The Spatial-Temporal Dynamic of Violent Death among the Native Peoples of Northern Russia

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THE SPATIAL-TEMPORAL DYNAMIC OF VIOLENT DEATH AMONG THE NATIVE PEOPLES OF NORTHERN RUSSIA

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Abstract. This paper examines the seasonal, weekly, and daily rhythms of violent mortality for seven different areas of the Russian North. Data were collected between 1987 and 1990 utilizing local death registers in the ZAGS (vital statistics) offices, as well as police records and court documents in the provinces and autonomous regions under study. From these registers, relevant data on all suicides, homicides, and accidental deaths were recorded on special survey forms. In addition to documenting the unusually high rate of violent death which characterizes the Russian North and northern native populations, this research documents pronounced seasonality in all components of violent death.

Introduction

One of the distinctive features of the current demographic and epidemiologic situation of northern indigenous peoples is the growth and high level of violent death, which by far exceeds the indexes of industrially developed and "Third World" nations (Young 1983). The case of Arctic Russia and Siberia is no exception. In the 1970s, the standardized general mortality coefficients for the residents of the northern regions and provinces of the former Soviet Union (with an overall population of more than 10 million people) were higher than the national average, while their average life expectancy was lower by more than four years (Sinel'nikov 1983). These indexes were even more unfavorable for 26 Russian Arctic minorities (the so-called "small peoples of the North"), with their total population, according to the latest Soviet census of 1989, about 184,000. In 1978–1979, their average life expectancy was 18 years lower than for the general population of the USSR (Pika and Prokhorov 1988). To a significant degree, such a large lag in life expectancy is attributable to a high level of violent death.

Besides differences in the level of violent death, there were also distinctions in the structure and dynamic of mortality among northern natives compared to other population groups in Russia. Among all residents of the Russian North, just up to the mid-1980s, diseases of the circulatory and respiratory organs and cancerous tumors rose in significance, while the proportional weight of trauma and alcohol-induced deaths decreased. The tendencies were the opposite for northern native peoples. Their share of deaths from serious trauma and accidental poisoning, homicides, and suicides constantly increased.

A sharp reduction in the rate of death from alcohol and alcohol-substitute poisoning and trauma took place throughout the country, including northern areas, during 1986 and 1987. This was due to measures taken as part of the Government's anti-alcohol policy. The fundamental and

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almost exclusive content of the 1985–1987 anti-alcohol policy in Russia (at least in its northern regions) was a sharp reduction in the delivery, sale, and consumption of all sorts of liquor. No noticeable changes for the better took place in social attitudes or popular behavior regarding drinking. Northern residents continued, and perhaps to an even greater extent were more anxious, to purchase and consume alcoholic beverages. With the subsequent liberalization of alcohol policy in 1988, that opportunity reappeared, and since then the number of violent deaths in the North again began to rise (Prokhorov et al. 1990).

Published governmental statistical data on violent death among the northern native peoples in the former USSR are unavailable. According to available unpublished data, the overall mortality rate due to heavy alcohol intoxication and trauma in northern regions of the former USSR varies between 100 to 150 per 100,000, of which 18–32 are deaths by suicide and 10–23 are homicides. In our estimate, these rates are significantly higher for the native peoples of the Russian Arctic and Siberia; their rate of death from heavy intoxication and trauma is from 190 to 400 per 100,000, a figure which also includes from 70 to 90 suicides and from 15 to 25 homicides.[1] Similarly, very high levels of violent death, much higher than the national averages, are reported for the native people in Alaska (McNabb 1990), Greenland (Thorslund 1987), and northern Canada (Young 1983).

Today alcohol intoxication and trauma, as causes of death, define the high level of mortality and the state of other social and demographic problems of northern natives as a whole. Unless we see a reduction in daily injuries, acts of violence, and suicides, it is difficult to hope for the stable demographic and social development of northern peoples in the future. In this article, I examine the problem not in its entirety, but only as regards its spatial-temporal characteristics and special socioecological character. **Where, when, and how** the majority of alcohol-related and other violent deaths occur among the native people of the Russian North are the fundamental questions I propose to consider.

Organization of Data Collection and Research Method

In Russia, as well as in the former USSR, the registration of a violent death necessarily requires the completion of a special investigation by the local police officials (militia) on the circumstances of death. This includes the collection of relevant forensic evidence. The recording of all deaths, including violent deaths, is carried out by the local offices of the Civil Affairs Registry (Russian abbreviation—ZAGS), part of the structure of local executive authority. Mortality records are maintained by the offices of government statistics, but statistical data, especially those relating to homicides and suicides, are subject to analysis and thus are published extremely rarely. Violent death statistics are elaborated for the general population of basic administrative units—autonomous republics, regions ("kraya"), and provinces ("oblasti"). Special statistical profiles for different ethnic groups within Russia and for smaller ethnic samples such as northern native peoples are not compiled.

To study the demographic situation among such smaller subpopulations, one must utilize materials from primary local death registration. This requires special field surveys. We carried out such field research in 1987 in the Penzhinski (Penzhina) district of the Koryak autonomous area, then part of Kamchatka Province, and in the Chukotski (Chukchi) and Providenski (Providencia) districts of the Chukchi autonomous area, then part of Magadan Province, where the Koryak, Chukchi, Eskimo, and Even people live. In 1988 the same research was carried out in the Lovozerski (Lovozero) district of Murmansk Province, among the Saami and Komi people. Our work continued in 1989 in the Berezovski (Berezovo) district of the Khanty-Mansi autonomous area, and in 1990 in the Purski (Pur) and Yamal'ski (Yamal) districts of the Yamalo-Nenets autonomous area, then part of Tyumeni Province, with its native population of Khanty, Mansi, Sel'kup, and Forest and Tundra Nenets (see Fig. 1).

In our choice of survey areas, we strove to collect data on populations in different natural environments—boreal forest (taiga), tundra, arctic seacoast—with distinctive traditional economies and ways of life. Of the latter, the sea-mammal hunters, the sedentary and semisedentary fishermen and hunters of the taiga, and the nomadic reindeer breeders of the tundra were examined. A special questionnaire entitled, "A Social Preventive Inspection of Accidents, Homicides, and Suicides in the Northern Areas" was prepared.

Collection of primary data was made in the following manner: in the archives of the ZAGS (Vital Statistics) offices of the provinces and northern autonomous areas records of all cases of violent death for the current year and for five previous years were copied, including data on name, place of residence, time and cause of death, sex and age of the deceased, etc. These data were then transferred to the questionnaire forms. Then, to the extent possible, these data were supplemented with information gathered directly from the authorities in the local area where the deceased persons had resided. Highly valuable information regarding the causes and concrete circumstances of the events were gathered from the archives of the local

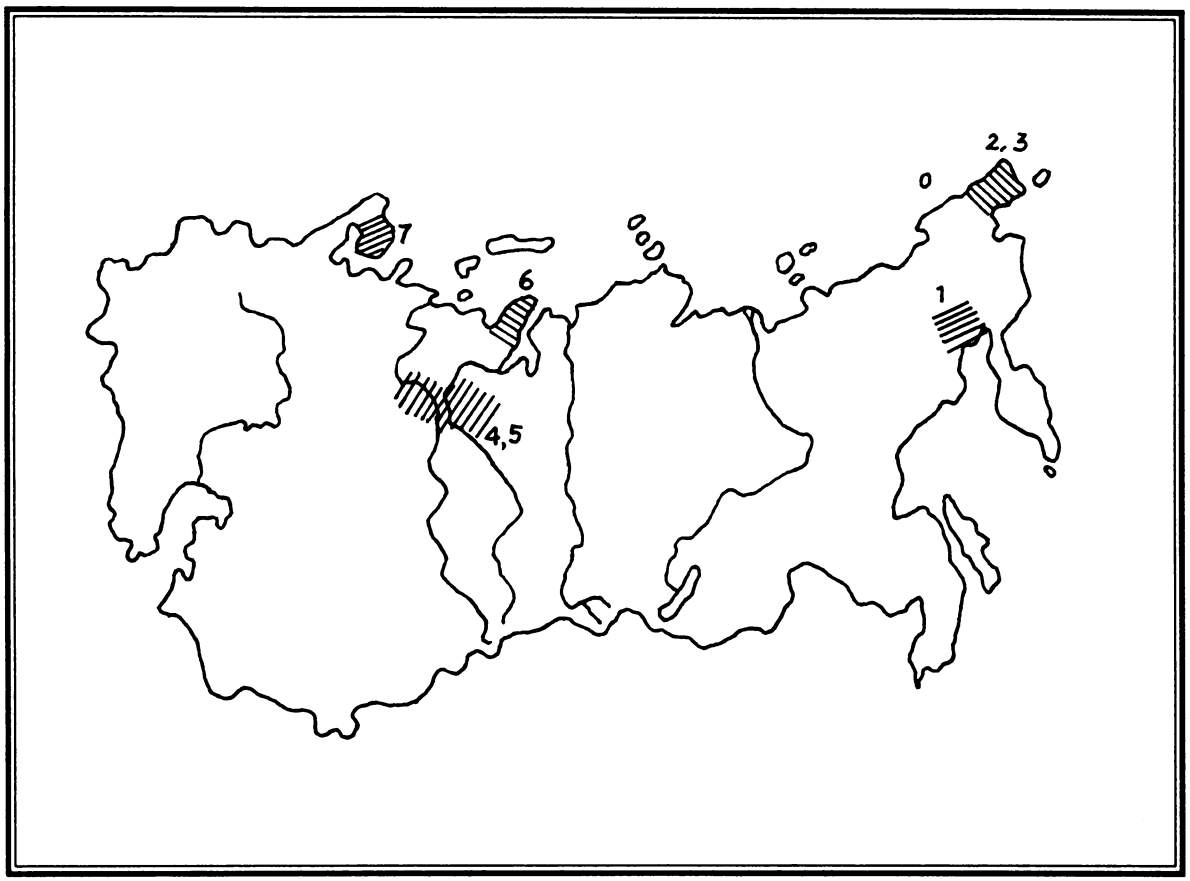


Figure 1. Areas of the Russian North in which cases of violent death were surveyed. (1) Penzhinski (Penzhina) District: Koryak, Even, 1987. (2) Chukotski (Chukchi) District: Chukchi, Eskimo, 1987. (3) Providenski (Providencia) District: Eskimo, Chukchi, 1987. (4) Berezovski (Berezovo) District: Khanty, Mansi, 1989. (5) Purovski (Pur) District: Khanty, Forest and Tundra Nenets, 1990. (6) Yamal'ski (Yamal) District: Nenets, Khanty, 1990. (7) Lovozyerski (Lovozero) District: Saami, Komi, 1988.

police (militia), the procurators' offices, and the courts, including data processed in the course of official investigations which took place immediately after the incidents occurred. These data were also copied onto the questionnaires. For refinement and verification of the data collected, as well as for the receipt of more detailed information, the employees of the village council, village doctors, and local residents were questioned.

In this manner, we collected detailed data regarding 60–90% of all incidents of violent death registered by the offices of the ZAGS in the given area. In all, information was obtained for 535 incidents of violent death (Table 1, Figs. 2–4). On the basis of the sample collected, a computer data base was created, with the help of which the quantitative distribution of violent death among various ethnic and spatial-temporal cohorts was elaborated. Several preliminary results of this research were published elsewhere (Pika and Bogoyavlensky 1991; Pika et al. 1991).

Table 1. Total Number of Violent Deaths, Arranged by Russian Arctic and Siberian Native Peoples Surveyed in 1983–1989.

Ethnic Group	Homicides	Suicides	Accidents	Total
Khanty	8	23	32	63
Mansi	7	17	34	58
Nenets	12	18	77	107
Forest Nenets	4	3	26	33
Sel'kup	1	0	3	4
Koryak	6	8	48	62
Even	0	1	9	10
Chukchi	22	35	79	136
Eskimo	4	6	33	43
Saami	3	7	9	19
Total	67	118	350	535

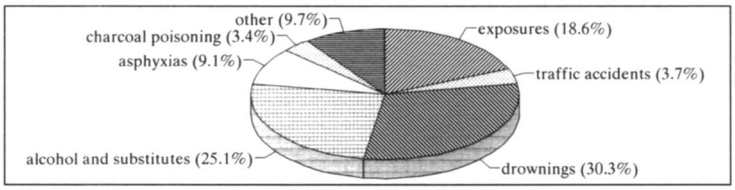


Figure 2. Accidents: causes of death (N = 350).

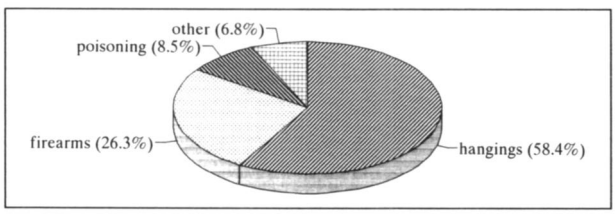


Figure 3. Suicides: causes of death (N = 118).

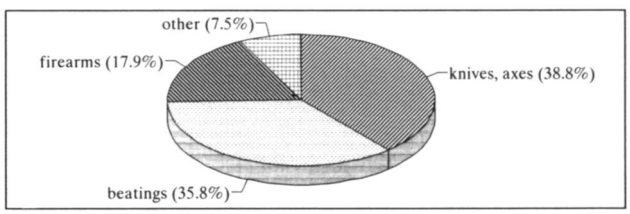


Figure 4. Homicides: causes of death (N = 67).

I would like to call the reader's attention as well to one essential methodological feature of the research presented, in that it is ethnodemographic and sociological, and not a demographic-statistical study. Here we have to keep in mind that the numerical strength of the indigenous populations in the northern administrative districts of Russia and in individual communities is relatively small. And although mortality rates are very high there, the actual yearly figures for deaths from trauma and intoxication are not high enough to construct a true statistical grouping. In order to increase the aggregate sample under study, data for several years and for various ethnic groups were combined. Because of this, the figures adduced in this article do not constitute real statistical indices for the specific year, month, territory, or native nations, but represent some model characteristics which reflect the general situation in the northern areas. Accordingly, the terms we have used in the article—"calendar year" or "calendar week" or "twenty-four hour period"—also constitute conditional terms used for our model-building.

The Seasonal Dynamics of Violent Death

The annual economic and social life cycle of northern aboriginal peoples, especially those engaged in traditional economic activities (hunting, fishing, reindeer-breeding), is closely tied to the seasonal changes of nature. This cycle is summarized below.

Spring: a period of increased economic and recreational activity for the northern residents, with conditions of open water and yet, as in wintertime, low air temperatures, especially during the night hours. With the breaking up of ice in the rivers and the clearing of ice from the coastal waters, a period of intensive fishing and sea hunting begins. On the interior tundras, hunters await the migration of wild reindeer and the return mass flight of fowl, the hunt for which is carried out in the vicinity of lakes and rivers. During this time, reindeer herders move to their spring and summer pastures, the herds are calving, and it is necessary to work hard in the open air. Death from cold exposure and drowning are the main dangers during this period.

Summer: a period of much more pleasant, comfortable conditions for man in the North. During this time, the economic activity of the local people of the boreal forest and tundra zones is relatively limited. For the sea hunters, however, this is a period of active harvest. In the settlements during this time there is increased unemployment and an abundance of alcohol use. The pendular migration of indigenous inhabitants and other residents who come from larger settlements to smaller ones and back increases in frequency. During this time, alcohol and interpersonal conflicts represent the basic factors of violent mortality.

Fall and Early Winter: the beginning of the season of fur hunting and fishing. During this time, the reindeer breeders come closest to the settlements. The slaughter of reindeer takes place near the villages, and this is not accomplished without alcohol abuse. At this time, the weather conditions worsen, and the number of daylight hours decreases. Severe changes in the weather, unexpected freezes, and strong winds can lead to deadly accidents.

Winter: by far the most severe time of year. At this season, people spend less time in the open air and more time inside their dwellings in close contact with one another. This contributes to increased consumption of alcohol, the accumulation of interpersonal conflicts, stresses, and

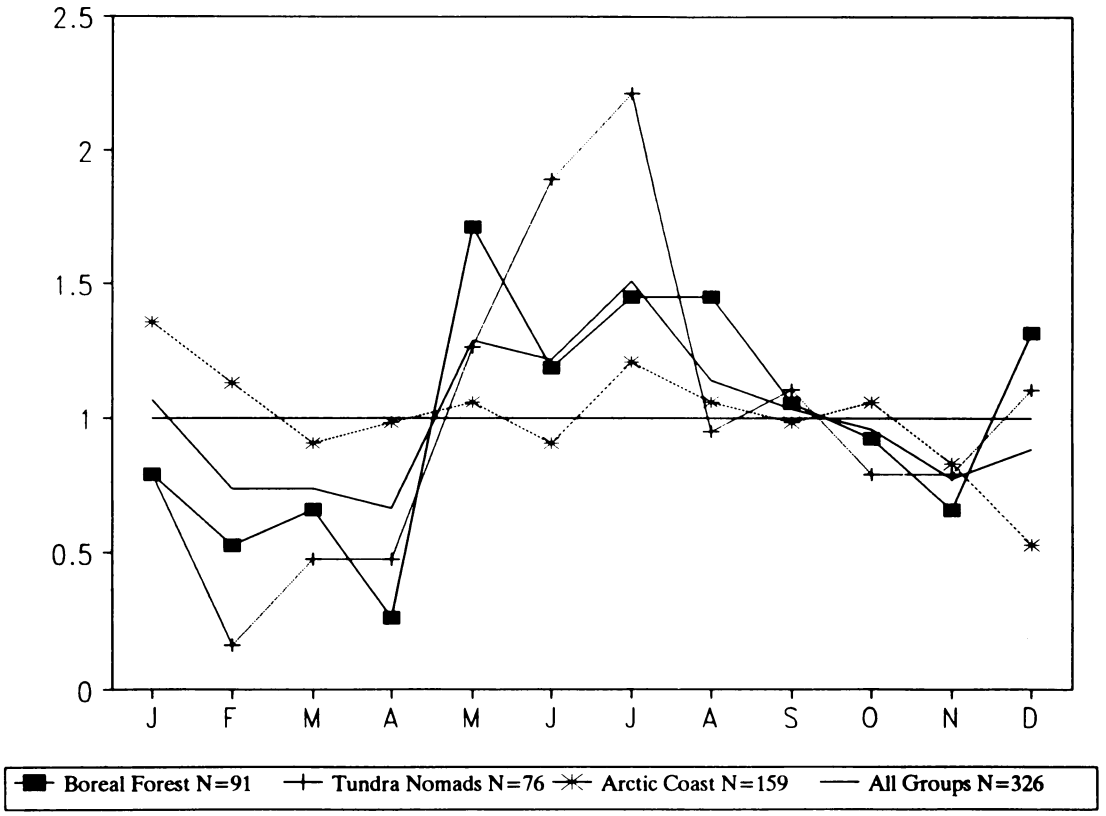


Figure 5. Accidental death among Russian Northern Natives by months of the year.

emotional disorders. Homicides and suicides are especially common during this time of year.

In our analysis of the seasonal dynamics of violent death we also took into account the influence of state and local holidays, given that on those days the consumption of alcohol increases, and the probable occurrence of violent situations grows greater. Of 535 cases of violent death studied, we chose 520 for our analysis of seasonal dynamics, excluding 15 cases for which information could not be fully obtained. The distribution of these violent deaths by month during the course of a model "calendar year" proved rather monotonous; we noted only a small increase in deaths (20% above the expected monthly mean) at the end of spring/beginning of summer. On the other hand, a distribution of the seasonal changes of individual components of violent death proved more dynamic. Let us separately examine the features of the dynamic of accidents, suicides, and homicides during the course of a "model" calendar year.

Accidents

Publications which include data, and analysis in particular, of the seasonal dynamics of accidents and deaths resulting from accidents among the northern natives are exceedingly rare. As an example we may cite the detailed sociological research of accident mortality among the natives of British Columbia (Schmidt et al. 1966). According to these authors' data, the majority of accidental deaths took place in July, and these were primarily drownings. With regard to Alaska, data are available which demonstrate an increased level of accidental deaths from May to October, with injuries from firearms and airplane crashes increasing during the period from August to November (Boyd et al. 1968). Both papers examined the situation prevailing during the early 1960s.

Our analysis of the seasonal dynamics of death from accidents is based on 326 cases. The peak for accidents in our sample of the native people of Northern Russia fell in the spring and early summer (see Fig. 5). For the inhabitants of the boreal forest/taiga zones—these are the Khanty, Mansi, Forest Nenets and Sel'kup—the total number of fatal accidents in May was three times greater than the average level of the four preceding months, and 70% higher than the monthly average for these ethnic groups.[2] The May peak in accidents was comprised principally of drownings and exposures, it being understood that cases of freezing were not situationally linked with drowning. The drownings occurred far from the villages, mainly in fishing and hunting areas, and those who perished were without exception male. Deaths from exposure, on the other hand, occurred in the villages, and women

were more likely to be the victims, often freezing on the streets at night in an intoxicated condition.

During the same time of year, we noted quite a few fatal cases of acute alcohol intoxication, especially during the former state holiday season from 1 to 10 May. During this time, typical accidents included trauma to and suffocation of infants sleeping in their parents' beds or while nursing. This is a fairly frequent phenomenon in the northern villages of Russia. Cases of mechanical asphyxiation from vomiting while in an intoxicated condition were also not uncommon. This cause of death was almost exclusively characteristic of male victims. During the course of the year, these two types of accidents constituted 6.6% of all violent deaths. In April and May their number rose to 15.3% of the total number of violent deaths.

Spring comes one month later to the tundra zone and the arctic seacoast than it does to the boreal forest and, as a consequence, among the inhabitants of the arctic regions the spring peak of accidents proved to be one month off (Fig. 5). The rise in the number of accidents among Arctic tundra dwellers—Nenets, Koryak, Chukchi, and Eskimo—began in May, but the peak, in contrast to that of the forest peoples, came in June and July, principally as a result of drownings, the number of which doubled during this period.

From August to December the total number of accidents in the tundra and the forest zones was relatively low, and it was especially low among the Chukchi, Koryak, and Eskimo. In August and September, drownings still predominated among types of accidents, becoming fewer in October. After the start of November, exposures became the number one type of accident. From November to February, exposures constituted almost half of all accidental deaths.

From February through May, severe alcohol intoxication began to predominate in the structure of accident-related mortality. An especially large number of intoxications from alcoholic beverages and alcohol substitutes occurred in March. During this month, alcohol intoxications constituted almost half of all accidents. Alcohol intoxication of the victim at dangerous and/or medium levels at the moment an accident occurred was established in 219 cases (64%). Alcohol-related accidents were fairly evenly distributed throughout the months of the year; their numbers increased slightly during months in which widely-observed state holidays occurred, such as New Year's Day and International Women's Day on the 8th of March.

With regard to the nomadic population, the highest level of mortality from accidents among this group also fell during the summer months. These accidents were primarily due to drowning of herdsmen during the fording and driving of herds across rivers, as well as to drowning of children and adolescents while swimming in small lakes. In October and November, we noted that nomads constituted a significantly greater proportion of victims of fatal accidents. The majority of deaths among nomads in the fall, however, took place not on the tundra, but in the villages, to which the nomads drive their herds for slaughter at this time of year. During this period, the nomads also frequent the villages to visit their kinsmen in order to buy goods and alcohol.

Linked with the seasonal dynamic, data on changes in the spatial location of violent deaths in different seasons of the year are of special interest. Of the total number of accidents which took place among all of the groups surveyed (350 cases in all), more than 60% occurred in the villages and less than 40% took place in the wilderness. In the course of the calendar year, this distribution changed as follows. Accidents which occurred in the villages were especially frequent in the period January–April (their share of total accidents peaked in March at 81%). Then in May, notwithstanding a continuing increase in the absolute number of accidental deaths which took place in the village setting, their share of total accidents decreased to 57%, and the share of accidents in the wilderness grew correspondingly. All summer the number and relative proportion of village accidents continued to decrease: in June they constituted 50% of the total sample, in July 44%, and in August barely 38%. Only after September did the share of accidents in the wilderness begin to decrease and that of the settlements to rise. Toward the end of the year, the rate of village accidents reached its yearly average—62%. The dynamics of accidents which occurred outside the villages, in the wilderness, changed correspondingly. In the spring and summer their numbers rose significantly, and in the fall they decreased. All of this indicates a strong link between the spatial location of accidents and the economic and recreational activities of the population at different seasons of the year.

Suicides

The study of the seasonal dynamic of suicides has a long tradition in sociology and anthropology. In Emile Durkheim's classic work, quite a few pages were dedicated to this question. Durkheim expressed the hypothesis that the determining factors of the seasonal dynamic of suicide were changes in air temperature and the extent of daylight hours (Durkheim 1897; Pope 1976). More recent research, however, demonstrates the significant role of social factors in the seasonal dynamic of suicides. Thus was noted the growth in the number of successful and attempted suicides in Egypt during the period from May through July (Okasa and Latif 1979). The authors explain this

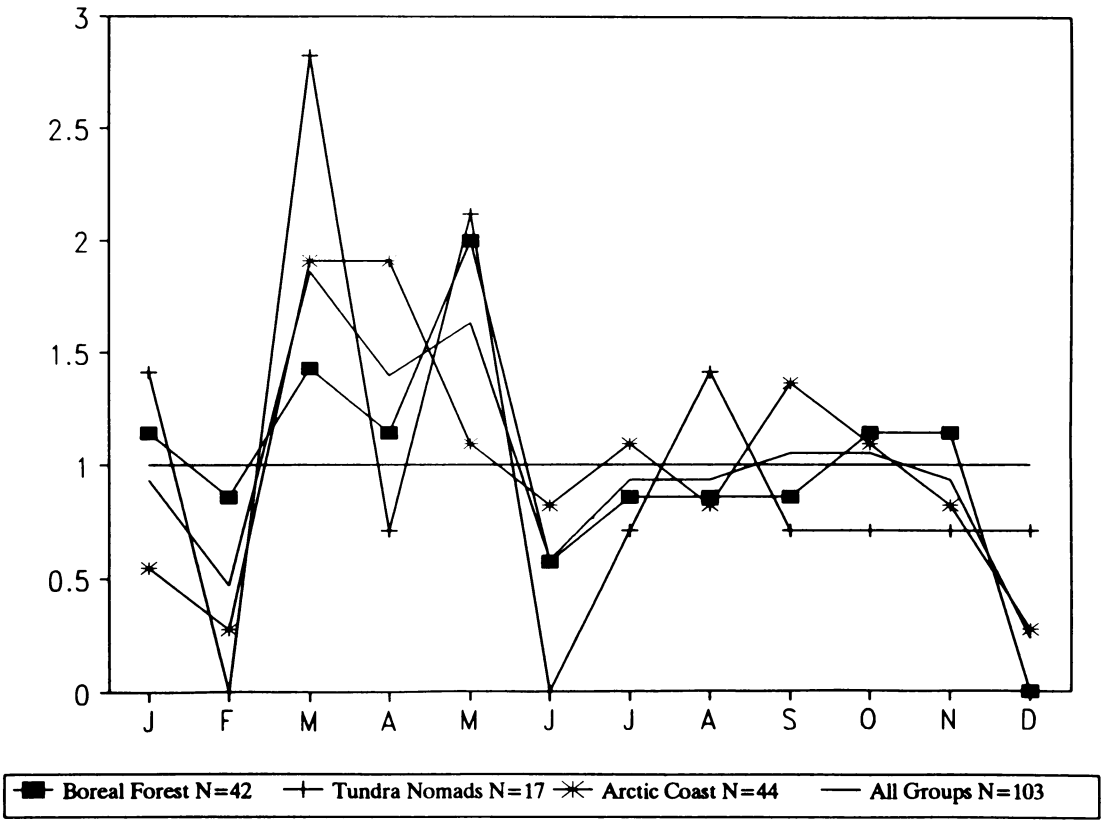


Figure 6. Suicides among Russian Northern Natives by months of the year.

on the basis of mental stress and emotional disorders linked with school and university examinations at that time of year.

It is difficult to interpret data on the seasonal dynamic of suicide among arctic natives as confirming or disproving such hypotheses. In Greenland in 1972–1973, some growth (although not significant) in the number of suicides was observed in April. In summer the number decreased, while in the fall (September–October) it rose once more (Grove and Lynge 1979). A similar bimodal form of seasonal distribution of suicides with peaks in spring and fall was revealed in Alaska (Hlady and Middaugh 1987). Our research demonstrates similar results (Fig. 6).

We studied a total of 118 suicide cases, of which 103 were chosen for seasonal dynamic analysis. For the native people of Siberia, just as for the indigenous residents of Greenland and Alaska, there proved to be a characteristically bimodal seasonal distribution of suicides: a springtime rise and "high peak" among the Chukchi, Eskimo, and Koryak in March and April, and among the Khanty and Mansi in May. This is followed by an autumnal rise and "small second peak" among the Chukchi, Koryak, and Eskimo in September, and among the Khanty and Mansi in October–November.

The springtime rise in the number of suicides among northern natives was quite significant: of 103 cases of suicide, 42 (40.7%) took place in March–May. These 42 "springtime" suicides were fairly typical of all the suicides studied in that they frequently involved intoxication (60% on average) and displayed a 3:1 male/female sex ratio. There were also some pronounced differences. Of all the suicide cases studied, barely 16% of the total occurred during a holiday season. In the spring, however, more than 30% took place during holidays, and there was significantly more frequent use of firearms, which account for 33% of springtime suicide cases.

The springtime rise in suicides ended in June, and in August their numbers decreased to the monthly average level. During this period, hanging was the predominant method of suicide. Firearm injuries constituted barely 13% of all suicides accomplished. In September–November, the number of suicides again rose (the "small peak"), as did the share of suicides carried out with firearms (32%). From December through February, among all the groups studied, the year's minimum number of suicides was observed. During this period, the percentage of hangings rose and the percentage of firearm injuries fell somewhat.

The spatial location of suicides during the course of the calendar year proved to be relatively constant. The overwhelming majority of suicides

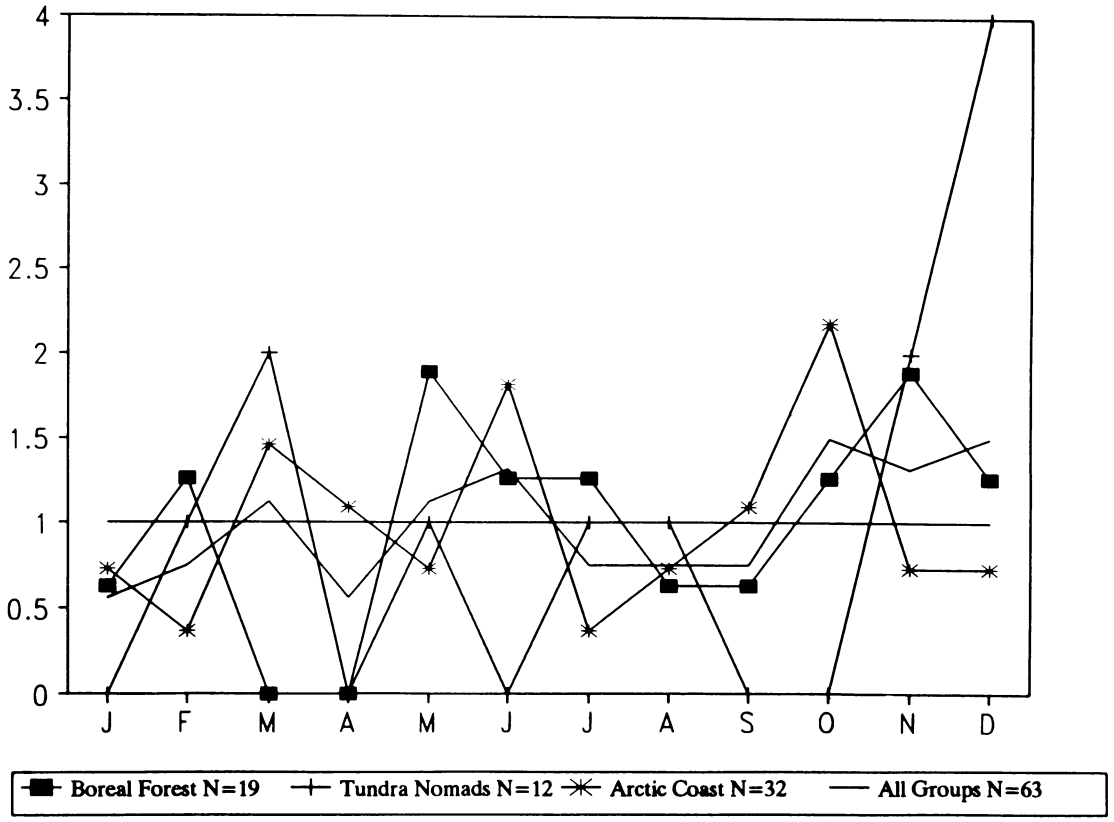


Figure 7. Homicides among Russian Northern Natives by months of the year.

took place in the villages. Barely 14% of suicides occurred outside the villages. A slightly higher percentage of suicides outside the villages, in the wilderness, was observed during months in which former Soviet state holidays fell: March 8th (Women's Day), 23%; May 1st (International Labor Day), 50%; and November 7th (The Anniversary of the Bol'shevik Revolution of 1917), 22%.

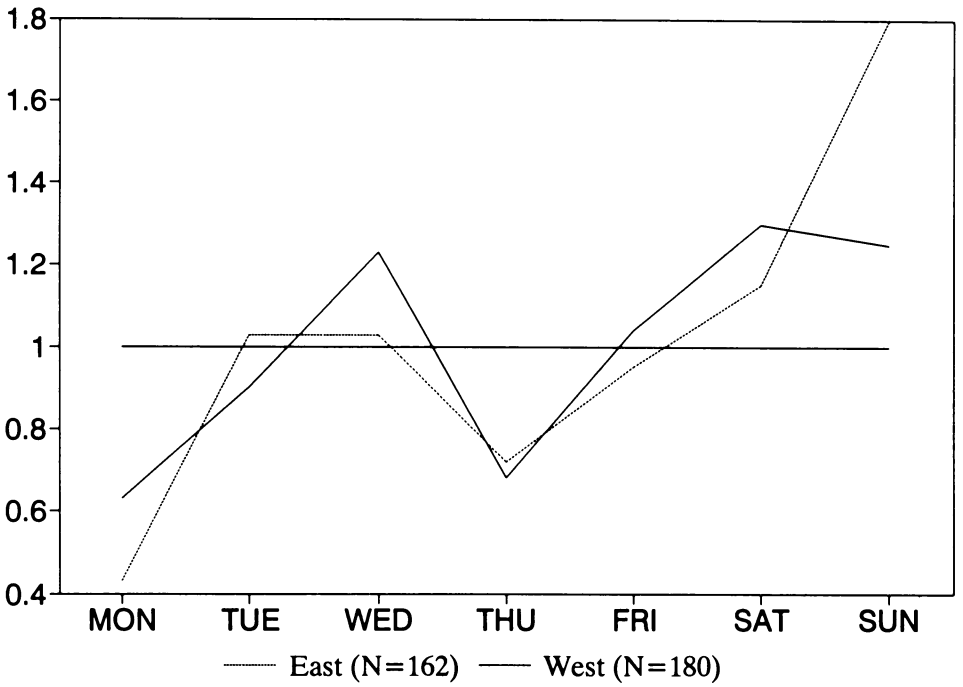
Homicides

We are not familiar with any publications regarding the seasonal dynamic of homicide among northern natives. I shall, therefore, cite only data from our surveys (Fig. 7). Homicides were distributed fairly evenly among the seasons of the year, but their number was 1.6 times greater in October–November. In the wintertime, men predominated among homicide victims, the ratio of male to female victims being 3:2. In the summer months, this correlation became the opposite. By far the most widely used means of homicide were injuries with a sharp weapon (knife, axe), beatings, and firearm injuries. These three methods together constituted 92% of all homicides, while firearms were used in only 1 in 5 cases. Predominant use of any one murder method (for example, use of a firearm) during other seasons or months of the year was not established. The majority of homicides—82% of the total—took place in the villages, and barely 18% in the wilderness. There was no significant change in this correlation during the course of the year.

Weekly and 24-Hour Cycles of Violent Death

If the study of seasonal dynamics of violent death, where natural and social factors are interwoven, is best carried out against a broad background (including natural biomes, ethnic and territorial groups), then the weekly and 24-hour cycles of violent death must be compared with the inner life of the village or small nomadic group. As opposed to the calendar year, the weekly time segment does not contain any regular natural cycle (if one does not consider seasonal differences), but it has a rigid social basis. It is basically divided into working and nonworking days of the week. This is, of course, more characteristic for village residents and less so for nomads.

A picture of the changes in the levels and structures of violent death among all the ethnic groups studied (535 cases in all) during the course of the "model" week revealed the following: by far the smallest number of violent deaths were observed on Monday. This number rose on



(East= Chukchi, Koryak, Eskimo; West= Khanty, Mansi, Nenets, Saami)

Figure 8. Accidental death among Russian Northern Natives by days of the week.

Tuesday and Wednesday, and fell on Thursday. It rose again on Friday and Saturday and reached its peak on Sunday. We shall examine separately the weekly dynamic of accidents, suicides, and homicides among the different native communities.

Accidents changed according to the scheme outlined above, and actually determined it, due to their constituting the largest share in the total sample of all violent deaths (65%). However, we observed an interesting difference in the weekly dynamic of accidents among native groups of Chukotka and Kamchatka, and those of Western Siberia. Among the Chukchi, Eskimo, and Koryak, the weekly maximum of accidents took place on Sunday. Among the Khanty, Mansi, Nenets, and Saami the peak fell on Friday and Saturday, and on Sunday the number of accidents even fell slightly (Fig. 8).

The same phenomenon, to an even greater degree, was characteristic of the weekly dynamic of suicides. Among the western aboriginal populations, the number of suicides rose toward the middle of the week (the peak falling on Thursday), while among the eastern groups, the inhabitants of Kamchatka and Chukotka, the number of suicides rose sharply on Friday, fell on Saturday, and rose again sharply on Sunday (Fig. 9).

This phenomenon was even more marked in the weekly dynamic of homicides: in Western Siberia homicides were distributed relatively evenly throughout the days of the week, and on Sunday their number even fell slightly. Among the inhabitants of Chukotka and Kamchatka the number of homicides rose sharply precisely on Sunday, a day which accounted for almost half of all homicides perpetrated during the week, and and for even more than half among the Chukchi (Fig. 10).

Is this an established pattern or simply coincidence? The former is more likely. The explanation for this, in our view, is to be found in patterns formed over past decades in alcohol consumption among the different native groups of Soviet Siberia. Thus, in the northern settlements of Tyumeni and Murmansk provinces (especially prior to 1985), there were no administrative restrictions on the sale of liquor on workdays, except for certain short periods such as fishing season and haymaking time. Everyone who wished could obtain and consume alcohol on any day of the week. In contrast, in Chukotka the rules were followed fairly strictly—"the entire village may drink but once a week." On Saturday, all adults of both sexes, including pensioners and the infirm, might buy their "quota" of liquor and drink. On Saturday evenings, as a result, the majority of village residents were drunk. On Sunday, once again nothing was sold and they suffered from abstention. To alleviate the syndrome, any available substitutes were used (eau de cologne, lotion, any technical

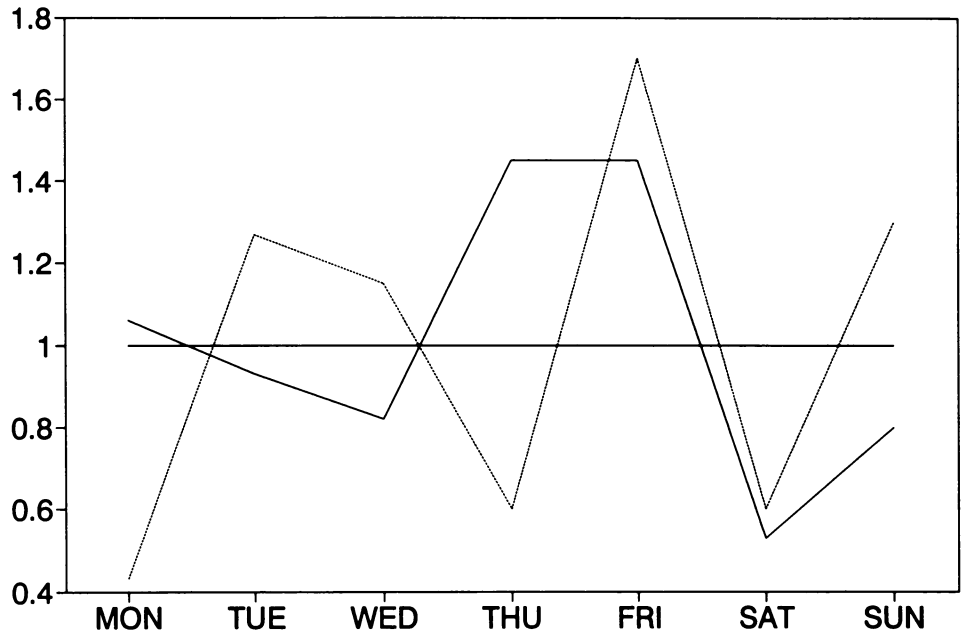


Figure 9. Suicides among Russian Northern Natives by days of the week.

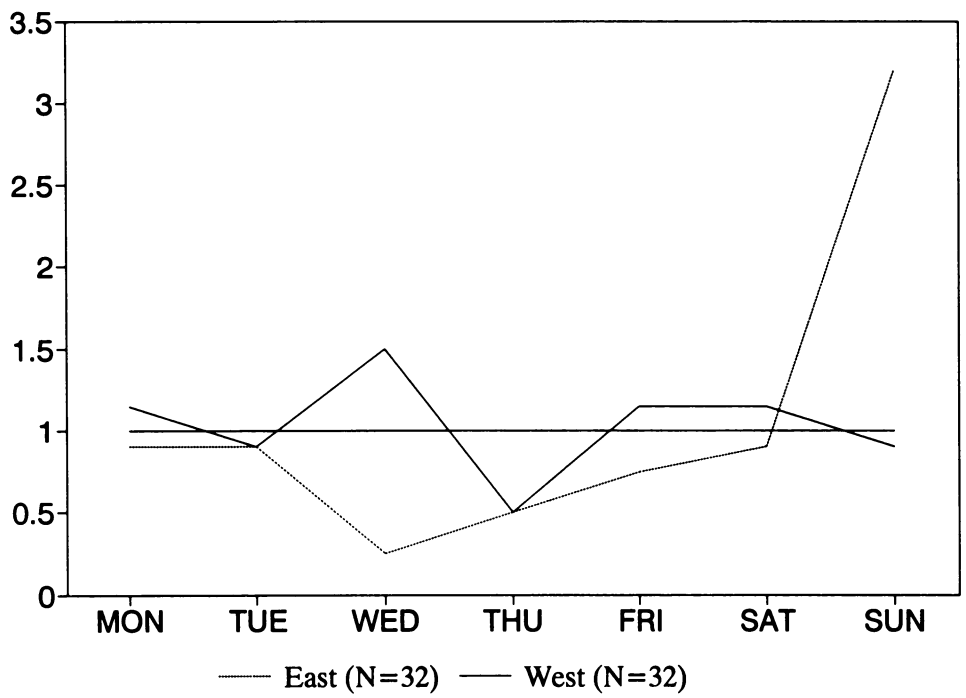


Figure 10. Homicides among Russian Northern Natives by days of the week.

liquids, and intoxicants). Many people found themselves in a depressed mental state due to the quarrels and fights which took place on Saturdays.

Saturday and Sunday were by far the most stressful and dangerous days for the population. On these days the situation was even more complicated because the village council, official functionaries' offices, production managers' offices, and public health institutions were closed and, thus, took no steps to alleviate the situation. The village cultural center and library could also be closed on those days. Militiamen and doctors, mostly non-Native, could abandon the village and go off to rest in the countryside. Naturally, all this did nothing to prevent dangerous altercations and accidents, and made more difficult the survival of those in need of urgent medical care. As a result, on the weekends, particularly on Sunday, the rate of death from intoxication and trauma rose significantly.

Let us examine in greater detail the changes in the character of violent death among the northern natives according to the days of the week.

Monday: the general number of violent deaths on this day of the week was usually minimal. Homicides, primarily cases of beatings and knife attacks, were almost all perpetrated inside homes and on the streets of the village. Among cases of suicide, more than half were committed with a firearm, the rest by hanging. The locations where suicides were committed were dwelling places and outbuildings. Among accidents more than half were drownings, most of which occurred far from the village, in the countryside.

Tuesday: there was a rise in the number of violent deaths (38% over Monday). More cases of suicide and accidents were noted and fewer homicides. Not a single homicide or suicide was committed with the use of a firearm. A third of the homicides on this day of the week were perpetrated outside the village, in the wilderness. Among cases of suicide, hangings predominated (72%). Accidents grew by a factor of 1.6, and among them cases of alcohol-induced deaths predominated (33%) and there were many drownings (29%). Almost half of all accidents on this day took place outside the village, in the wilderness.

Wednesday: there was a further rise in the number of violent deaths (13% over Tuesday). The number of homicides on this day grew in the Western region among the Khanty and Mansi, and it fell in the east, among the Chukchi and Eskimo. There were fewer cases of suicide, but among suicides more were committed outside the village and among the nomads. The number of accidents increased, especially drownings. Almost all cases of drowning occurred far from the village.

Thursday: the general number of violent deaths fell markedly (by 38% from Wednesday), and there were fewer homicides and accidents. The number of suicides remained at the previous level, and among suicides the percentage of those committed with firearms grew. More than a third of all suicides were committed outside the village. There were fewer cases of drowning and alcohol poisoning. The majority of accidents happened in the village and in the surrounding areas, not in the wilderness.

Friday: there was a sharp rise in all types of violent death (48% over Thursday). The number of homicides doubled, with the majority being committed in the village, inside homes. Suicides rose by a factor of 1.5; the majority of these were committed in the village and included hangings, firearm injuries, and intoxications. Among accidents occurring on this day there were more cases of intoxication and exposure, and all cases of accidental deaths caused by automobiles or tractors. On this day quite a few incidents were noted to have occurred in hunting cabins and near fishing sites. However, the majority of violent deaths took place in the villages.

Saturday: the rise in the number of violent deaths continued (8% over Friday). Homicides rose again by a factor of 1.5; firearms and knives were frequently used as murder weapons. The number of suicide cases in such a dynamic situation fell sharply—by more than 3 times compared to Friday. Among cases of suicide, those committed with firearms fell by a factor of more than 4–5. Generally speaking, there were no cases of suicide committed outside the village on this day. The number of accidents rose due to reasons related to the abuse of alcohol—exposures, cases of choking on vomit, sudden infant deaths, and carbon monoxide poisoning in homes. On this day there were usually fights in the village cultural centers (clubs) and on the streets.

Sunday: a further rise and the weekly maximum of violent deaths (22% over Saturday). Homicides rose again by a factor of 1.5; the majority of homicides were committed in the villages with firearms. The number of suicides grew by a factor of 2, among which hangings and poisonings inside dwellings predominated. Among accidents there were many cases of exposure, falls from heights, and accidental poisonings. The overwhelming majority of accidents on this day of the week occurred in the settlements and nearby.

On Monday a sharp decrease in the number of all types of violent death was observed, whereupon the entire weekly cycle repeated itself again. Such is the weekly dynamic of violent death in the places inhabited by northern natives.

Daily (24-hour) human activity depends upon natural (day and night) and social factors such as working and nonworking hours. The daily picture of violent death can also change correspondingly. Of 422 violent deaths for which the time of day was established: 4% occurred in the morning, 26%

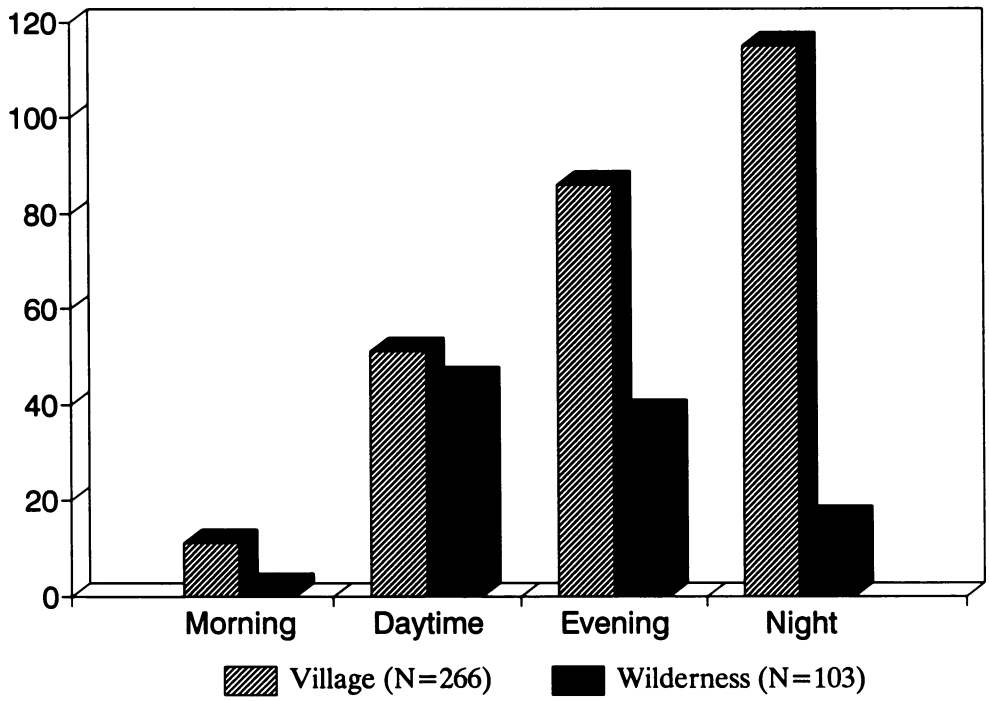


Figure 11. Violent deaths among Russian Northern Natives by location and time of day.

occurred during the day, 33% took place in the evening, and 37% occurred at night. Changes in factors such as the location of the incident (village vs. wilderness) and the way of life (nomadic vs. sedentary) proved to be significant in the daily dynamic of violent death. Thus, for the nomads and for village residents exposed to the wilderness while hunting and fishing, there was characteristically a different daily distribution of violent death than in the settlements. Among the sedentary population, the maximum number of violent deaths fell in the evening and at night. Among the nomadic people and in general outside the village, the greatest number of violent deaths fell during the daytime; few occurred during the evenings, and even fewer at night (Figs. 11 and 12). This corresponds with the differences in the daily rhythm of life among native people while staying in the wilderness and in the settlements. Those reindeer breeders, fishermen, and hunters who live in the wilderness work during the day, rest in the evening, and sleep at night. In the villages, on the other hand, there exists an active night life. This is primarily centered around visits to the cultural center, the movie theater, and dances, but most frequently visits to other residences and nighttime searches for alcohol.

Gender proved to be a significant factor for the daily dynamic of accidents. The maximum number of accidents among men occurred in the evenings, while among women they more often took place at night (Fig. 13). As our investigation indicated, the change in levels and the distribution of particular causes and locations of violent death during the course of the day was as follows.

Morning (from 6:00 a.m. to 11:00 a.m.): the minimum number of violent deaths. There were no homicides and almost no suicides. Among accidental deaths, cases of choking on vomit, sudden infant death, and heavy alcohol intoxications predominated. The locations of these incidents were residences and the streets of the villages. The ratio of accidents which took place inside the settlements to those which occurred outside them at this time of day was 5:1.

Day (from 11:00 a.m. to 5:00 p.m.): the number of violent deaths grew by a factor of more than 6 in comparison with the morning hours. Homicides were due to fights in the villages, and almost half were committed with firearms. Among daytime suicides as well, more than half were committed with firearms. The locations where suicides took place were village residences and nomadic dwellings. Among accidents, cases of drowning predominated, as well as individuals being run over by cars. The ratio of accidents in the settlements to those outside the settlements at this time of day was 1:1.

Evening (from 5:00 p.m. to 11:00 p.m.): there was a further rise in violent deaths (30% over daytime). Homicides increased by a factor of 3; many were caused by heavy trauma from knives or axes, and few with firearms. Outside

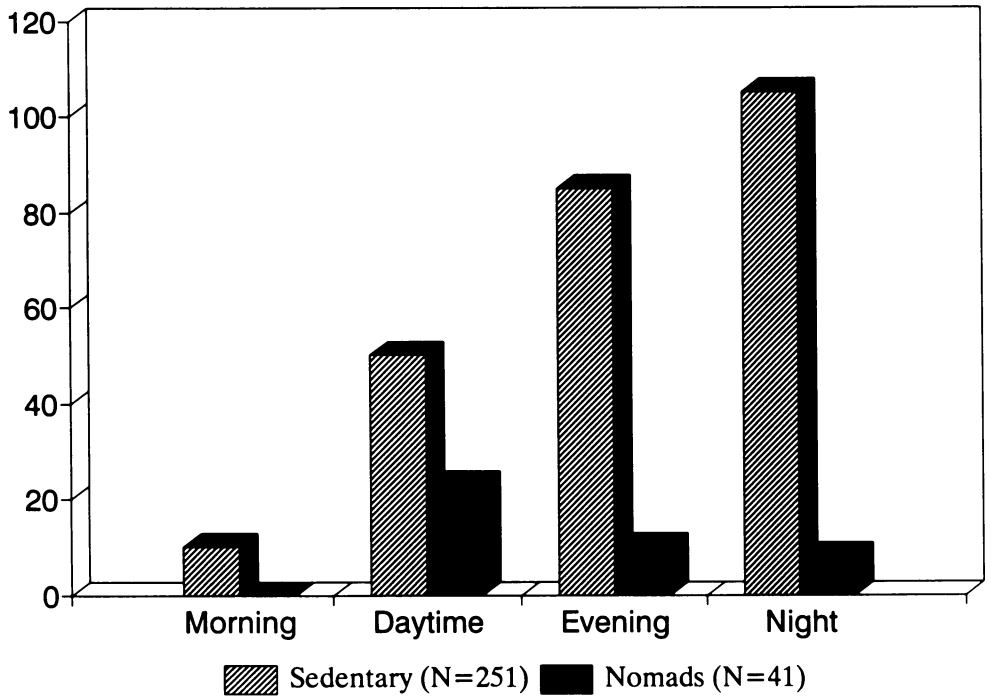


Figure 12. Violent deaths among Russian Northern Natives, sedentary vs. nomadic.

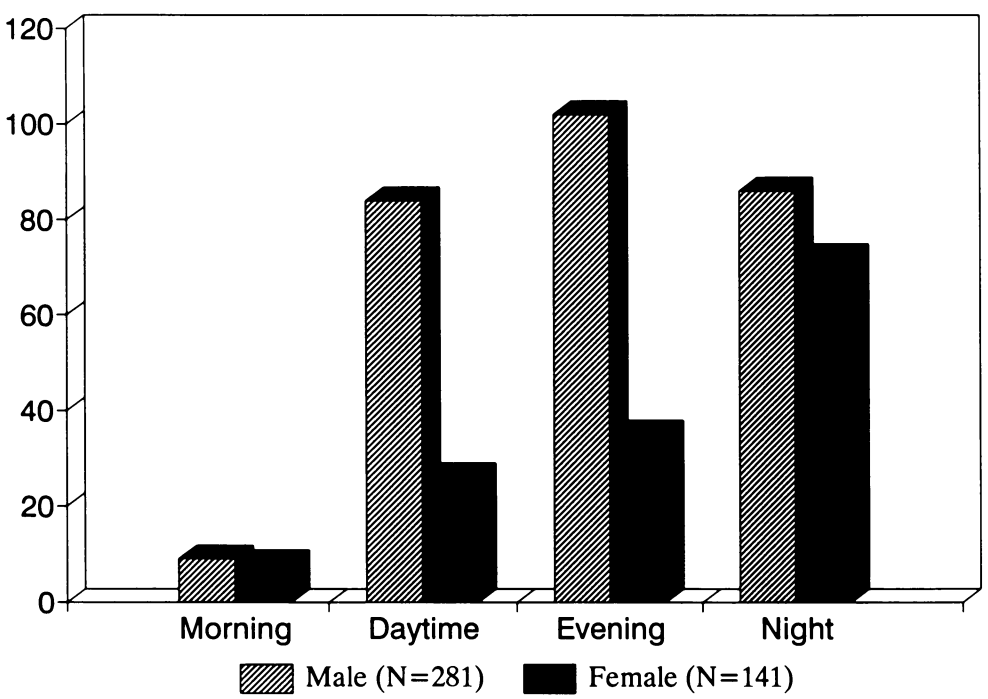


Figure 13. Violent deaths among Russian Northern Natives by gender and time of day.

the villages there were almost no homicides. Cases of suicide rose but not significantly. The majority of suicides were committed by hanging and poisoning in apartments, with few firearms employed. Among accidents there were especially many cases of exposure on the streets and in the areas surrounding the villages. The ratio of accidents which took place inside the village to those occurring outside at this time of day was 2:1.

Night (from 11:00 p.m. to 6:00 a.m.): a further rise in the number of violent deaths (17% over the evening hours). There was a noticeable increase in the number of suicides. The number of homicides fell to half, and there were almost no instances of firearm use in homicides. Accidents were comprised of cases of exposure on the streets, choking, sudden infant death, and carbon monoxide poisoning. The ratio of accidents occurring in the villages to those which took place in the wilderness at this time of day was 6:1.

Discussion

The study of the dynamics of violent death among the native people of the Siberian North indicates that accidents, homicides, and suicides conform to pronounced seasonal, weekly, and 24-hour characteristics.

In the "summer" structure of violent death there is a relatively low percentage of suicides, a slightly higher share of homicides, and a very high percentage of accidents, among which the most common are drownings. For the "autumn" structure, a relative balance of its major components is apparent; although drownings remain the leading cause of death, their share of the total number of violent deaths is relatively small. In the "winter" structure, drownings are replaced by exposures as the principal cause of violent death. Finally, in the "springtime" structure, the predominant causes are heavy alcohol intoxications and suicides committed primarily by males. A significant number of these suicides are committed with firearms.

Such an unexpected phenomenon as the increase in frequency of firearm use in suicides during the spring and autumn rise in suicides is of interest. Here we would like to note two circumstances: first, suicides committed with firearms occur almost exclusively among males, and second, they coincide in time with the spring and fall amateur hunting seasons, when in northern families a weapon and ammunition are handy and ready for action. Nevertheless, the causative and situational link between the periods of increased suicides and the hunting seasons is not as yet completely evident. This question has still not been fully clarified and requires additional study.

I must also note yet another feature of the seasonal distribution of violent deaths. During each month of the calendar year the frequency of one type of violent death, as a rule, rose while the other types fell. The exception to this rule was the month of March. The general level of violent death in March is not the year's highest (although it is higher than average). But only in this month did we note a rise in all basic types of violent death—heavy alcohol intoxications, hangings, and firearm injuries. In March we noted the year's maximum number of suicides as well. If all the native groups in our survey are taken as a whole, in March the number of suicides was 2 times higher than the average monthly rate. Most likely, the March rise in violent death, and suicides in particular, may be linked to seasonal emotional and mental disorders during the last, and by far the most difficult, period of polar night. There is another possibility—that of the influence of the most deadly state holiday for the native people, International Women's Day on March 8th, an event marked by celebration and excessive alcohol consumption.

The spatial location of violent death in the different seasons and months of the year is determined by economic and recreational activities. A great many accidents which occur from May through October take place outside the villages. In all seasons of the year, homicides and suicides are committed chiefly in the villages. Among the nomads, a significant proportion of suicides are committed during their visits to the villages, and not in the nomadic camps.

The weekly cycle of violent death is related, for the most part, to social factors. The main ones are the division of the calendar week into working and nonworking days and the administrative prohibitions on the sale of liquor. Neither of these factors has its origins in the traditional culture and psychology of the aboriginal population. They represent a deliberate form of acculturation and are controlled by outsiders. The number of violent deaths rises from the beginning of the week to the end, reaching its peak on weekends. Thus, according to our survey, the impression is created that, during the first three days of the week, a rise in the number of violent deaths is occurring outside the villages and, during the last three days of the week, violent deaths are mainly concentrated within the villages. In areas where the use of alcohol is distributed more evenly throughout the course of the week, such a phenomenon is not observed.

Administrative prohibitions on the sale of liquor during workdays were introduced in the Chukchi autonomous area during the 1950s and 1960s. This was a result of the desire of local economic leaders to ensure work discipline among the local population. It occurs to us that when making decisions now about the system of alcohol sales in the native villages, the effects on the health and mortality of the inhabitants must be considered as well as the effects on productivity and work discipline. The local people themselves must be taken

into account; the social and psychological consequences of such a prohibition must be anticipated, and an effort to ameliorate the situation must be made. If a prohibition on the sale of liquor during the work week is instituted in a village, and the sale of alcohol is only permitted on one of the weekend days, then this policy should be coordinated with the institutions of public health and security to ensure some kind of preventive measures to deal with the probable occurrence of violent death, including social/cultural measures, entertainment, first aid duty, and law enforcement.

In the weekly dynamic of violent death among native people we noted a particular decrease in the number of violent deaths on one of the days in the middle of the week, usually Thursday, less often Wednesday. This was characteristic of all groups studied. This fluctuation, in our view, is linked with the alcohol situation and is set by the social-biological rhythm of alcohol consumption in northern villages. We would simplify its essence thus: "We drink for two days, then we rest." Saturday gives the starting point to this algorithm and, correspondingly, on Monday comes the weekly minimum of alcohol consumption and of violent deaths, then after two days of aggravation of the alcohol situation (Tuesday, Wednesday) comes the next weekly minimum on Thursday. In addition, Thursday can be considered a "borderline" day between the periods of increased violent death in the wilderness (at the start of the week) and the time of concentration of violent deaths in the villages at the end of the week.

For the daily dynamic, growth in the number of violent deaths from morning toward evening is characteristic. Within this trend, accidents predominate in the daytime, homicides in the evening, and suicides at night. Among all the groups of native residents surveyed, the daily rhythm of violent death in the settlements and that observed in the wilderness differed from one another: in the wilderness the maximum of deaths is during the first half of the 24-hour period, during daylight hours, and in the villages it comes during the second half of the 24-hour period, during nonworking hours, after dark. In the wilderness, nighttime incidents are quite rare. All this forces attention once more to the phenomenon of "night life" in the remote northern communities. During these hours in certain locations (village centers, private homes, apartments), situations may take on a criminal character and endanger people's lives. Moreover, for individuals who are in an intoxicated condition, the cold and darkness present a serious danger even within the village. This is especially true for women, who suffer more accidents at night than do men. Perhaps this is somehow linked to the activity level of women themselves in the dead of night, when for the majority of men active behavior at this time is not characteristic.

Conclusion

In this article we have not attempted to emphasize the study of precise ethnic differences in violent death rates among the native peoples of the Russian North. Our task consisted, rather, of using the sample of several ethnic groups, living in different cultural-ecological conditions, to construct a general model for the understanding of violent death as a special social-demographic phenomenon. As far as was possible, we attempted to indicate all regional and ethnic features. However, as our research demonstrates, the influence of traditional customs and behavioral norms in modern life is not so great as to be the primary determinant of violent death. All searches for ethnocultural and ethnopsychological specifics of violent death among the native peoples of the North (just as among other peoples of Russia and the former USSR, however) are extremely interesting, and projects in this field may contribute significant results. But this is a task for the future when, we hope, in the areas where the native peoples live, special medical services keenly responsive to their life-styles and cultures will be created; when permanently operating medical registers of morbidity, trauma, and violent death (frequently suicides) will be established; and when profound medical, psychological, and ethnocultural research will be carried out. Meanwhile, unfortunately, the study of violent death and even the problem of suicide among Siberian natives remains on the periphery of scientific and practical focus of regional northern medicine in Russia. The current state of violent death among the northern native peoples is weakly reflected in the public health statistics, almost unstudied in its sociocultural, ethnopsychological relationships. In Russia, very little is known about the experiences of other arctic countries in coping with the problems of alcoholism, trauma, suicide, criminality, and violence in the areas populated by indigenous ethnic groups.

The main goal of this article is to bring needed attention to this severe problem of the circumpolar region, a problem which demands a broad interdisciplinary approach to its study and joint efforts of scholars and social workers from various countries for its resolution.

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Endnotes

1. In my search through the literature, I never came across any published data on the mortality rates for accidental death, homicide, and suicide among the northern peoples of Russia. A special survey of unpublished governmental statistics was prepared recently by my colleague, Mr. Dmitri Bogoyavlensky at the Laboratory of Ethnic Demography of the Institute of Employment Studies, Russian Academy of Sciences. The survey examined two regions of Russia and indicates that in 1988–1989, in Tiumeni Province, the level of suicide among the native people was 80 per 100,000 and the number of homicides was 21 per 100,000. In Magadan Province, the corresponding numbers were 86 and 22 per 100,000. For the entire population of the entire former USSR in 1988–1989, these figures were 19 and 7 per 100,000, respectively.

2. Editor's note: all monthly figures for accidental death, suicide, and homicide are presented as factors of the monthly average (or expected monthly mean) for a particular ethnic group. Thus, if there were 91 accidental deaths over a year's period for boreal forest groups, the monthly average would be 7.58. It is important to note that the horizontal lines on figures 4–6 represent these expected monthly means *and* that these monthly averages are different for each group being studied. On Figure 5, for example, the May datum point for boreal forest groups is 1.7. This indicates that the actual rate is approximately 1.7 times the monthly average for those ethnic groups (or, put more simply, 70% above the monthly mean).

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