

A PRISON ENVIRONMENT'S EFFECT ON HEALTH CARE SERVICE DEMANDS

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ABSTRACT

This study looks at the impact of a corrections environment upon prisoners through a process of monitoring inmate attendance at sick call clinic. Contrasting cell block designs and characteristics are compared on the basis of significant differential demands for health care services emanating from specific areas. Known psychological and physiological responses to situations perceived to be threatening provide the theory that health behavior may be used as one indirect measure of environmentally induced stress. Findings suggest there are architectural design features of the prison environment that provide basis of perceived threats to inmate safety and survival. Loss of privacy on several dimensions appears to be a critical environmental characteristic.

Research has established that abnormally high utilization of health care services occurs in total institutions. This raises several questions. Do people who find themselves in total institutions have characteristics which are predominantly unique to their population but at variance from the general population? If so, would such variation influence the differences in utilization of health care? Are there common characteristics of total institution environments that would cause the high rates of health care utilization?

Studies of Navy ship crews by Doll et al., 1969 [1]; Gunderson et al., 1970 [2]; and a prison study by Andrew Twaddle, 1976 [3], revealed health care utilization patterns which were similar to each other. Here two different total institutions with different subject profiles produced similar patterns. This suggests the possibility that characteristics of total institutions are causal rather than characteristics of the subjects.

These questions prompted a study of the environmental characteristics at the State Prison of Southern Michigan (S.P.S.M.) and their influence on health care service demands of the prison population. The objective was to search sub-environments within the prison for causal variables related to increased rates of health care utilization. A theory of stress-induced need for health care service is put forth. Speculation is that unique combinations and accumulations of environmental stressors exist in sub-environments which are causal.

OVERVIEW

In his discussion of "Diseases of Adaptation," Dr. Hans Selye says, "... that what matters is not so much what happens to us, but the way we take it." [4] Selye has established the relationship between illness and the balance of the body's immune system. He further established relationships between the immune system and endocrine activity caused by stress. Are felony prisoners more susceptible to stress? Could this be one of the reasons prisoners as a whole seek health care more frequently?

Stephen Kaplan writes in *Perception of an Uncertain Environment*, "Making a go of it requires, first of all, comprehending what is going on. This in turn requires the capacity to recognize things, that is, to react to patterns of stimulation as instances of categories that one has experienced previously. Such recognition is more difficult the more uncertain the environment is." [5] Kaplan's observations lead directly to a theory of coherence explored in Aron Antinovsky's *Health, Stress, and Coping* [6].

Atinovsky contends that a strong sense of coherence is what enhances, what he refers to as, a salutogenic state. This in turn improves the chances of good health and well-being.

Atinovsky theorizes that it is within the well-being of other areas of life that enduring general coping abilities are developed. It is through this general coping ability that one is able to successfully or unsuccessfully deal with stressors.

Yochelson and Samenow have conducted extensive evaluations of criminal personalities [7]. One of their conclusions is that fear in the criminal is widespread, persistent and intense throughout his life. In fact, the criminal is so fearful of losing his life that he perceives threats emanating from many sources, such as water, lightning, insects, and closed spaces.

The common thread which runs through Yochelson and Samenow's description of the criminal personality is the excessive need to control rather than adapt as a coping strategy.

Even though we know total institutions influence health care utilization, speculation remains as to specific causal variables. At some point during incarceration and under certain circumstances prisoners make a decision to attend sick call.

Total institutions normally offer free housing, food and medical care. These

are items most human beings constantly struggle to obtain. Yet, very few human beings would consider prison a preferred environment, intensely institutionalized inmates excepted. The common characteristic total institutions have to offer their occupants is severe loss of control of life's outcomes.

Once inside the prison there are additional threatening conditions which await the inmate. Potential rape, robbery, assault and debasements of every kind are present. Loss of privacy and identity comes with the prison I.D. number and cell assignment.

Crowding, noise, and loss of privacy were three prominent characteristics observed at S.P.S.M. The research of D'Atri and Ostfeld, 1973, concerning physiological response to crowding revealed high blood pressure correlations with the degree of crowding [8].

In Lou McClelland's discussion on "crowding and territoriality" in *Humanscape*, she says, "The critical factor producing the endocrine response is 'social competition' or 'social density' which is not identical to spatial density." [5] Crowding is less tolerated in institutions where individual members of a population are socially incompatible.

Sound adds cognitive input to the brain continuously. When the eyes and ears are receiving a sensory input from a given source or object, they combine to diminish ambiguity about the source or object. In Sherwood L. Washburn's *Aggressive Behavior and Human Evolution*, he speaks of the time when man separated from the apes [5]. At approximately one million years ago man's brain is thought to have begun increasing. "The brain and the way of life evolved together." The rapid change in human culture over the last 40,000 years has placed man's ancient nature into an environment foreign to that in which it evolved. A loud noise in ancient times probably meant imminent danger was near. Today there are many generators of loud noise. We become accustomed to them — at a price.

David C. Glass et al., 1973, concluded from their studies on "Behavioral and Physiological Effects of Uncontrolled Environmental Elements" that stressors such as unpredictable, uncontrollable noise reduce mental capacity to solve complex problems [9]. They also found that the real or perceived ability to control the noise or stressor tends to reduce the negative effect of the stressor.

Privacy becomes a critical issue in a crowded prison such as S.P.S.M. The constant "on guard" position prisoners must maintain requires some periods of rest and withdrawal.

Dr. Leon Pastalan's discussion on "Privacy Preferences Among Relocated Institutionalized Elderly" points up the importance of privacy [10]. Mortality rates tended to be higher for those who had a greater discrepancy between the level of privacy attainable and the level preferred. At S.P.S.M. there is no "solitude," no place for "intimacy"; "anonymity" is not allowed. "Reserve" is about all that is available to a prisoner. There is no place to go when you've "had enough" except inside your mind. Even that is disturbed by the noise.

To be under observation at all times by other human beings is to be vulnerable. Potential adversaries can learn all habits, movements, and weaknesses and develop effective methods of attack. The potential for survival is diminished for those under constant surveillance.

The research of Rachel Kaplan and Stephen Kaplan on “preferred environments” reveals human preferences for “green environments.” [5] In addition to the “green” preference, elements such as “edges,” “textures,” and “mystery” or the promise of “additional information” are included in preferred environments. For a prisoner at S.P.S.M. there is virtually no “green experience.” [5] There is little “mystery” inside the concrete prison walls or inside a concrete cell. After the eyes have explored the corners and edges of a cell for a few days, there is little left to engage one’s curiosity. It is difficult to become involved in such an environment.

Elmer H. Johnson and Benjamin Britt’s research on felon self-mutilation concludes that “self-mutilations are one of the emotional consequences of placing the convicted offender in an environment deliberately designed to create frustration.” [11] The Johnson, Britt study suggests that prisons as a social system are predicated on the assumption that imposition of stress is primary as a device for inducing behavioral change. Unfortunately, those who bring certain individual qualities of stress tolerance with them to prison may find that level of tolerance exceeded. Supportive services for individuals reaching a crisis stage of stress breakdown are sorely lacking in most prisons.

The Place

The prison population studied lived in the State Prison of Southern Michigan (S.P.S.M.) located at Jackson, Michigan. Constructed in the late 1920’s and early 1930’s, S.P.S.M. is referred to as the largest walled prison in the world. Figure 1 illustrates the site plan and cell block locations of this prison.

The Cell Blocks

Cell blocks 1, 2, 3, 4, and 5 on the north of the prison are of a “spine” design. Individual cells are placed back to back upon a central utility corridor which forms the “spine.” Each cell opens onto a catwalk running the length of the cell block on each gallery level. There are five galleries or stories of cells in each cell block. Figures 2 and 3 show a typical gallery plan and section of the “spine” and “open” type cell blocks.

Walls, floors, and ceilings of the cells and cell blocks are constructed of poured concrete. The translucent glass prevents prisoners from seeing out of the cell block unless the windows are opened.

Each cell contains approximately sixty square feet of floor area. Furnishings normally consist of a prison type toilet, one hand sink with hot water and cold water taps, one steel bunk, one personal steel locker, a chair, and one small desk.

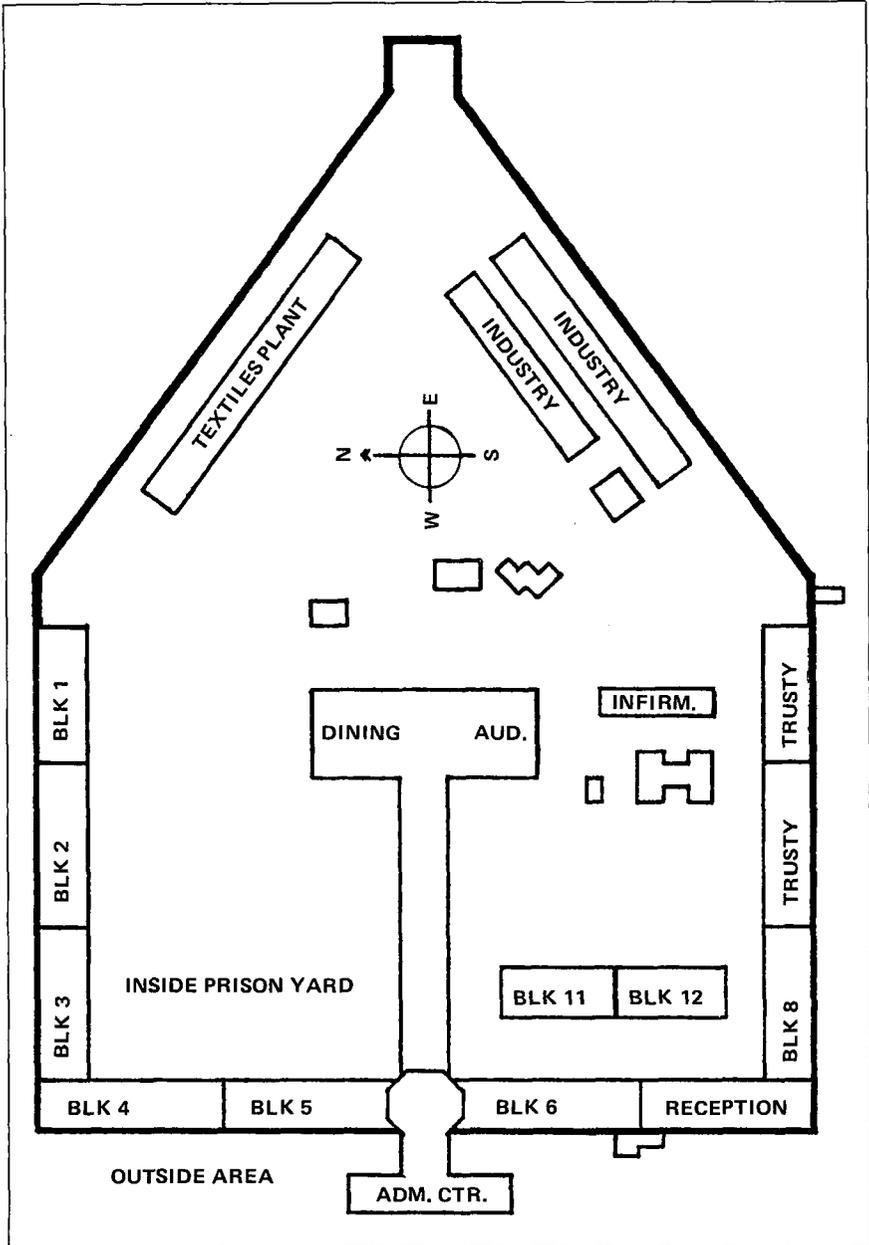


Figure 1. Prison site plan.

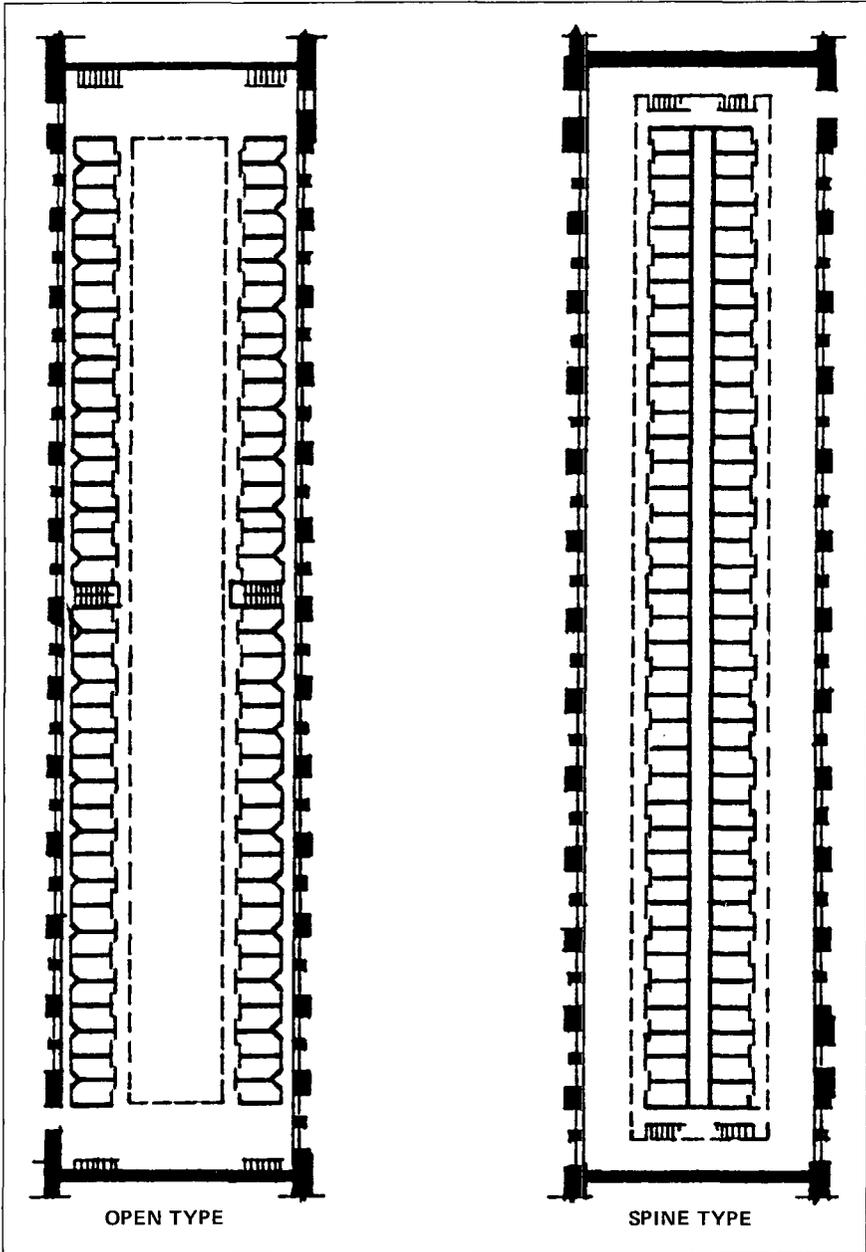


Figure 2. Typical gallery floor plan of cell blocks.

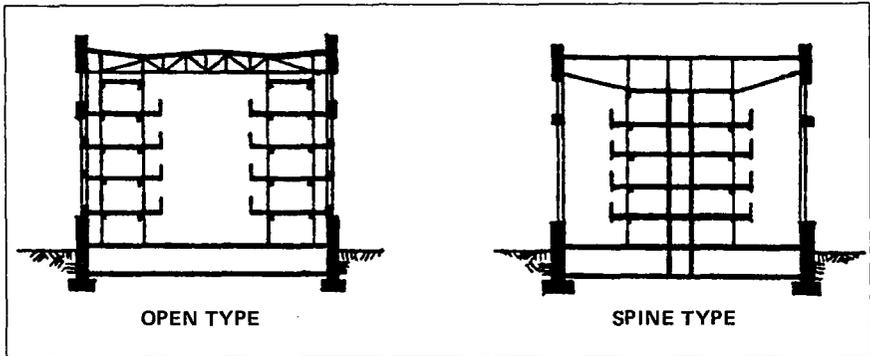


Figure 3. Cross section through cell blocks.

The arrangement of cells gives a degree of visual privacy except for anyone who walks past the front of the cell on the gallery catwalk. For those on the "outside" half of the cell block, the view is toward farm land when the windows are open. For those on the "inside" half, it is toward the prison yard and the walls surrounding the yard. One prisoner cannot see another when they are all locked in their cells.

Cell blocks 6, 7, 8, 9, 10, and 12 are located on the south half of the walled section. These cell blocks are of the "open" design with cells arranged along the exterior walls and facing across an "open" area way.

All "open" type cell blocks except cell block 6 have five gallery levels. Cell block 6 houses the "protective custody" population on the third gallery level.

Cell blocks 6 and 8 are similar in design. Their typical floor plan and cross section are also shown in Figures 2 and 3. There is a guard corridor on each gallery level extending the full length of the cell block between the exterior wall and the cell. This arrangement places bars at each end of the cell further reducing privacy of the occupant.

Cell blocks 11 and 12 are free standing units of "open" design and located inside the walled section as shown in site plan Figure 1. The design of these two cell blocks is similar to blocks 6 and 8 except there is no guard corridor along exterior walls.

The cell arrangement in all "open" cell blocks drastically reduces the visual privacy for each cell compared to that in the "spine" cell blocks. A prisoner with a cell near the midpoint of the cell block can see and be seen by approximately 100 other prisoners on the opposite side of the "open" cell block.

The dining room and kitchen serving all the cell blocks in the walled prison are located in the center section of the prison services building shown in Figure 1. Seating capacity in the dining room is between 1200 and 1400 men at one time. Walls, floor, and ceiling are hard surfaced. It was not uncommon to see birds flying about the ceiling and alighting upon the light fixtures.

The prison yard, while not an area which was analyzed, does tend to influence behavior. When two or three thousand men congregate in such a yard, the potential for violence rises. There are frequent fights between prisoners which are difficult to prevent.

Special Environments

Some prisoners are segregated from the general prison population for specific reasons. The “spine” type cell block 5 was used to house prisoners held for “punitive” segregation. Cell block 6 was similar to other “open” type cell blocks except for gallery level 3. On the east half of this gallery level “protective custody” prisoners were housed. This gallery catwalk was enclosed with heavy wire mesh from floor to ceiling and locked gates were provided at each end of the third level catwalk. This prevents unauthorized contact with prisoners housed there. These prisoners are confined to their cells for long periods of time similar to the segregated prisoners in cell block 5 except they are allowed to eat meals and do some exercise outside of their cells.

General Strategy for the Study

It was Twaddle’s opinion that to pursue studies that might isolate independent variables would require access to the housing and work units of the prison. It is in these environments where decisions are made to seek medical care. Based on this premise, a strategy was developed that would identify areas within the prison where higher than average health care utilization was generated. These areas could then be examined in more detail and the management and environmental characteristics could be compared to those areas where lower health utilization occurred.

A large sample was also considered valuable in detecting subtle variations which might go undetected in a smaller population.

Cell blocks 1, 2, 3, 4, 5, 6, 8, 11, and 12 were selected for this study. Two contrasting cell block designs were represented in this group for comparative analysis. Two contrasting segregation environments, punitive and protective custody, were represented in cell block 5 and the third gallery level in cell block 6.

Sick call attendance was selected as the dependent variable for this study. This represented the result of a decision made by the prisoner to seek health care services. In prison as in the free world, the decision to seek medical services at sick call does not necessarily mean a person is really ill.

A study by Barbara Howe et al., 1975-76, revealed several aspects of the role sick call plays in prison [12]. Sick call may provide an excuse to get out of work; it may allow an inmate to obtain pharmaceuticals, a chance to meet another prisoner, to conduct business, provide a break in prison boredom, and of course, contact with medical staff for relief of illness symptoms or consultation

on an illness. The contact with medical staff may provide a prisoner with a certain amount of nurturing and psychological support as well as a sense of being cared for.

Monitoring sick call is an indirect way of monitoring prisoner behavioral response to the environment.

The need or decision to seek medical care may have origins from one or more variables. Infections resulting from lowered immunology capabilities, personality characteristics, racial characteristics, self-inflicted disease or injury, exceeded stress tolerance, and hypochondriasis are some of the possible variables. The underlying theory for this study is that stressors or accumulation of stressors within certain environments will cause the stress tolerance levels of human beings to be exceeded. This will result in a higher health care utilization among those living in the presence of such stressors than among those living in less stressful environments.

In order to isolate the environments from which the highest rates of health care demands originated, locational and medical information was collected on all who came to sick call. In addition, the medical services generated by each sick call were recorded in order to study the implications of each sick call on the other elements of the health care system.

Cell block characteristics were observed and documented on the following attributes:

1. visual privacy afforded in the cell;
2. number of cells per cell block;
3. visual stimulation via color;
4. ventilation control;
5. visual orientation inside and outside the cell block;
6. traffic paths used by prisoners within the cell block;
7. compass orientation of cell blocks; and
8. materials used in construction.

The collected data would allow health care utilizers to be traced vertically, horizontally, cell block to cell block, security management to security management, by demographic characteristics, and by illness complaint.

Sick call monitoring was started on May 1, 1978. Each man who came to sick call during the month was recorded and data collected from him.

Sick call for segregated prisoners is held in the segregation cell blocks rather than bringing them to the sick call clinic building for security reasons.

Figure 4 illustrates the content of sick calls by the percentage distribution of complaints and reasons for attending sick call.

Figure 5 illustrates the percentage of specific services generated by the recorded sick calls.

One aspect of this distribution is worth special note. The high volume of pharmacy services prescribed and particularly the high percentage of pharmacy

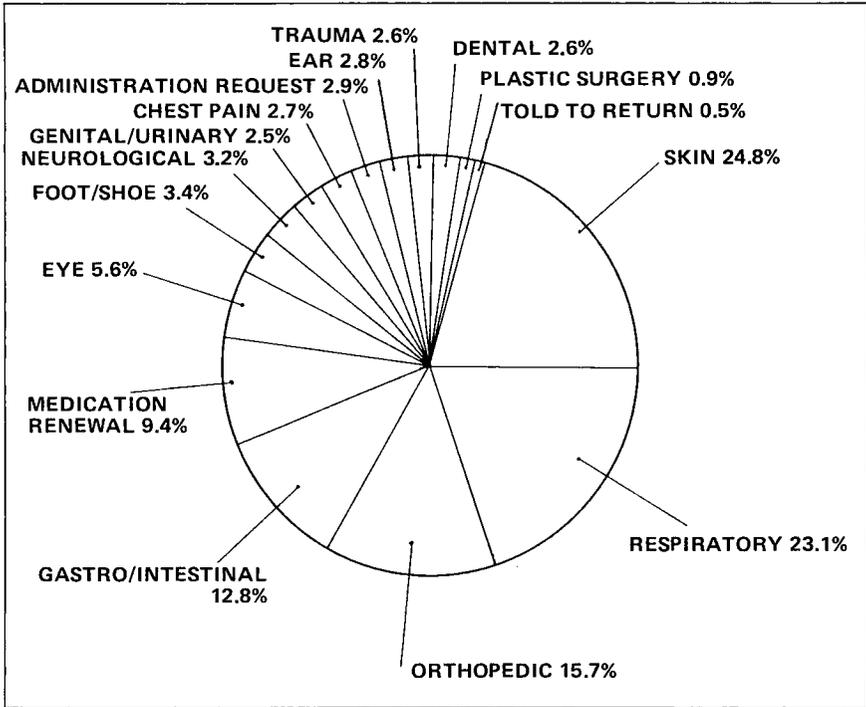


Figure 4. Complaints and reasons given for sick call attendance.

consisting of “over the counter” (O.T.C.) pharmaceuticals reflects the impact of security policy on the health care utilization.

The gallery level upon which a prisoner lived also made a difference in his chances of deciding to go to sick call. The chances of those living on the lower gallery levels coming to sick call were found to be significantly greater than those who lived on the top two gallery levels in cell blocks 1, 2, 3, 4, and 5. These are all “spine” type cell blocks.

The predicted odds of not coming to sick call when the gallery level effect is considered are shown in Table 1.

Except for gallery level 2 (3rd gallery up) the predicted odds of not coming to sick call increased on each gallery level, i.e., prisoners on the upper gallery levels do not attend sick call as frequently as those on the lower gallery levels. Figure 6 illustrates the per cent of prisoners coming to sick call at least one time on each gallery level in each cell block.

A distinct pattern difference for the upper galleries exists between the “spine” type cell blocks and the “open” type when cell block 12 is omitted from the comparison. The substantially higher percentage of prisoners coming to sick call from cell block 6, gallery level 3, reflects the effect of the protective custody on segregated prisoners housed on that level.

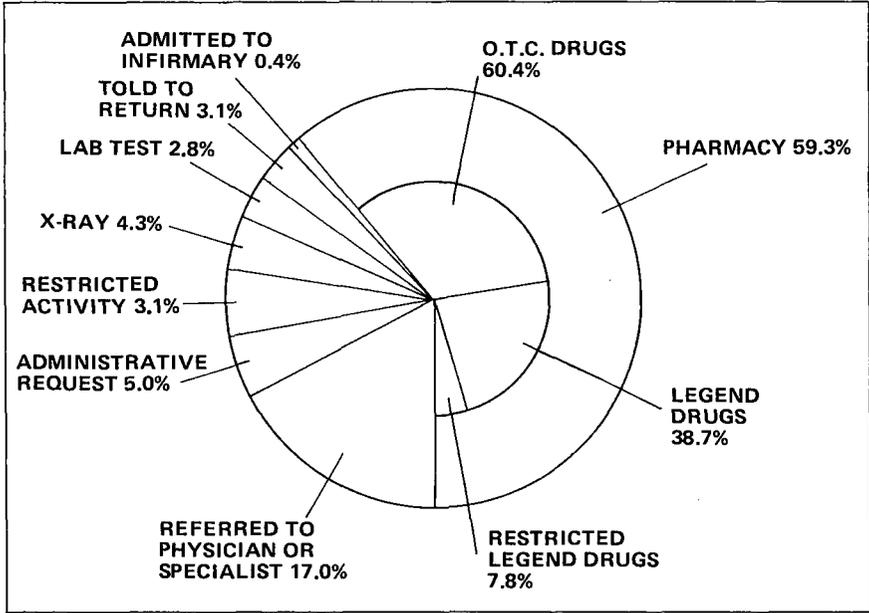


Figure 5. Services generated by sick calls.

Table 1. Predicted Odds of *Not* Coming to Sick Call by Gallery Level

<i>Gallery Level</i>	<i>Change in Odds Multiplier</i>	<i>Std. Err.</i>	<i>Significant Level</i>	<i>Predict, Odds No Sick Call</i>	<i>% Coming to Sick Call</i>
Base	.83	-1.5037	.1336	2.48	28.7
Level 1	.91	-0.7443	.4533	2.72	26.9
Level 2	.77	-2.2984	.0214	2.3	30.3
Level 3	1.23	+1.5679	.1211	3.7	22.8
Level 4	1.40	+2.5644	.0108	4.2	19.2

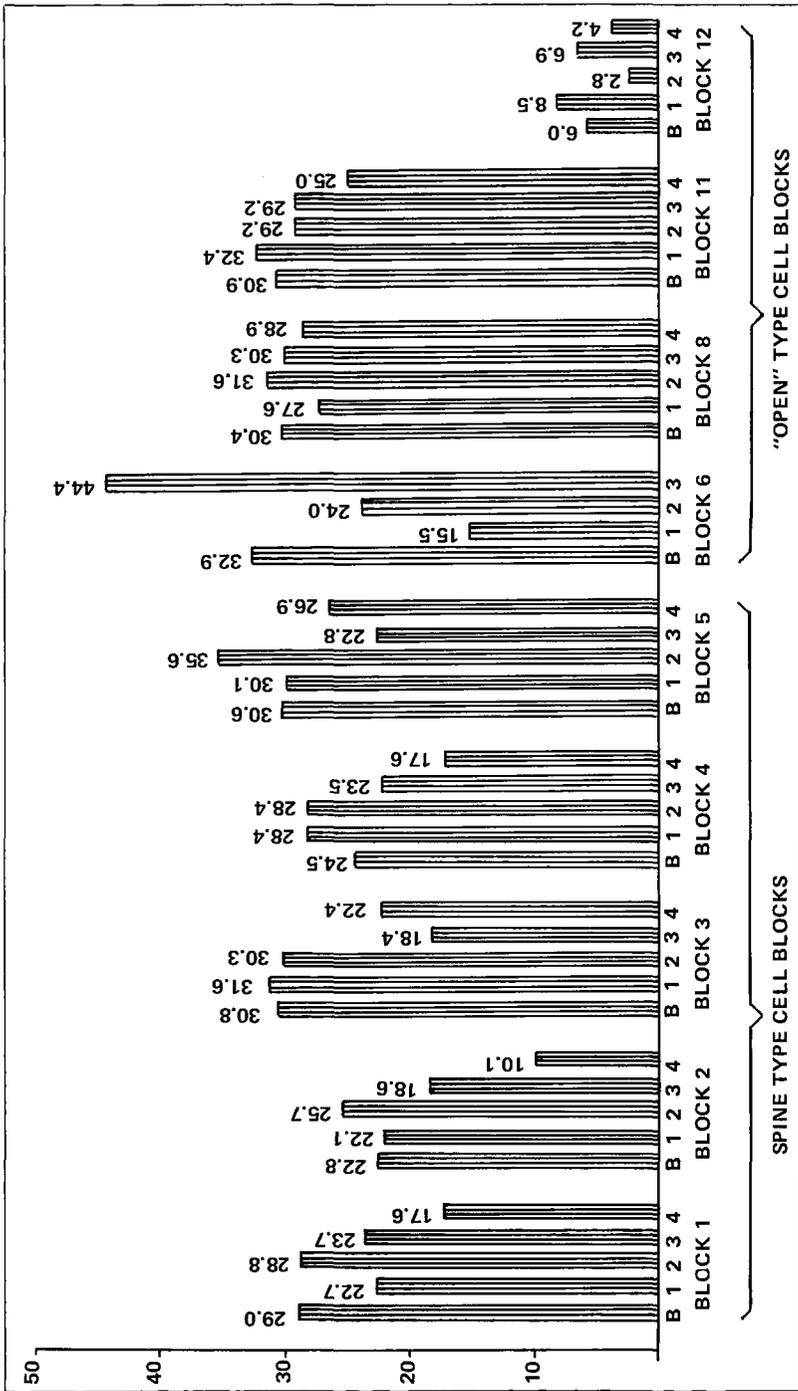


Figure 6. Per cent of Prisoners coming to sick call at least one time on each gallery level in each cell block.

Table 2. Percentage of Prisoners Coming to Sick Call by Cell Block Type

	<i>Cell Block Type</i>		<i>Total</i>
	<i>Spine</i>	<i>Open</i>	
Not Sick	1183 (76.0%)	773 (70.7%)	1956 (73.8%)
Sick	372 (24.0%)	320 (29.2%)	692 (26.1%)
Total	1555	1093	2648

The cell block in which a prisoner lived affected his chances of deciding to attend sick call. Not only did the cell block make a difference, but the type of cell block ("open" or "spine") also made a difference. Those men living in "open" cell blocks, except for cell block 12, were more likely to come to sick call than those living in "spine" blocks.

Due to the biasing effects of the punitive segregation cell block 5, and the honor cell block 12, these two blocks were deleted from the analysis of this sick call pattern. The percentage of men coming to sick call from the remaining "spine" and "open" cell blocks is shown in Table 2.

The percentage of prisoners coming from "open" cell blocks is significantly higher than those from the "spine" blocks. When the overall probability of coming or not coming to sick call was calculated the expected number of sick calls from "spine" blocks was 406. The expected number from "open" blocks was 285. From the observed sick calls and expected, the calculated $\chi^2 = 9.49$ with 1 df. This indicated a significant difference between open and spine at the 1 per cent level.

Observed management of "spine" blocks did not differ from the "open" blocks when segregation cell block 5, protective custody in cell block 6, and honor blocks 11 and 12 are omitted. The most prominent difference between "spine" blocks and "open" blocks is the cell arrangement which causes an extreme loss of privacy for prisoners housed in the "open" blocks. This held true especially for cell block 6 and 8 which had guard corridors along the back of each cell. Prisoners housed in "open" cell blocks may be under observation by others any time they are in their cells.

Inability to obtain visual or auditory privacy is similar to inability to defend one's territory. Such arrangements require a prisoner to be "on stage" at all times in order to maintain status. Maintaining attention to what one is doing and how it might be perceived by others for prolonged periods of time under such circumstances is very stressful.

When all cell blocks were compared for their respective rates of sick call, cell block 12 varied extremely from all others as illustrated in Figure 6.

Cell blocks 11 and 12 are classified as "honor" blocks. Prisoners must request assignment to an honor block, they must have been free of trouble

reports for one year as well as having a job. This is a self-selecting group who have considerably more control over their life's outcome than others within the prison. Why such a difference should exist between two honor blocks was puzzling. Cell block 12 was the first honor block established inside the walled prison as a trial program. There was a certain prestige and several additional privileges given to those in 12 block.

Sick Call and Noise in the Cell Blocks

While no direct or statistical correlation was made between sick call and noise levels, there does appear to be some pattern. Perhaps this will lead to further examination in future prison studies.

One of the early impressions of the prison environment at S.P.S.M. was the noise in the cell blocks and work areas. The frequent public address announcement, steel doors and bars being slammed shut, and the yelling of prisoners reverberated constantly through the cell blocks.

From the sound recording tapes collected in each cell block, noise levels were plotted for both magnitude and duration over the twenty-four hour period of taping. The number of minutes which noise levels exceeded 65 dBA, 70 dBA, and 75 dBA were totaled for each level and the percentage of total time was calculated. Figure 7 illustrates the result of this sound evaluation in each cell block.

When the pattern of noise levels for "spine" cell blocks is compared with the pattern of sick calls in these same cell blocks, a relationship exists. This holds particularly so in the 70 dB range of noise. Noisier cell blocks have more sick calls.

"Spine" Cell Block Noise vs. "Open" Cell Block

The principal noise generator is the individual prisoner in each cell. When the noise time and level of the "spine" blocks are compared to the "open" blocks, we find the "spine" blocks to be noisier for longer periods of time.

The design of "spine" blocks is such that prisoners have no visual contact with each other unless someone walks past the front of a cell. This affords more visual privacy than the "open" cell blocks. However, there is more social isolation. In order to communicate, the prisoners must yell to each other if they are to communicate verbally. In the "open" cell block, numerous prisoners can see each other at all times while in the cells. They can maintain a certain level of visual communication through body language and overt hand gestures. This may reduce a certain amount of yelling in "open" cell blocks over that in the "spine" blocks.

Sick Call Distribution by Cell Orientation

When the frequency of sick call for those living near the cell block stairwells where traffic was heaviest was tested against those living near the midpoints of

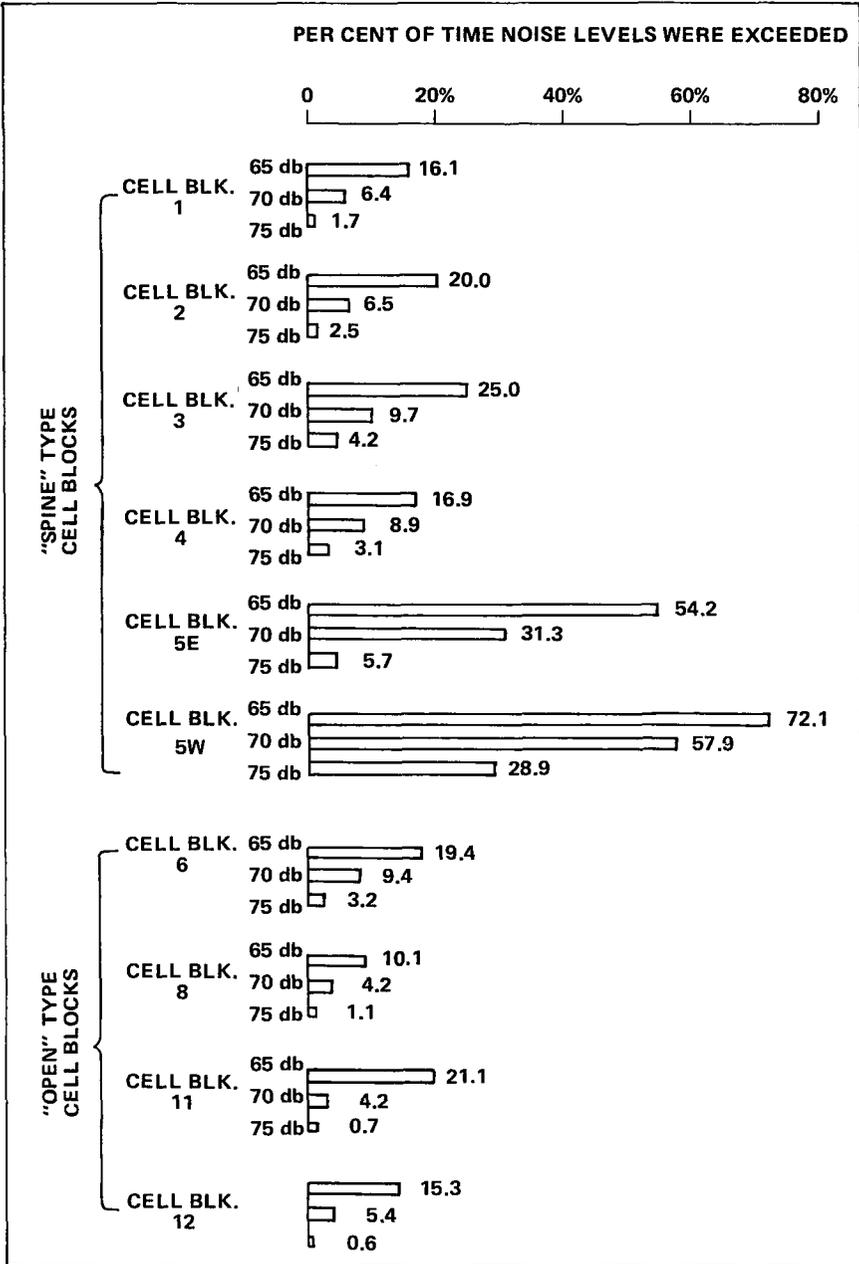


Figure 7. Per cent of time in 24 hours that noise levels were exceeded in each cell block.

cell blocks, no significant difference existed. Surprisingly, a statistically significant greater chance of coming to sick call was observed among those prisoners living in the "inside" half of cell blocks 1, 2, 3, 4, and 5 than among those on the "outside" half. Figure 1 illustrates the "inside"/"outside" relationship.

The "inside" refers to that half of each cell block which has cells closest to the prison yard side of the cell block. The "outside" half faces toward the "free world" side of the prison wall. Since this was an unexpected finding, the possible interaction of gallery level, side of block and race was tested.

The predicted odds of *not* coming to sick call when cell block orientation effect is considered are shown in Table 3. The predicted odds of *not* coming to sick call are greater for prisoners who live in cells located on the "outside" half of the cell blocks 1, 2, 3, 4, and 5. There is something about the "inside" half which is influencing prisoner decisions to attend sick call.

With each half of each cell block being essentially symmetrical, there appears no specific design feature which would be suspect as causal.

A more subtle factor may exist in the differences between "inside" and "outside" halves. When windows of the cell blocks are opened so prisoners may look out of the cell block, those on the "inside" half look into the prison yard. Those on the "outside" half look out to green farmland and forests which are considered preferred environments. This type of view may provide some stress reduction in itself.

CONCLUSIONS

Given the conditions existing in most prisons today, imprisonment is certainly a threat to inmate survival. The losses experienced in prison would certainly be capable of causing physical and mental deterioration.

One major category of loss is that of privacy. This includes invasion of personal privacy and loss of identity through the institutionalization process. Critical visual, spatial and acoustical privacy losses also occur. The ability to defend one's territory in prison is diminished drastically in all the foregoing measures. When extreme social crowding exists such as at S.P.S.M., territorial

Table 3. Odds Prediction of *Not* Coming to Sick Call by "Inside" vs. "Outside" Cell Orientation (Cell Blocks 6, 8, 11, and 12 are Excluded)

	<i>Change in Odds Multiplier</i>	<i>Std. Err.</i>	<i>Significant Level</i>	<i>Predict. Odds No Sick Call</i>	<i>% Coming to Sick Call</i>
Inside	.843	-2.6505	0.8	2.52	28.4
Outside	1.178	+2.6505	0.8	2.52	22.9

defense and privacy are even further reduced due to the population size and the environmental design. People placed in such circumstances will attempt to develop some methods or behaviors to cope as best they can. The health behavior discussed here attests to this human behavioral response to such environments.

Prisons should be designed to provide visual and acoustical privacy for the inmate while also providing necessary security commensurate with the inmate and society's needs. This may modify some aspects of behavior. Such designs should also limit the number of prisoners within any one institution. The reduction in population size should reduce the number of privacy penetrations for all inmates. One could expect this to simultaneously reduce the stress placed upon institutional staff which, in turn, should improve prisoner-staff relationships. Staff must endure much of the same impact of the environment that inmates endure, and this affects their attitudes and behavior too.

Obviously present prison environments and their management methods have been rather unsuccessful so far as rehabilitation of inmates is concerned. Little is to be lost and much may be gained in "humanizing" the prison environment. Greater respect for the importance of privacy among human beings may be one place to start.

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