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Suicide Deaths and Non-Fatal Hospital Admissions for Deliberate Self-Harm: Temporality by Day of Week and Month of Year, United States

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Abstract

Background—No one knows if the temporality of non-fatal deliberate self-harm in the United States (U.S.) mirrors the temporality of suicide deaths.

Aims—To analyze day- and month-specific variation in population rates for suicide fatalities and, separately, for hospital admissions for non-fatal deliberate self-harm.

Methods—For 12 states, we extracted vital statistics data on all suicides (n=11,429) and hospital discharge data on all non-fatal deliberate self-harm admissions (n=60,870) occurring in 1997. We used multinomial logistic regression to analyze the significance of day-to-day and month-to-month variations in occurrence of suicides and non-fatal deliberate self-harm admissions.

Results—Both fatal and nonfatal events had a 6%–10% excess occurrence on Monday and Tuesday and were 5%–13% less likely to occur on Saturdays ($p<0.05$). Males were more likely than females to act on Wednesdays and Saturdays. Non-fatal admission rates were 6% above the average in April and May ($p<0.05$). In contrast, suicide rates were 6% above the average in February and March and 8% below it in November ($p<0.05$).

Conclusions—Suicides and non-fatal hospital admissions for deliberate self-harm have peaks and troughs on the same days in the U.S. In contrast, the monthly patterns for these fatal and non-fatal events are not congruent.

Keywords

self-harm; temporality; epidemiology; multinomial logistic regression; seasonality

Introduction

Suicide accounts for a substantial health burden globally -- not only in the United States, where it remains one of the 15 leading causes of death, but also in the European Union, China, and other countries Kochanek, Xu, Murphy, Miniño, & Kung, 2011; Mathers, Fat, & Boerma, 2008. Rose 1985 described the two dominant traditions of research on suicide epidemiology as a 'causes of incidence' tradition and a 'causes of cases' tradition. Research

on ‘causes of incidence’ describes and explains population-level risk of suicide and other deliberate self-harm. In contrast, research on ‘causes of cases’ probes individual-level risk of these behaviors, with emphasis on personal characteristics such as a recent marital separation or mental illness that differentiate high risk individuals.

Epidemiological research on temporality of suicide occurrence illustrates this distinction. Durkheim 1897 noted that population-level suicide mortality rates (its incidence) varied with the day of the week and the season of the year. He found lower suicide rates during the final six months of each year, and increased values in January that persisted through springtime. Durkheim also found higher suicide rates on the first days of each week. Throughout the 20th century, generally congruent evidence accumulated about excess suicides during the first months of the year and during the first days of the work week (e.g., Bradvik & Berglund, 2002; Altamura, Van Gastel, Pioli, Mannu, & Maes, 1999). Many observers of the seasonal phenomenon drew attention to meteorological explanations such as hours of sunshine or rainfall, reflecting a population-level causes-of-incidence orientation (e.g., Barker, Hawton, Fagg, & C., 1994; Jessen, Steffensen, & Jensen, 1998; Petridou, Papadopoulos, Frangakis, Skalkidou, & Trichopoulos, 2002; Preti, 1997).

In contrast, in an important summary of the evidence, Gabennesch (1988) posited that “a temporal broken-promise effect can develop from the elevated sense of expectancy implicitly occasioned by either a positively valued event (e.g., spring) or the threshold of a new cycle per se.” Of course, these processes can occur simultaneously, as they do in the day-of-the-week-cycle. The beginning of the week follows an end (Saturday and Sunday) which, like a holiday, has positive connotations for most people. Thus, an initial contrast effect can occur during the weekend, as Saturday and Sunday fail the suicidal individual. This would explain why “the suicide rate begins to climb on Sunday. And it means that many [Monday] suicides are lagged effects of the weekend, while others are probably precipitated by the dynamics associated with the beginning of the new cycle itself” (Gabennesch, 1988). Notice Gabennesch’s reference to the suicidal individual, and the explanation’s explicit orientation to the individual-level causes of the suicide act.

However plausible the meteorological hypothesis might sound, a series of studies on the declining seasonality of suicide rates have raised doubts about its continuing seasonal validity. For example, studying early and late 20th century suicide rates for the canton of Zurich, Switzerland, Ajdacic-Gross and colleagues (2005) reported seasonality during the years 1901–1920, but found no seasonality in the early 1990s. Similar dampening of the traditional seasonality effect has been observed elsewhere (e.g., Ajdacic-Gross, Bopp, Ring, Gutzwiller, & Rossler, 2010; Hong Kong: Yip & Yang, 2004; Lithuania: Kalediene, Starkuviene, & Petrauskiene, 2006; Slovenia: Oravec et al., 2006; Poland: Polewka et al., 2004; Wales: Simkin, Hawton, Yip, & Yam, 2003), but not universally (e.g., Romania: Voracek, Vintila, Fisher, & Yip, 2002). Some studies also find quite different seasonal patterns with summer or fall peaks (e.g., Petridou, et al., 2002; Finland: Valtonen et al. 2002; Greenland: Björkstén, Kripke, & Bjerregaard, 2009; Italy: Altamura, et al., 1999; Micciolo, Williams, Zimmerman-Tansella, & Tansella, 1991; Singapore: Ho, Kua, & Hong, 1998; Turkey: Doganay et al., 2003; United States: Lester & Frank, 1988).

A shifting pattern is more consistent with Gabennesch’s (1988) socio-cultural explanation than a meteorological one. The seasonal pattern could shift in an increasingly technological world where communications gains have reduced isolation and increased expectations in the winter. Sebestyen et al. (2010) also reports that increasing anti-depressant use in Hungary is associated with declining suicide seasonality, especially among males.

Preti, Miotto, & Coppi (2000) and Pretti & Miotto (2000) raise further concerns about meteorological explanations for seasonality using Italian data that show suicide and parasuicide (attempted suicide) seasonality varies by gender, age group, and the violence of the method used. Doganay et al. (2003) also found variation by gender among 'suicide attempts' seen in Turkish emergency departments. Similarly, Yip & Yang (2004), Jessen, Steffensen & Jensen (1998) and Jessen, Andersen et al. (1999) found that fatal and non-fatal patterns differed from one another seasonally and to a lesser extent by day of the week in Hong Kong, Scandinavia, and several other European countries.

Against this backdrop, this paper analyzes the temporality of suicides and hospital admissions for non-fatal deliberate self-harm in the United States (U.S.) during calendar year 1997. It examines both variation by day of the week and month of the year. We analyzed a full year of data for 12 geographically diverse states that house more than one third of the U.S. population. We also examined whether the trend by day of the week persisted beyond 1997. Finally, we examined whether the fatality risk among fatal and hospitalized cases varied temporally. Prior studies have largely not addressed that question explicitly.

Materials and Methods

Using a census of hospital discharge records from a geographically diverse convenience sample of 12 states, we examined the temporality of suicide acts (including other deliberate self-harm). The sample consisted of all states with hospital discharge censuses that included temporal data publicly available at an affordable price in 1997. All 12 states— Arizona, California, Massachusetts, Maryland, Nebraska, New Hampshire, New York, Rhode Island, South Carolina, Utah, Vermont, and Washington D.C. — released data on the day of hospital admission. (The District of Columbia, while technically not a state, collects data on hospital admission and is a distinct geographic region of the U.S. described in this study, for the sake of simplicity, as a state.) Validity checks were completed, and variables were recoded when necessary to produce uniform coding categories across states for discharge status. Readmissions for follow-up cases were identified when possible using information such as admission status or readmission codes, and were removed from the data set.

Among 12 states, 40,094 hospital records with International Classification of Diseases, 9th Edition, Clinical Modification (ICD-9-CM) external-cause-of-injury (E) codes of intentional self-inflicted injury and diagnoses compatible with this cause were identified (ICD-9-CM, 1991). A total of 27 cases were missing day of the week admitted; none were missing the month of the year admitted. Mortality data were derived from the 1997 Multiple Cause of Death (MCOD) file (National Center for Health Statistics, 2000). Suicide fatalities were identified using ICD-9-CM external-cause-of-death E-codes of intentional self-inflicted injury and totaled 7,866 for the 12 states. Two cases were missing day of week of death and no cases were missing month of year. We tabulated additional MCODE files to check if the U.S. suicide fatality pattern by day of the week shifted after 1997. Kposowa & D'Auria (2010) provided similar information on the U.S. trend by month for 2000–2004. Online query of the Healthcare Utilization Program National Inpatient Sample provided 2007 data on the split in self-harm admissions between weekdays and weekends.

We tabulated fatal and nonfatal self-harm per day by day of the week or month. For ease of comparison, we normalized the estimates by dividing by the mean number of daily acts across the year. So, for example, we divided the number of nonfatal admissions for self-harm on Wednesdays by 53, because 1997 had 53 Wednesdays, and divided the number in January by 31.

To test significant differences in the relative prevalence of self-harm among fatal and nonfatal cases for day of week and month of year we performed logistic regression analyses predicting which cases were fatal. Using Monday and May as reference categories, the most prevalent day and month for both fatal and nonfatal acts, we estimated the likelihood of being a nonfatal (as opposed to being a fatal) case for each day of the week and each month of the year. These models were extended to include statistical adjustment for known correlates of self-harm, namely age, race, sex, and method. Age was operationalized as a categorical variable with 6 distinct groups (under 14, 15–19, 20–24, 25–44, 45–64, and 65 and older). We initially examined distinct racial and ethnic groups consistent with U.S. Census categories, including Hispanic origin. Ultimately, race was constructed as a categorical variable defined as white non-Hispanic and other because the estimated racial variation only existed for whites. For sex comparisons, males were used as the reference group. Methods were classified into 6 distinct groups: poisonings, cut/pierce, firearms, suffocation, other specified, and other unspecified. Tests for interaction were performed for all covariates by day of week and month of year. Due to the large sample size, we a priori set a threshold for significance of product terms at alpha levels less than or equal to 0.05. The tables present main effect estimates by subgroups when interaction terms were significant. We use odds ratios to express the magnitude and direction of relationships.

To test the significance between the relative prevalence of all deliberate self-harm (fatal and nonfatal combined) for day of week and month of year we used multinomial or polytomous logistic regression models. In this case, day of week and month of year were used as multi-level dependent variables and we tested the significance in the intercepts of each day or month as an outcome relative to Monday and May. Separate models were run for day of week and month of year. Both sets of models were extended to include statistical adjustment for key covariates. In the polytomous regression model, a beta and corresponding confidence interval was estimated for each category of the dependent variable. This enabled us to determine which days and months, if any, were influenced by the presence of other variables. All analyses were performed using Stata Version 7 software (Stata Corporation, 2001).

Results

Monday and Tuesday had the highest frequencies and rates of deliberate self-harm, both fatal and nonfatal (Figure 1 and Table 1). Friday and Saturday had the lowest rates for all acts combined and for nonfatal acts. Among fatalities, however, Saturday and Sunday had the lowest rates.

For month of year rate comparisons, April and May had the highest frequencies and rates of nonfatal self-harm and of all acts (Table 1 and Figure 2). Fatality rates varied in a saw tooth pattern with minor monthly variation and peaks from February thru May and in September. Winter months from October to January had the lowest rates of all acts, with December having the lowest rates overall.

Tests for significant variations in fatal and nonfatal acts revealed modest statistical differences by day of week and for one month of the year. Relative to Monday and adjusted for age, sex, race, method, and month of year, the likelihood of self-harm not proving fatal was significantly higher on Tuesday (Odds Ratio (OR) 1.39; 95% Confidence Interval (CI) 1.05, 1.86), Thursday (OR 1.38; 95% CI 1.04, 1.83), and Saturday (OR 1.44; 95% CI 1.08, 1.92). Sub-group variation was detected in interaction testing by race. Specifically, non-whites were significantly more likely to inflict nonfatal self-harm on Sunday (OR 1.40; 95% CI 1.06, 1.87), while whites were significantly less likely to have a nonfatal act on Sunday (OR 0.46; 95% CI 0.32, 0.68).

For month of year, Table 2 shows the likelihood that an attempt was nonfatal was lower in July relative to the most prevalent month of acts, May (OR 0.61; 95% CI 0.42, 0.89). In other words, the risk of deliberate self-harm being fatal is significantly higher in July. In addition, males, whites and people aged 45 and older had above-average fatality risks from deliberate self-harm. People aged 5–24 had below-average fatality rates. Relative to poisoning, the fatality risk for deliberate self-harm involving firearms and suffocation was above average and the risk for cutting or piercing was below average. Table 2 shows these temporal effects and estimates for all significant covariates that had *p*-values less than or equal to 0.05. Full regressions are available from the lead author.

Multinomial models predicting the day or month that self-harm occurred revealed significant temporal variations in the occurrence of all deliberate self-harm by day of week and month of year (see Table 3). In unadjusted models without covariates, self-harm was significantly less likely to occur on every day except Tuesday relative to Monday. However after adjustment for other known correlates of self-harm validated in our earlier regression models (age, sex, race, and method), Tuesday through Friday had a lower likelihood of self-harm, but Saturday and Sunday did not. In effect, rates are lower on the weekend because the people who deliberately harm themselves on the weekend differ in demographics and method of choice from those who deliberately harm themselves on weekdays. For month of year, March, April, and August were not significantly different from May events and, once covariates were included in the model, July also was not statistically different from May. Deliberate self-harm was significantly less frequent in all other months. Males were significantly more likely than females to deliberately harm themselves in March than in May (OR 1.14, 95% CI 1.04, 1.25).

The patterns observed in this paper appear to be stable over time and similar to national patterns. In 2007, 27.6% of hospital admissions for deliberate self-harm nationally occurred on Saturday and Sunday, almost exactly matching the 27.7% in our 1997 data from 12 states. As Table 4 shows, the national suicide pattern by day of the week was stable from 2001 through 2006. It also parallels the pattern in our data. The percentage of incidents on Thursday and Saturday, however, was slightly lower in our data, than in the national data.

Discussion

This study identified two important temporal trends in deliberate self-harm. First, the pattern of self-harm across days of the week differs in fatal and nonfatal cases. These variations are only explained in part by variations in age, sex, race, and method of fatal versus nonfatal self-harm. The second major finding is the statistical difference observed in the timing of self-harm and the attenuation of these differences in light of other covariates. Specifically, lower rates of suicide on Saturday and Sunday were fully explained by variations in age, sex, race, and method. That finding argues for the broken promises hypothesis, since the greatest chance of broken promises probably arises on the weekend when people have more non-work time.

Limitations and Strengths

This study has four main limitations. First, hospital and vital statistics records are not always reliably labeled for poisonings and injuries that are deliberately self-inflicted, which could affect the estimated rates. Second, the data are from 1997. Our limited tabulations of more recent data, however, show that the temporal pattern has not shifted since then. Third, the sample is very sparse on Midwestern states, although there are no significant demographic differences between the states under study and census data for the entire U.S. The concordance of the pattern by day of the week for the sample states with more recent data for the U.S. as a whole, however, suggests the results are reasonably generalizable. Finally,

the data sets we used had a limited set of covariates and lacked usable information about substance use, mental illness, anti-depressant use, life stresses, and other personal characteristics.

Notwithstanding these limitations, a very large census of cases was analyzed, which improved the precision of the estimates and our ability to detect statistically significant variations in the timing of deliberate self-harm. Additionally, the data derived from administrative records which provide more objective information than self-report measures.

Methodological Recommendations

This paper is among the first to use multinomial logistic regression (MLR) to test the significance of differences in rates of deliberate self-harm by day of the week or month of the year. MLR does not require multi-year data, which is required for harmonic or sinusoidal analyses (Ajdacic-Gross et al., 2003; Yip & Yang, 2004), and MLR is computationally efficient (Stata Corporation, 2001). It is less clumsy and more informative than the more conventional chi-squared analysis of the evenness of the self-harm distribution across days or months. In addition, the confidence limits by time period allow identification of a tiered hierarchy of significant differences when one exists, even though one was not detected here. It also accommodates adjustment for confounding factors. We thus strongly recommend MLR for temporality studies.

Future studies in this area should gather data on the timing of precipitating events that lead to hospital admission for self-harm. Phillips & Sanzone (Phillips & Sanzone, 1998) found that 16% of suicide deaths did not occur on the day of the suicidal act, with a lag more frequent for females than males. Similarly, acts committed on Sunday evening might involve an overnight lag going to the hospital, contributing to the Monday peak. Despite the concordant temporal patterns of deliberate self-harm in hospital and mortality data, the regressions suggest that in part, lower weekend fatality risks also may be an artifact of the demographic profiles of people who act on the weekend. A study using mortality follow-back data that capture problems with health, relationships, alcohol use, and other personal factors might be illuminating.

Comparison with Prior Studies

Our findings on the increasing fatality risk for non-fatal self-harm with age matches contemporaneous findings for the U.S. that do not account for temporality (Spicer & Miller, 2000). The higher fatality risks observed for males and for acts involving firearms or suffocation also match.

The peak in deliberate self-harm on Mondays is a persistent one previously observed in the U.S. with 1973–85 mortality data (McCleary, Chew, Hellsten, & Flynn-Bransford, 1991) and with data from around the world (Polewka, et al., 2004; Eisenbach, Ungur, Unger, Stremmel, & Encke, 2008; Ho, et al., 1998; Nishi, Miyake, Okamoto, Goto, & Sakai, 2000; Durkheim, 1897). Like our study, Bradvick & Berglund (2003) and Erazo, Baumert, Ladwig (2004) also find that the rate of deliberate self-harm is significantly elevated on Tuesdays. Kposowa & D'Auria (2010) instead identify a Wednesday peak for U.S. mortality in 2000–04, but they apparently made an error in computing day of the week. They report that 24.6% of all suicides occurred on Wednesdays, which Table 4 clearly shows is incorrect.

Our finding of a late spring peak is consistent with MacMahon's (1983) finding for U.S. suicides in 1972–78 mortality data. The second summer peak was not present at that time. It has been observed, however, in Lester (2001) and Kposowa & D'Auria (2010) for the U.S. and in several recent studies in other countries (Björkstén, et al., 2009; Preti & Miotto, 2000 in some cohorts; Polewka et al., 2004 for females; Doganay, et al., 2003).

Unlike several recent international studies (e.g., Yip & Yang, 2004; Doganay, et al., 2003), we found only limited differences in the U.S. temporal pattern by gender and race. The discrepancy may arise in part because we tested the significance of demographic interactions with a more powerful multinomial logit model at the person level rather than a multi-year harmonic analysis on monthly aggregate data. The lack of notable variations by gender, however, is consistent with earlier findings for the U.S. by Lester & Frank (1988).

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Biographies

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Epidemiologist Henry Weiss is a Professor in the Department of Preventive and Social Medicine and directs the Injury Prevention Research Unit. His research interests include injuries during pregnancy and the quality of injury coding in hospital discharge and mortality data sets.

Figure 1.
Mean Daily Suicide Rates (Normalized to the Mean)

Figure 2.
Mean Monthly Suicide Rates (Normalized to the Mean)

Table 1

Daily Rates and Daily Relative Rates of Hospital-Admitted Nonfatal and Fatal Deliberate Self-Harm by Day of the Week and Month of Year, 12 States of the United States, 1997. (Hospital admission data from pooled state hospital discharge censuses. Mortality data from the US Multiple Cause of Death file.)

	All Acts Combined (29 missing)			Nonfatal Hospital Admitted Acts (27 missing)			Fatal Acts (2 missing)		
	Frequency	Rate/day	Rate/day normalized to the mean	Frequency	Rate/day	Rate/day normalized to the mean	Frequency	Rate/day	Rate/day normalized to the mean
Day of Week									
Sunday	6745	129.71	0.99	5659	108.83	0.99	1086	20.88	0.97
Monday	7291	140.21	1.07	6064	116.62	1.06	1227	23.60	1.10
Tuesday	7211	138.67	1.06	6027	115.90	1.06	1184	22.77	1.06
Wednesday	7048	132.98	1.01	5853	110.43	1.01	1195	22.55	1.05
Thursday	6730	129.42	0.99	5653	108.71	0.99	1077	20.71	0.96
Friday	6508	125.15	0.95	5383	103.52	0.94	1125	21.63	1.00
Saturday	6400	123.08	0.94	5428	104.38	0.95	972	18.69	0.87
TOTAL	47933			40067			7866		
	All Acts Combined			Nonfatal Hospital Admitted Acts			Fatal Acts		
	Frequency	Rate/day	Rate/day normalized to the mean	Frequency	Rate/day	Rate/day normalized to the mean	Frequency	Rate/day	Rate/day normalized to the mean
Month of Year									
January	3971	128.10	0.97	3319	107.06	0.97	652	21.03	0.98
February	3626	129.50	0.99	2988	106.71	0.97	638	22.79	1.06
March	4181	134.87	1.03	3472	112.00	1.02	709	22.87	1.06
April	4140	138.00	1.05	3494	116.47	1.06	646	21.53	1.00
May	4287	138.29	1.05	3600	116.13	1.06	687	22.16	1.03
June	4002	133.40	1.02	3348	111.60	1.02	654	21.80	1.01
July	4077	131.52	1.00	3413	110.10	1.00	664	21.42	0.99
August	4139	133.52	1.02	3489	112.55	1.02	650	20.97	0.97
September	3972	132.40	1.01	3309	110.30	1.00	663	22.10	1.02
October	3994	128.84	0.98	3333	107.52	0.98	661	21.32	0.99
November	3879	129.30	0.98	3282	109.40	1.00	597	19.90	0.92
December	3694	119.16	0.91	3047	98.29	0.89	647	20.87	0.97
TOTAL	47962			40094			7868		

Table 2

Estimated Associations Between Day of Week and Month of Year and the Likelihood of Non-fatal (as Opposed to Fatal) Suicide Act. Estimates from Binomial Logistic Regression Analyses

Variable	lower 95% CI	Odds Ratio	upper 95% CI	p-value
Month of Year¹				
July	0.42	0.61	0.89	0.01
Day of Week²				
Sunday (Non-whites)	1.06	1.40	1.87	0.02
Sunday (Whites)	0.32	0.46	0.68	<0.01
Tuesday	1.05	1.39	1.86	0.02
Thursday	1.04	1.38	1.83	0.03
Saturday	1.08	1.44	1.92	0.01
Covariates				
Male ³	0.45	0.48	0.53	<0.01
White (non-Hispanic) ⁴	0.33	0.48	0.69	<0.01
5–14 years ⁵	2.34	3.29	4.64	<0.01
15–19 years ⁵	2.10	2.46	2.89	<0.01
20–24 years ⁵	1.30	1.50	1.74	<0.01
45–64 years ⁵	0.45	0.50	0.55	<0.01
65 and older ⁵	0.26	0.30	0.34	<0.01
Cut/pierce ⁶	1.08	1.27	1.50	0.01
Firearms ⁶	<0.01	0.01	0.01	<0.01
Suffocation ⁶	0.01	0.01	0.01	<0.01
Other specified ⁶	0.08	0.08	0.10	<0.01
Unspecified ⁶	0.23	0.32	0.46	<0.01

¹ reference category May

² reference category Monday

³ reference category female

⁴ reference category non-whites

⁵ reference category age 25–44

⁶ reference category poisonings

Table 3

Variation in the Likelihood of Deliberate Self-Harm. Estimates from Multinomial Logistic Regression Analyses with Multiple Covariates

Variable	lower 95% CI	Beta	upper 95% CI	p-value
Day of Week Model[/]				
Sunday	-0.11	-0.03	0.04	0.40
Tuesday	-0.19	-0.11	-0.03	<0.01
Wednesday	-0.20	-0.13	-0.05	<0.01
Thursday	-0.20	-0.12	-0.04	<0.01
Friday	-0.23	-0.15	-0.07	<0.01
Saturday	-0.10	-0.02	0.05	0.56
Month of Year Model[/]				
January	-0.29	-0.19	-0.092	<0.01
February	-0.37	-0.26	-0.16	<0.01
March	-0.18	-0.08	0.02	0.11
April	-0.19	-0.09	0.01	0.08
June	-0.20	-0.10	<-0.01	0.05
July	-0.19	-0.09	0.09	0.07
August	-0.13	-0.03	0.07	0.57
September	-0.20	-0.10	<-0.01	0.04
October	-0.21	-0.11	-0.01	0.03
November	-0.26	-0.16	-0.06	<0.01
December	-0.38	-0.27	-0.17	<0.01

[/] Adjusted for age, sex, race, and method

Reference categories were Monday and May

Number of United States Suicides and their Distribution by Day of the Week in 2001 to 2006, and Comparable Data for our 12 States in 1997 (from US Multiple Cause of Death files)

Table 4

	2001	2002	2003	2004	2005	2006	2001–2006	1997 *
Monday	16.0%	16.0%	15.3%	15.4%	15.3%	15.3%	15.6%	15.6%
Tuesday	14.7%	15.3%	15.0%	15.4%	15.0%	15.3%	15.1%	15.1%
Wednesday	15.0%	14.6%	14.8%	14.3%	15.1%	14.3%	14.7%	14.9%
Thursday	14.0%	14.0%	14.1%	14.0%	14.1%	14.2%	14.1%	13.7%
Friday	14.2%	13.8%	14.1%	14.0%	14.0%	14.2%	14.0%	14.3%
Saturday	13.0%	12.8%	13.1%	13.5%	12.9%	13.5%	13.1%	12.4%
Sunday	13.2%	13.5%	13.7%	13.5%	13.6%	13.2%	13.4%	13.8%
Deaths	30,596	31,639	31,466	32,411	32,629	33,297	192,038	7,866

* = 1997 data are restricted to our 12 states

Data were adjusted to a 364 day year with 52 occurrences of each day of the week.