population into two groups in a graph. As one can see in Figure 3, there is little change throughout the year among families without school-aged children, but the population of families with school-aged children peaks significantly during the summer and fall months, consistent with the overall surge in family shelter population.

Figure 3 – Families with School-Aged Children in Shelter – 2004-2011
Source: Hennepin County and State of Minnesota MAXIS database



Failure to maintain doubled-up status. Within the literature and in conversations with Hennepin County staff, there are references to families being unable to maintain their doubled-up status after the end of the school year. The argument is that once kids are around the house all day, it becomes more of a burden to host another family within a home or apartment. In

addition, it may be easier to tell a doubled-up family that it is time to leave once the weather is warmer rather than to do so during the cold winter months.

To determine whether there is legitimacy to the hypothesis that terminated doubled-up housing situations are a cause of the surge in family shelter population, I coded over 800 shelter intake interview forms conducted by Hennepin County staff members. Shelter staff write notes on these forms during the interviews that they conduct with families who seek access to shelter. One of the questions asked during the interview is the reason for the family's homeless status. Common answers included eviction, a move, lack of money, or the inability to stay with family or friends. The importance of doubled-up living situations became evident after a review of this data because over 60% of all respondents cited the inability to continue to stay with friends or family as a reason for their homelessness. I broke out the responses by month to see if there was a seasonal trend in doubled-up status as a cause of homelessness. The regression indicated that there were no statistically significant differences throughout the year. Therefore, there is substantial evidence that supports the hypothesis that many people enter shelter after a spell in a doubled-up living situation, but there is no evidence to suggest that breakdowns of doubled-up situations is a primary driver of the family shelter surge in Hennepin County.

Summary of potential causes. The analysis of potential causes produced four interesting takeaways. First, the Hennepin County surge is a function of increased entrants into the shelter system. Second, non-resident families exacerbate the surge, but strong seasonal demand for shelter exists among the resident population. Third, families with school-aged children are the primary driver of the Hennepin County surge. This is the most significant finding of the report. Finally, a significant percentage of families seeking shelter in Hennepin County do so following a spell in a doubled-up housing situation.

Limitations

There are a number of limitations of this study that readers should consider. First, evidence to support the presence of similar phenomenon around the country is limited. To properly identify other surges around the country, more robust data would be needed in each setting. Ideally, data from additional cities, counties, or states would also be included in the analysis. Second, there may be other causes of the phenomenon that were not considered in this analysis. The universe of causes investigated within this study was based on hypotheses presented in the literature and potential explanations discussed in conversations with Hennepin County staff. Third, the shelter data from Hennepin County excludes shelters that do not directly contract with the county. Fourth, the residency status that is determined at shelter intake is based on self-report. In addition, some families may establish Minnesota residency for thirty days prior to seeking shelter. Therefore, this analysis may underestimate the role of non-resident families in this phenomenon. Finally, the generalizability of these findings is limited. Given the unique facts and circumstances found in each geographic setting, the findings from one setting may not be applicable to other areas. A more robust analysis of the causes of surges in other markets would be needed before generalizable conclusions could be reached.

Implications

Although there may be multiple causes of the family shelter surge in Hennepin County, there is strong evidence that increased entries into the system by families with school-aged children is a significant factor. Given this fact, Hennepin County may choose to target resources and energy on families with school-aged children prior to the end of the school year. County staff have already begun discussions with homeless and highly mobile student liaisons at both the Minneapolis Public Schools and the State of Minnesota. There is a great opportunity to

intervene with unstably housed families prior to the end of the school year, which may help the county reduce the severity of the family shelter surge.

Additional research may be conducted to develop a deeper understanding of the causes of shelter entry during the surge. While it is clear that families with school-aged children are a major contributor to the surge, this study does not explain why those families are seeking shelter over the summer. A qualitative study in which interviews are conducted with families who enter shelter during the summer could provide an empirically based explanation for this phenomenon.

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