

HOW DO HOUSEHOLDS USE THEIR BASEMENTS?

Marilyn Bode, Kansas State University
Sylvia Fuoss, Fuoss Consulting
Evelyn Franklin, University of Minnesota

Factors of climate and cultural background have long been considered the causes of regional differences in structure types and occupancy practices in homes throughout the United States (Beyer, 1965). Nationally, slightly less than one-half (46%) of single-family homes have basements (American Housing Survey, 1993). The practice of building houses in Minnesota with basement-type foundations is one marked regional difference; ninety-eight percent of Minnesota homes are built with basements (Laquatra & McCarty, 1992). Although housing codes include safety regulations, such as for egress from basement bedrooms, and there are health considerations around basement use, there has been no research on how residents with basements use their basements. The purpose of this study is to investigate how basements are used in Minnesota homes.

This investigation examined basement use in Minnesota homes during seven consecutive days between March, 1994 and February, 1995. A random sample of potential participants from each county was drawn from telephone listings. Only households in houses with basements were eligible.

Respondents who agreed to participate were mailed packets containing a questionnaire to report household and housing characteristics, and a diary in which to record types and duration of activities performed in the house by household members for seven consecutive days. All housing and household characteristics discussed in this paper are limited to the 589 cases with complete data.

The mean number of persons per household in the sample was 3.0 (SD=1.4). In 38 percent of the households, one household member was employed full-time; in another 38 percent, two or more household members were employed full-time. Less than one-quarter of the households had no one employed.

Eighty-nine percent of the homes in the sample had closed basements. Fourteen percent had walk-out basements; sixteen percent had other types of configurations. Seventy-five percent of the homes had full basements while the others had partial basements or were combined with crawl spaces.

What types of spaces have been built into basements? The types of rooms reported in basements are shown in Table 1.

Table 1. Basement rooms reported in 589 Minnesota homes

Type of Room	Houses with 1 or more rooms of this type
Laundry Room	244 (41%)
Bathrooms	216 (36%)
Family Room	182 (31%)
Furnace Room	173 (29%)
Storage rooms	170 (29%)
Recreation room	147 (25%)
Bedrooms	201 (35%)
Workroom or Shop	71 (12%)
Office	45 (8%)
Kitchen areas	27 (4%)
Living room	24 (4%)
Dining areas	7 (1%)

What types of activities are conducted in basements? Table 2 indicates that the types of activities conducted in basements are extremely diverse. Besides the activities listed in the table, in 28 homes a business was located in the basement.. The types of businesses operating from the basement include non-farm and farm offices, arts and crafts and photography businesses, repair and manufacturing businesses, commercial child care, and teaching and tutoring services.

Table 2. Most common occupant activities in the basement during the test week

Activity reported	Number of households
Laundry	356 (60%)
Utility (manage food storage, stored articles or recyclables)	239 (41%)
Cleaning (wet or dry)	204 (35%)
Shower or bathing	190 (32%)
Sit to talk, play games, watch TV	184 (31%)
Change clothes, groom self	172 (29%)
Children's play (with or without supervision)	105 (18%)
Household repairs	91 (15%)
Office or school work	86 (15%)
Exercise (with or without equipment)	78 (13%)
Crafts (work with wood, paint, sewing machine, etc.)	62 (11%)
Meal preparation or eating	40 (7%)
Pet care	36 (6%)
Computer use (office or school work, or games)	31 (5%)
Wood fire activity (stack wood, tend or repair stove)	28 (5%)

How much time do household members spend in basements? In the household diary the number of minutes was reported that each person spent on each of the two housing levels--the basement and the next level above the basement. The mean amount of time spent in the basement during the test week was 27.1 hours per household (SD=45.2), compared with 173.0 hours on the main level (SD = 107.6). The average amount of time spent per person in each household in the basement during the test week was 8.5 hours (SD=13.3) and on the main level was 63.8 hours (SD=35.1)

The number of hours spent in the basement is related to the age of the house; residents of new homes spend more time in the basement than residents of older homes. Residents with walk-out basements spend more time in the basement than residents with other types of basements.

Because about 1/3 of the homes had bedrooms in the basement, the number of hours that each household member spent sleeping in the basement was computed. Males are slightly more likely than females to sleep in the basement; 6.2 percent of males and 4.6 percent of females slept there at least 40 hours during the test week.

Teenagers are more likely to sleep in the basement than any other age group; 16 percent of 13- to 19-year-olds slept more than 40 hours per week in the basement during the test week.

This study of a random sample of households shows that people in Minnesota do occupy their basements for significant amounts of time, including time spent sleeping. These activity patterns have implications for health and safety.

Health problems can result from exposure to pollutants in basements: radon, carbon monoxide, heating fuels, sewer gas, molds, solvents, paints, and stored chemical products. The authors conclude that attention should be given to ventilating basement spaces in an effective and all-inclusive manner.

To reduce risks related to improper furnace and water heater operation, these appliances should be serviced regularly. Basement rooms should also have smoke detectors as well as carbon monoxide detectors.

Housing codes require that basement sleeping rooms have an outside exit in case of an emergency. Basement rooms where children play and other household members work and relax should also have access to outside exits. Walk-out basements provide that kind of access.

References

- American Housing Survey (1993). Detailed Tables from the 1993 AHS-N Data Chart: Good Buildings? - Table 2-2. World Wide Web URL: <http://www.census.gov/ftp/pub/hhes/housing/ahs/tab2-2.html>
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This research was funded in part by the Minnesota Department of Health as part of its State Indoor Radon Grant program.