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DESIGN, STRUCTURE, AND BEHAVIOR:

A STUDY OF VISITORS AT CRATER LAKE NATIONAL PARK

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Paper submitted to the Program Committee for the annual meeting of the Rural Sociological Society, San Francisco, August, 1978. Research was conducted under Contract # CX900070061 between Oregon State University and the National Park Service.

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ABSTRACT

There is widespread agreement that people are affected by their environments, but little knowledge of how specific environmental elements affect behavior. A theory is developed which describes the connection between structure, perception, behavior, and experience. The theory is illustrated using an exploratory study of visitor behavior at Crater Lake National Park in Oregon. Rim Village, the center of visitor activity, was divided into areas depending on structural characteristics. Behavior was then observed and recorded to see how design and structure affected use patterns. Findings generally confirm the notion that design and structure affect behavior.

The idea that people are affected by environmental factors is so widely accepted that it is almost a truism. A great deal of attention has been focused on the man-made environment, with the implication that through better design more of man's physical and psychological needs can be met (Izumi 1966; Walker 1971). The effect of housing on people's lives has been an area of particular concern for a number of years (Schorr 1966; Sommer 1969). But in spite of extensive efforts to design and manage environments, there is little knowledge of how specific environmental changes affect behavior. As Sommer (1969, pp. 3-6) points out, attention is generally focused on the structure itself ("harmony with the site, integrity of materials, cohesiveness of units") rather than the interaction between structure and human activities. "When it comes to materials and structures, architects join engineers in carrying out systematic research, but in the behavioral realm, the way buildings affect people, architects fall back on intuition, anecdote, and casual observation."

Managers of public resources have also been concerned with the ways in which environments affect experience. Here the problem is particularly important because people often "accommodate themselves to anything, no matter how uncomfortable or dysfunctional, either because they do not know how to improve the situation or believe that rules forbid them to alter the [existing] arrangement. This is especially true in institutional ... [settings]... where space is occupied by non-owners for short periods" (Sommer 1969, p. 10).

The goal, then, is to "design, plan, and develop resources in such a way that the user's experience...will be enhanced" (Driver 1972). Research has explored recreationists' motivations and needs (Driver 1972) as well as the ways in which people perceive and define recreation environments

(Shafer 1969a; Shafer and Mietz 1969; Lee 1972). As in the architecture and design fields, there is interest in the connection between structure and behavior, but little theoretical explanation or empirical demonstration.

This paper has two objectives. The first is to develop from the psychological literature a theoretical connection between structure, perception, behavior, and experience. The second is to apply this theory to resource management, using illustrative data from a study of the ways in which design and structure affect visitor behavior at Crater Lake National Park.

THEORY

The general theoretical model proposed here is that structure affects experiences only indirectly. In order to affect experience, structure must produce a change in perception, which in turn affects behavior. Behavior then produces a change in experience. This can be illustrated as:

structure ⟶ perception ⟶ behavior ⟶ experience

STRUCTURE

Structure consists of interrelated factors which, taken together, form a "frame of reference" (Sherif and Cantril 1947). The frame of reference is essentially a boundary which determines the perceptually relevant cues in any given situation. It is possible to distinguish between the structure of past experience, social structure, physical structure, and administrative structure.

Structure of Past Experience

People tend to act in ways that have been successful for them, so each individual forms a set of personal structures based on past experience (Studer 1969; Cantril 1950; Ittelson and Cantril 1954; Sherif and Cantril 1947; Sherif, Sherif and Nebergall 1965; McConnel 1974). These structures make it possible to recognize and react to stimuli without constant reintroduction. For example,

> if a person in a dark room sees two illuminated toy balloons, one of which expands as the other gets smaller, he will interpret this not as a change in the size of the balloons but as a change in their distance from him.... From past experience we know that if two things are identical and one is larger than the other, it should be closer to us. And so when the balloon is made larger we see it coming closer while the one made smaller recedes (Cantril 1950).

In addition to helping interpret present stimuli, past experience also provides a basis for the formation of future expectations (Proshansky, Ittelson, and Rivlin 1970; Sherif, Sherif, and Nebergall 1965; Cantril 1950; Itellson and Kilpatrick 1953).

Resource planners and managers obviously cannot change the past experiences of users. But understanding this type of structure may help in understanding reactions and expectations. Visitors to national parks, for example, may have had "national park experiences" ranging from hotels, restaurants, and curio shops to remote backcountry. Managers may also have to deal with experiences that are "inappropriate," such as outmoded backcountry camp practices (e.g. cutting trees or burying trash).

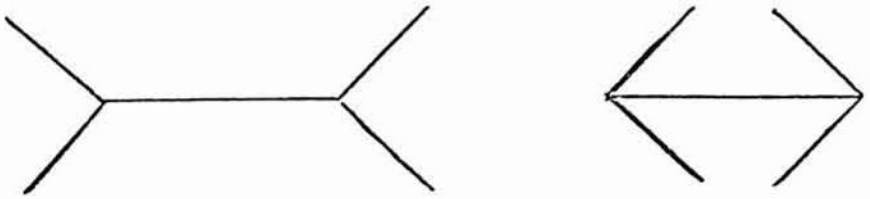
Social Structure

The general effect of others on individual perceptions has been well documented in the literature on reference groups (Merton 1968) and conformity (Sherif and Cantril 1947; Asch 1955; Cohen 1964; Sherif, Sherif and Nebergall 1965; Merton 1968; Kamal 1970). People are sensitive to norms, to what others think, and to how well their own actions "fit in" (Tuan 1974; Proshansky, Ittelson and Rivlin 1970c). Social structure also refers to individual characteristics (such as age and income), groups (families, couples, etc.) and regularities in behavior (e.g. restaurants fill up at lunch time). Social structure, like the structure of past experience, is difficult to change in a field setting. The primary benefit from understanding social structure is that planners can either meet user needs and expectations or take advantage of social structure when introducing change. An example would be building

wider walkways based on the knowledge that people use an area in groups of two or three, or lowering prices during off-peak periods to disperse use.

Physical Structure

Physical structure refers to the existing external environment in a given situation (Struder 1969; Proshansky, Ittelson and Rivlin 1970c; Tuan 1974). In studies of perception, it is these physical characteristics which are most frequently manipulated (Michotte 1946; Cantril 1950; Kilpatrick 1954; McConnel 1974). A simple example is the Mueller-Lyer illusion shown below, in which the horizontal lines are of equal length but appear different due to their surroundings (McConnel 1974).



Physical structure is one of the easiest factors to alter in research because the change is concrete, observable, and measurable. This kind of structure makes sense to resource managers for the same reasons. Physical structure in many cases is an extension of administrative structure.

Administrative Structure

Administrative structure essentially involves manipulation of both physical and social structures. It affects individuals from the standpoint of "what is allowed." Physical structures "define" areas in terms of location, access, and the activities for which provisions are made. Social structures in the form of rules and sanctions specify acceptable behavior. Administrative design, then, creates the physical and social definition of an area. Provision is made for a certain range of activities and for people possessing certain characteristics while other uses and users are excluded. For example, a remote lake in a roadless area will be used for fishing, swimming, and camping by those strong enough to hike. Providing road access will open the area to

boating and encourage use by other groups (such as older people or families with young children), although the wilderness character of the area may be lost.

To summarize, four different kinds of structure are relevant here. Social structure and the structure of past experience are of interest because they help in understanding people's motivations and reactions. Administrative and physical structure are more susceptible to manipulation, with the aim of providing opportunities for some kinds of experiences and precluding others.

PERCEPTION

Vision is the predominate perceptual sense in humans, and this is the area in which most perception research has been done (Robinson 1956, Cantril 1950; Ittelson and Kilpatrick 1953; McConnell 1974; Tuan 1974). Psychologists generally agree that there is a relationship between physical structure and perception (Michotte 1946; Ittelson 1951; Proshansky, Ittelson and Rivlin 1970; Ittelson and Cantril 1954; McConnell 1974; Tuan 1974). However, other components of the individual's frame of reference also have an effect, making perception selective (Sherif and Cantril 1947; Ittelson and Cantril 1954; Robinson 1956; Proshansky, Ittelson and Rivlin 1970c; Tuan 1974). Selectivity means either that all things in the environment are not perceived or that some are perceived more readily than others. For example, when participants in an experiment are hungry, they perceive food items as larger than non-food items of the same size, and recall more food objects than objects of other types (McClelland and Atkinson 1948).

Physical arrangements, then, can be expected to have an effect on individual perceptions. But this effect will be mitigated by other components of the individual's frame of reference, so that some physical structures will have greater salience than others.

BEHAVIOR

The criterion which reflects perception is overt behavior. Experiments with a "distorted room" (Kilpatrick 1954) provide an example. The room is built nonrectangular, with sloping walls, floors, and ceilings and with windows of different sizes and shapes. Viewed with only one eye, the walls appear vertical, floors and ceilings level, and windows the same size and shape. No matter how long a person views the distorted room, he cannot detect the distortion. Given a stick and told to touch different parts of the room, the observer is at first unsuccessful, but then acquires the ability to detect the distortion.

Physical structure and the structure of past experience lead to perception of the room as rectangular. This perception is inferred from behavior (verbal reports and unsuccessful attempts to touch different objects). Even in a laboratory, then, it is difficult to directly measure perception, and the primary focus is on behavior. This concern is mirrored in field work. Planners and managers have an interest in how people perceive an area, but what they really care about is how people behave and the kind of "experience" which results.

EXPERIENCE

The distorted room experiment demonstrates a relationship between structure, perception, and behavior. But it also shows how these factors affect experience more generally. As subjects observe their own attempts to touch different parts of the room, they become aware of its shape and begin to perceive it as it actually is. Later attempts to locate objects are more likely to be successful. The point is that the individual learns and generalizes from the interaction of the physical structure and his own behavior. This more general experience is likely to endure through time and affect future perception.

It is this kind of more general experience with which resource managers are concerned. As with perception, however, experiences are difficult to measure, and it is hard to know when and how they are affected by changes in structure. The researcher is forced to rely either on observation of behavior or on verbal reports. In operational terms, then, the four-variable model becomes a two-variable model; structure is manipulated and behavior is observed. We assume or infer that structural changes affect perception, producing behavioral change, and that changed behavior produces changes in the more general nature of the experience.

METHOD

Data were collected during the summer of 1977 at Crater Lake National Park in Southwestern Oregon (see Figure 1). The primary attraction of the area is the water-filled caldera of Mt. Mazama, which forms a clear blue lake six miles across and almost 2,000 feet deep. The lake is viewed from the caldera rim, which rises 1,000 - 1,500 vertical feet above the lake surface. Viewing the lake is the principal activity of visitors, although other opportunities exist.

The general goal of the study was to understand the ways in which the design of physical structures affected use. Observation was done at Rim Village (see Figure 2), which is the center of visitor activity in the park. Data were collected in several different ways. These included car counts in three parking lots, people counts and activity inventories in four viewing areas along the rim of the lake, activity inventories in the cafeteria building, and a more general assessment of how people distributed their time among these areas.

Six of the data collection tasks required half-hour periods. These tasks were numbered and the order in which they were performed was randomly determined each day. Collecting the time distribution data required a longer

period, but the time of day for collecting these data was also determined randomly. Within each observation area, the individuals to be observed were chosen randomly as the n^{th} person to enter the area after the observer had arrived at his station. When that subject left the area, the next was selected in a similar manner.

PARKING LOTS

People enter Rim Village by car from the west. Their first opportunity to stop is the cafeteria parking area, which is rectangular in shape and resembles the lot of a large super market. It has spaces for 159 cars. The road proceeds along the north edge of the cafeteria lot to the center parking area, which has head-in parking on both sides of the road. It is long and narrow, and appears smaller than the cafeteria lot, although it has spaces for more (178) cars. At the end of the center lot is the parking area for the lodge, which has overnight accommodations. Spaces here provide for 67 cars. Data were collected by simply walking through the lots and counting the number of cars in each one. A total of 37 counts were made during the study.

In our initial visits to the area, it appeared to us that the design of the area encouraged people to park in the cafeteria lot. The large expanse of parking, the formidable cafeteria building, and the proximity to rim area 1 (which offers the first opportunity to view the lake) all combine to give visitors the message, "Stop here, ladies and gentlemen. This is where the action is at Rim Village." We predicted that the cafeteria lot would have the highest rate of use, even though the center lot has more spaces and offers access to more attractive natural areas (rim areas 2 and 3, to be discussed).

RIM AREAS

Rim Village has approximately a quarter of a mile of viewing area along the rim. A low stone wall and paved walkways follow the rim, and cross-cutting walks connect the rim to the parking lots. We divided the area into

four sections, based on geographic location and physical structure.

Rim area 1 is adjacent to the cafeteria parking lot. It is long, essentially straight, and quite narrow (approximately 200 yds. x 15-30 yds.), with little vegetation. Standing at the stone wall along the rim, one is essentially right next to the road and the cafeteria lot.

Rim area 2 is adjacent to the west half of the center parking lot. It is slightly longer and somewhat wider than area 1 (approximately 275 yds. x 30-75 yds.), with large grassy areas and more trees. The wall and walkway wind along the rim, providing more varied spaces. This area also contains the Exhibit Building and the Sinott Memorial, both of which house interpretive facilities. Sinott Memorial is on a lower plane and is visually separated from the main area.

Rim area 3 is similar to area 2 except that it contains no buildings. As with area 2, the vegetation and walkways are varied and a person standing at the rim is well removed from, although still in sight of, the road and parking lot.

Rim area 4 is immediately adjacent to the lodge. It is short and narrow (approximately 75 yds. x 20-30 yds.), but has walkways which are on different levels and which have visually secluded "cubby-hole" spaces.

In our initial visits to the four rim areas, we felt that the physical characteristics of the areas lent themselves to different uses. To explore this possibility, we collected two kinds of information. First we listed the likely activities, including observation, picture-taking, walking, conversing, and reading. The observer then noted the amount of time subjects spent in each activity.

Second, we kept track of the way in which people interacted with the low stone-wall barrier by recording the amount of time spent at the barrier, on the barrier, or over (on the rim side of) the barrier. We hypothesized that

people would use the rim areas differently; for example, doing more observing and picture-taking in area 1 and more reading or conversing in area 3. In the course of the summer, 83 observations were made in rim area 1, 53 in area 2, 46 in area 3, and 39 in area 4.

CAFETERIA

The cafeteria building is a stone and wood structure, built to look like those constructed during WPA projects in the 1930's. It contains a curio shop, a snack bar and small convenience grocery, a cafeteria, and a restaurant. Our primary interest was to determine the attractiveness of this facility relative to interaction with the natural resource and interpretive facilities (in rim areas 1-4). In addition, however, we observed behavior within the building to see how people spent their time. The observer simply recorded the amount of time spent shopping for curios, buying food, eating or drinking, or using the restrooms. We had no hypotheses regarding these activities. A total of 71 observations were made in the cafeteria.

TIME DISTRIBUTION

Five major areas have been identified, rim areas 1-4 and the cafeteria building which houses the concessions. How did people entering Rim Village distribute their time among these areas? To find out, the observer randomly chose the n^{th} car entering the parking lot after he had reached his station. He then recorded the time spent in each of the 5 areas until subjects left Rim Village. A total of 54 parties were observed, 5 of which were dropped from further analysis because they left without getting out of their cars. We hypothesized that the cafeteria and rim area 1 would receive the highest proportion of visits and that these areas would be visited first. In spite of the attractiveness of rim areas 2 and 3 as natural areas, we predicted that they would receive less use because they are removed from the cafeteria parking lot.

RESULTS

PARKING LOTS

The distribution of parked cars is given in Table 1. As predicted, the cafeteria lot was used much more heavily than the center lot, both overall and during peak use periods. The peak use times for the cafeteria and lodge lots reflect the kinds of activities for which the areas are used; the cafeteria lot fills up during the middle of the day, while the lodge lot is used at night. Although it doesn't show in Table 1, the center lot was generally used only as an "overflow" lot. Cars appeared in the west end during mid-day when the cafeteria lot filled up and in the east end at night when the lodge was in use.

RIM AREAS

The activities which characterize the different rim areas are listed in Table 2. Almost all the visitors in area 1 spent some time observing the lake, while about half the people in other areas engaged in this activity. Area 1 is also the place where the highest percentage of people took photographs. A substantially higher percentage of people spent time walking in areas 2 and 3. There is very little conversing or reading in any of these areas. Essentially, then, area 1 is used for observing and photographing while walking is the more common activity in areas 2 and 3.

People used the stone barrier differently in the four areas. A higher percentage stand at, stand or sit on, and cross over the barrier in area 1. The narrower space in area 1 as well as the predominance of observing and picture-taking probably account for people being at or on the barrier. People also crossed over the barrier in this area to feed the ground squirrels or obtain a "better" view (the wall in other areas was close enough to the edge that crossing over offered no advantage).

close enough to the edge that crossing over offered no advantage).

CAFETERIA

The activities occurring within the cafeteria complex are listed in Table 3. Shopping for curios is the predominant activity (75% of the people); 25% or less buy food, eat or drink, or use the restrooms. The use of the cafeteria relative to the rim areas is discussed in the next section.

TIME DISTRIBUTION

The distribution of use at Rim Village is summarized in Table 4. Most people make their first visit to either the cafeteria or rim area 1, and the vast majority visit both of these areas while at the Village. Less than a third visit rim area 2, even though it contains the interpretive facilities, and few people visit area 3, in spite of its appeal as a natural area. The average visitor spends 48 minutes at Rim Village, the largest portion of which (20-30 minutes) is spent inside the cafeteria. Rim area 1 gets about 10 minutes. Those who visit rim area 2 spend a fair amount of time there, but this is a minority.

DISCUSSION

The average visitor to Rim Village arrives by car and parks in the cafeteria lot. He or she then heads for the cafeteria or rim area 1, visiting both these areas before leaving. The cafeteria gets the longest visit, most of which is devoted to curio-shopping. Rim area 1 comes next, with enough time to look at the lake and take a few pictures. Most visitors never get to the interpretive facilities or other rim areas.

This obviously is not a random distribution of use, so it is reasonable to conclude that structure affects behavior. The problem is in determining which type of structure has the major effect. It may be that social structure and the structure of past experience are the important factors, and that

people would spend their time shopping and confine themselves to rim area 1 regardless of design. But the physical structure of the area appears to have created a "tourist trap," so that most people never even make contact with the interpretive facilities or the more attractive natural areas.

The physical structure issue is particularly important because the Park Service intends to re-develop the Rim Village area. The plan is to remove some parking from the immediate rim area, replacing it with a parking lot south of the cafeteria area. The current intention is to remove the center lot, turning it into a pedestrian mall. The data reported here indicate that this would be a disaster, further concentrating use in the vicinity of the cafeteria and rim areal, and leaving the new pedestrian mall unused (as rim areas 2 and 3 are currently). If the goal is to disperse use and encourage people to visit the more interesting natural areas, it makes sense to convert the cafeteria lot to a pedestrial mall. Parking in the center lot would encourage use of rim areas 2 and 3, and the pedestrian mall would probably change the nature of the cafeteria-cafeteria lot - rim area 1 complex.

There is little disagreement with the contention that environments affect people. Resource managers are aware of this in their attempts to provide opportunities for certain experiences, but the idea of "managing the environment" is often just too general. This paper isolates physical structure as the element most susceptible to control, and demonstrates ways in which studies can make the connection between certain physical structures and observable behavior. It is then possible for managers to decide which behaviors (and resulting experiences) they think people "should" have and design physical structures accordingly.

Table 1

Occupancy Rates for the Three Parking Areas

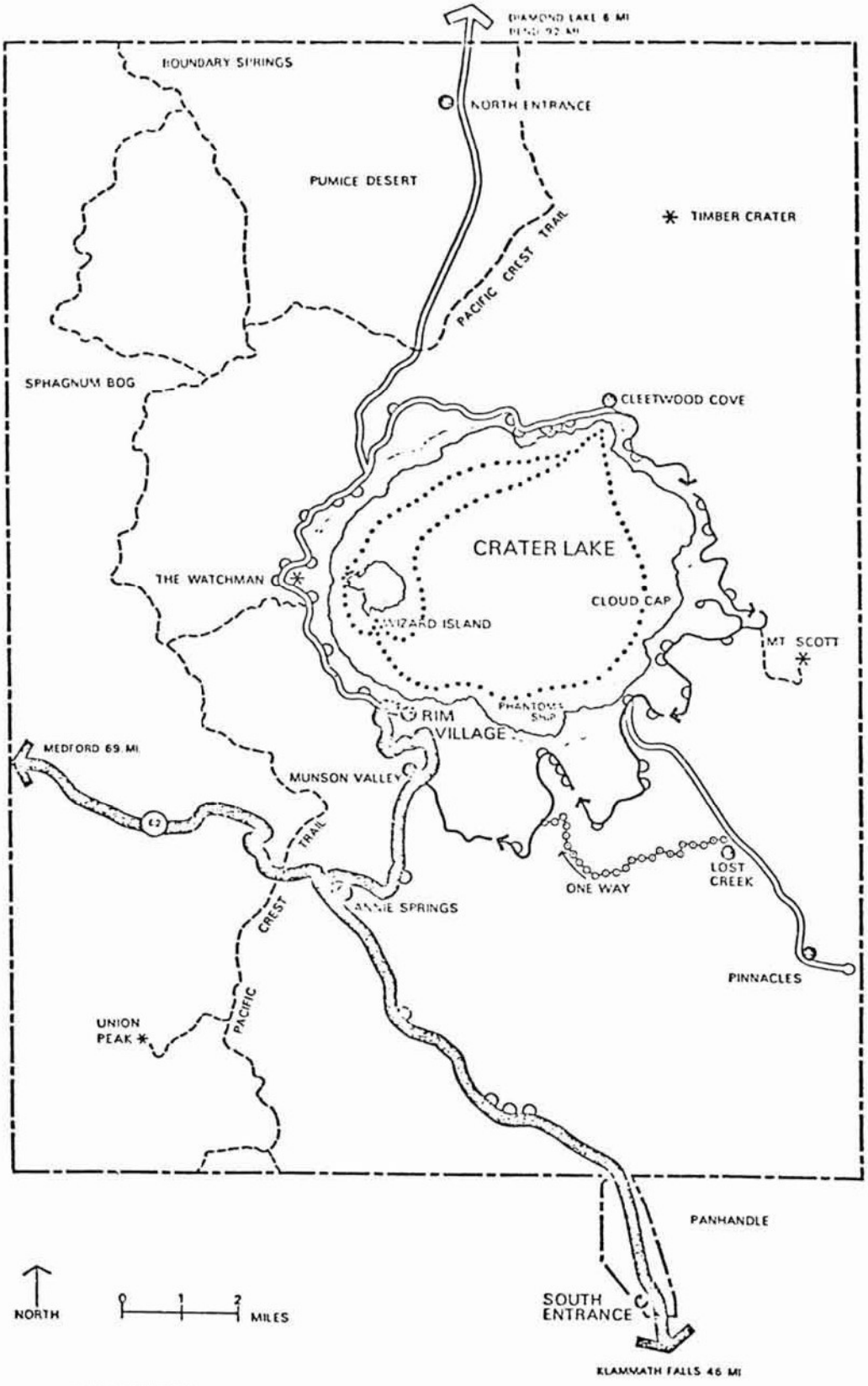
	Cafeteria Lot	Center Lot	Lodge Lot
Average occupancy (0800-1900 hours)	58% (93)	16% (28)	49% (31)
Peak use period	1000-1700	1300-1400	1600-1000
Average occupancy during peak period	75% (119)	31% (56)	62% (42)

Table 2

Uses of Rim Areas[a]

Activities	Area 1	Area 2	Area 3	Area 4
Observing Lake	89	51	47	64
Taking Photos	43	9	7	3
Walking	17	70	87	40
Conversing	1	13	2	10
Reading	0	4	0	3
Total Time Spent (Minutes)	8	17	4	5
Interaction w/ Barriers				
Standing at Barrier	65	15	44	46
Sitting or Standing on Barrier	24	6	4	3
Over Barrier	10	0	0	0

[a]Percentage of persons observed in each area who engaged in the specified activity.



NORTH ENTRANCE
ENTRANCE STATION - SEASONAL RESIDENCE

CLEETWOOD COVE
BOAT DOCKS - REFRESHMENTS - WATER MONITORING STATION - FUEL STORAGE - CHEMICAL TOILETS - TICKET OFFICE

WIZARD ISLAND
BOAT DOCKS - BOAT STORAGE FACILITY - CHEMICAL TOILETS - TRAILS

RIM DRIVES
OVERLOOKS - PICNIC AREAS - COMFORT STATIONS - EXHIBITS - INTERPRETIVE TRAILS

THE WATCHMAN & MT SCOTT
UNUSED FIRE LOOKOUTS - WATCHMAN USED FOR SHELTER & EXHIBITS

RIM VILLAGE
SINNOTT MEMORIAL OVERLOOK - RIM WALKS - PARKING - PICNIC AREA - COMFORT STATIONS - LODGE (80 ROOMS) - CABINS (50) - CAFETERIA (AND SNACK) - EXHIBIT BUILDING - COMMUNITY BUILDING - EMPLOYEE DORMITORY

MUNSON VALLEY
ADMINISTRATION BUILDING - MAINTENANCE FACILITIES - GAS STATION - PERMANENT AND SEASONAL HOUSING

LOST CREEK
PRIMITIVE CAMPGROUND - GRAYBACK RIDGE MOTOR NATURE ROAD - INTERPRETIVE EXHIBITS - PINNACLES VIEW POINT

ANNIE SPRINGS
MAZAMA CAMPGROUND (198 SITES) - SOUTH ENTRANCE STATION - INFORMATION - SEASONAL RESIDENCE - MAIN PARK WATER SUPPLY - AMPHITHEATER - SANITARY DUMP STATION

SOUTH ENTRANCE/PANHANDLE
MAINTENANCE STORAGE AREA

BACKCOUNTRY
TRAILS - UNDEVELOPED CAMPSITES

RIM DRIVES
EAST RIM DRIVE ONE WAY CLOCKWISE FROM CLEETWOOD COVE TO MUNSON VALLEY - GRAYBACK RIDGE MOTOR NATURE ROAD ONE WAY FROM LOST CREEK TO EAST RIM DRIVE - ALL OTHER ROADS ARE TWO WAY

RIM DRIVES OPEN FROM ABOUT MID JULY UNTIL CLOSED BY SNOW USUALLY IN LATE OCTOBER

PARK BOUNDARY
ROADS OPEN ALL YEAR
ROADS OPEN SUMMER ONLY
FOCAL POINT/DEVELOPED AREA
OVERLOOK/PARKING
BOAT TOUR ROUTE
GRAYBACK RIDGE MOTOR NATURE ROAD
TRAILS

FIGURE 1
EXISTING DEVELOPMENT
CRATER LAKE NATIONAL PARK/OREGON
UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

ICS | 400378
DSC | DEC 77

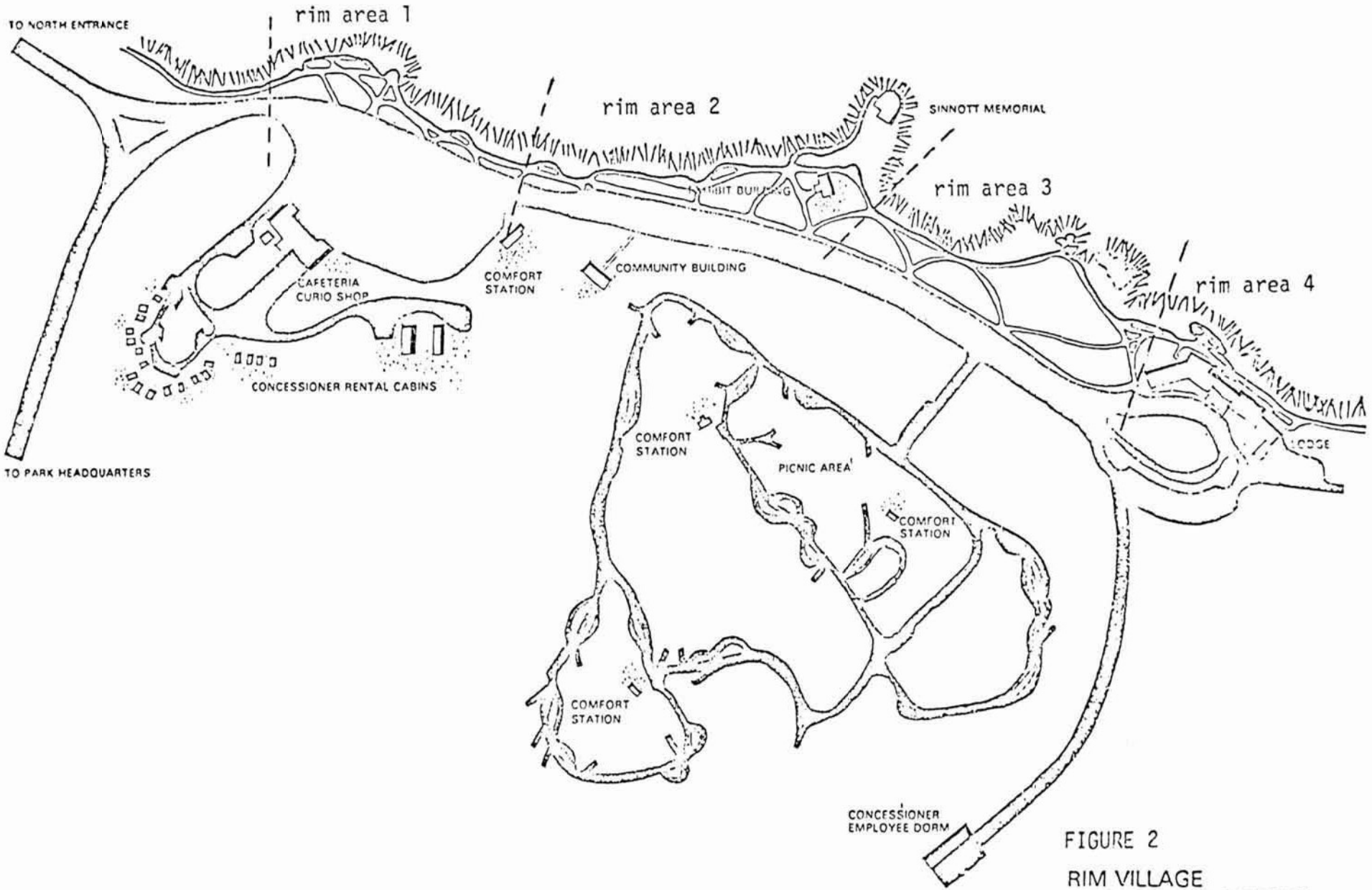


FIGURE 2

RIM VILLAGE
EXISTING CONDITIONS
CRATER LAKE NATIONAL PARK / OREGON

Table 3

Activities Within Cafeteria Building

Activity	Percent who do this activity	Average time (min.) for those who do	Average time (min.) for all Visitors
Shopping for Curios	75	19	15
Buying food	25	7	2
Eating or Drinking	24	18	4
Using Restrooms	17	4	1

Table 4

Distribution of Time Spent at Rim Village

	Percent who go to this area first	Percent who go to this area some time	Average time (min.) spent by those visiting this area	Average time in this area for all users	Percent of time at Rim Village spent in this area (all users)
Cafeteria Building	35	70	28	20	42
Rim area 1	45	75	10	7	15
Rim area 2	4	31	23	7	15
Rim area 3	0	11	7	1	1
Rim area 4	0	6	2	1	2

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RIM VILLAGE TIME STRIBUTION (n=49)	% who go to this area first	% who go to this area at some time	Av. time (min) spent in this area by those who do visit it	Av. time (min) in this area for all visitors	% of time at Rim Village spent in this area (all users)
Parking lot (upon arrival)	100	100	3	3	6
Cafeteria Gift Shop	35	70	28	20	41
Return to car	2	100	6	6	12
Rim Area1	45	75	10	7	14
Rim Area 2	4	31	23	7	14
Rim Area 3	0	11	7	.7	1
Rim Area 4	0	6	2	.1	.2
Picnic Area	2	4	2	.1	.2
Restrooms	2	8	5	.4	.8
Other	0	22	—	—	—

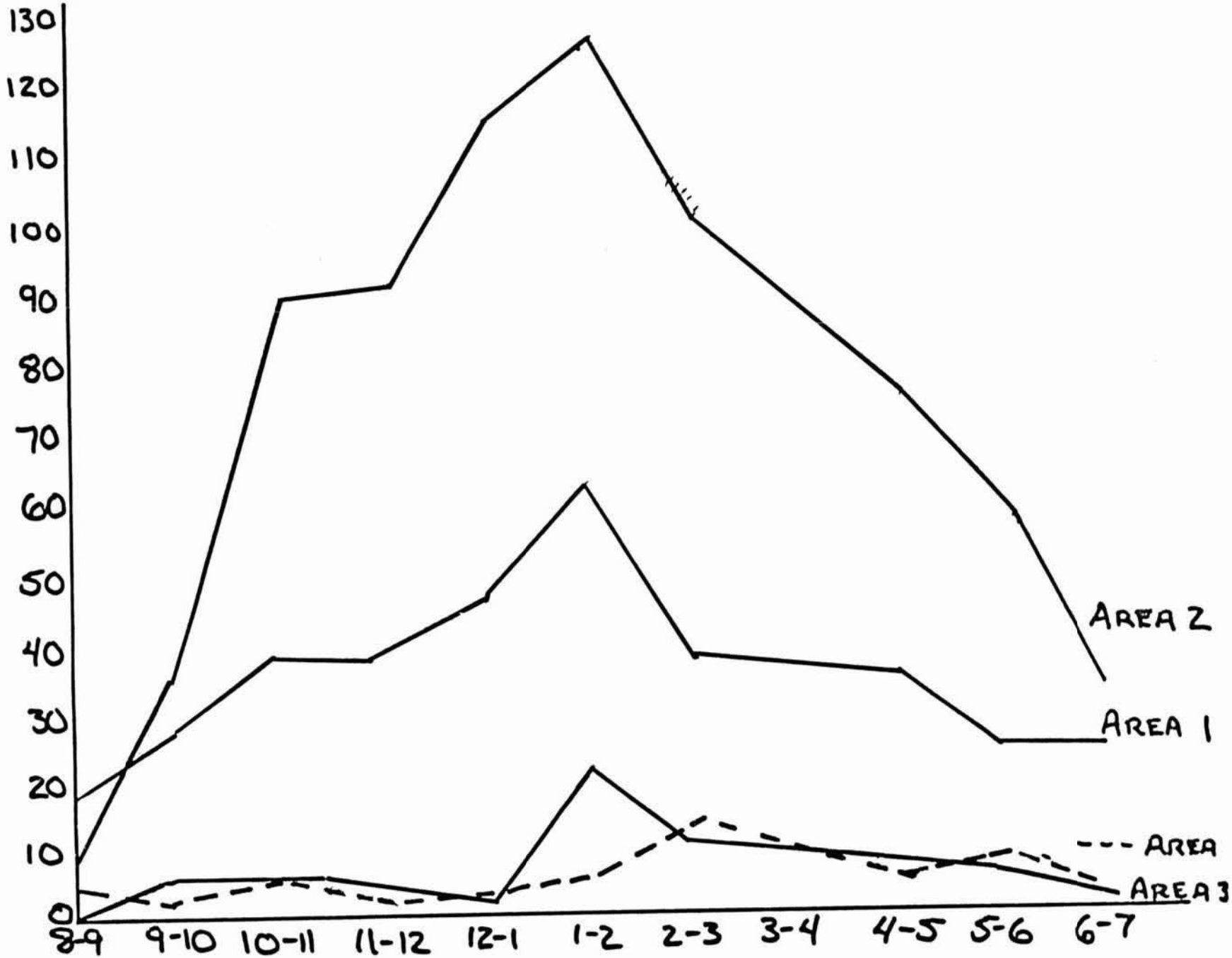
RIM VILLAGE TIME DISTRIBUTION OTHER *	% who do this activity	Av. time (min) spent in this activity for those who do it	Av. time (min) for all visitors
Discovery Point Trail	8	35	3
Garfield Trail	6	Not observed	—
Asking Information	2	1	.01
In Lodge	6	Not observed	—

RIM VILLAGE OBSERVATIONS	RA 1 (n = 83)		RA 2 (n = 53)		RA 3 (n = 46)		RA 4 (n = 59)	
	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)
ACTIVITIES								
Observing	89	6	51	4	47	3	64	6
Taking Pictures	43	3	9	4	7	2	3 (1)	6
Walking	17	2	70	3	87	3	40	2
Reading/Writing	0	0	4	8	0	0	3 (1)	5
Talking	1 (1)	22	13	4	2 (1)	3	10	5
Other *	2	15	0	0	0	0	5 (2)	not observ'd
INTERPRETATION								
Sinnott Memorial	—	—	60	16	—	—	—	—
Exhibit Building	—	—	42	5	—	—	—	—
J.W. Hillman	—	—	8	13	—	—	—	—
Contact w/Ranger	2 (2)	4	—	—	—	—	—	—
FEEDING WILDLIFE								
Time Spent	13	6	0	0	0	0	0	0
Read Signs?	17	YES	4 (2)	YES	0	YES	0	YES
Before or After?	1 (1)	BEFORE AFTER	—	—	—	—	—	—
Informed by Ranger?	1 (1)	YES	0	YES	0	YES	0	YES
Before or After	1 (1)	DURING	—	—	—	—	—	—
BARRIERS								
At Wall	65	6	15	11	44	4	46	4
On Wall	24	5	6	6	4 (2)	2	3 (1)	12
Over Wall	10	7	0	0	0	0	0	0

RIM VILLAGE ACTIVITIES OTHER*	% who visit this area and do this activity	Av. time (min) for those who do it
RIM AREA 1 (n=83)	———	———
Discovery Point Trail	1	26
shooting at birds with a slingshot stopped by Ranger)	1	4
RIM AREA 4 (n=39)	———	———
Garfield Trail Alone	3 (1)	not observed
Garfield Trail with a naturalist	3 (1)	not observed

b

RIM AREAS
No. of visitors from 0800-1900



(n=37)

PETS AT RIM VILLAGE	RA 1	RA 2	RA 3	RA 4
Ratio pets : visitors	1 : 109	1 : 104	1 : 90	1 : 62
pets per visitor	.01	.01	.01	.02

CAFETERIA GIFT SHOP ACTIVITIES (n = 71)	% who do this activity	Average time (min) for those who do	Average time (min) for all visitors
Shopping for curios	75	19	15
Buying food	25	7	2
Eating or drinking	24	18	4
Using restrooms	17	4	1

Rim Village Barriers	RA1		RA2		RA3		RA4	
	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)
At Wall	65	6	15	11	44	4	46	4
On Wall	24	5	6	6	4 (2)	2	3 (1)	12
Over Wall	10	7	0	0	0	0	0	0

FEEDING WILDLIFE AT RIM VILLAGE	RA 1		RA2		RA3		RA4	
	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)
Time spent	13	6	0	0	0	0	0	0
Read signs?	17	YES	4 (2)	YES	0	YES	0	YES
Before or After?	1 1 (1)	Before After	—	—	—	—	—	—
Informed by a Ranger?	1 (1)	YES	0	YES	0	YES	0	YES
Before or After?	1 (1)	During	—	—	—	—	—	—

RIM VILLAGE ACTIVITIES	RA 1 (n = 83)		RA2 (n=53)		RA 3 (n=46)		RA 4 (n=39)	
	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)
Observing	89	6	51	4	47	3	64	6
Taking Pictures	43	3	9	4	7	2	3 (1)	6
Walking	17	2	70	3	87	3	40	2
Reading / Writing	0	0	4	8	0	0	3 (1)	5
Talking	1 (1)	22	13	4	2 (1)	3	10	5
Other	2	15	0	0	0	0	5 (2)	not observ

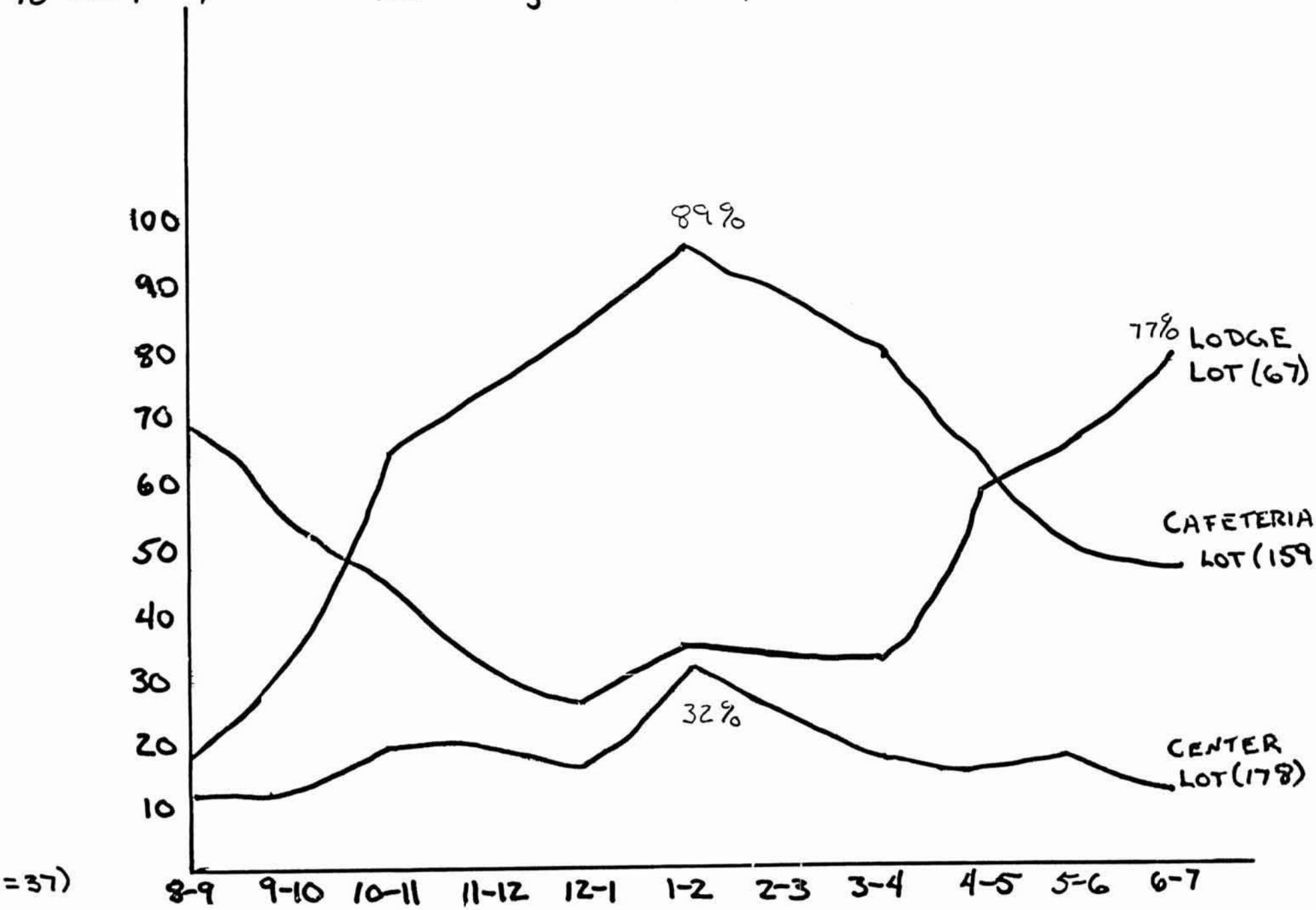
RIM VILLAGE INTERPRETIVE FACILITIES	RA 1		RA 2		RA 3		RA 4	
	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)	% who do	Av. time (min)
Sinnott Memorial	—	—	60	16	—	—	—	—
Exhibit Room	—	—	42	5	—	—	—	—
John Wesley Hillman	—	—	8	13	—	—	—	—
Contact with a Ranger	2 (2)	4	—	—	—	—	—	—

RIM VILLAGE PARKING (n=37)	CAFETERIA LOT	CENTER LOT	LODGE LOT
Average occupancy (800 to 1900 hrs)	58% (93)	16% (28)	49% (31)
Peak use period	1000 – 1700	1300 – 1400	1600 – 1000
Average occupancy during peak period	75% (119)	31% (56)	62% (42)

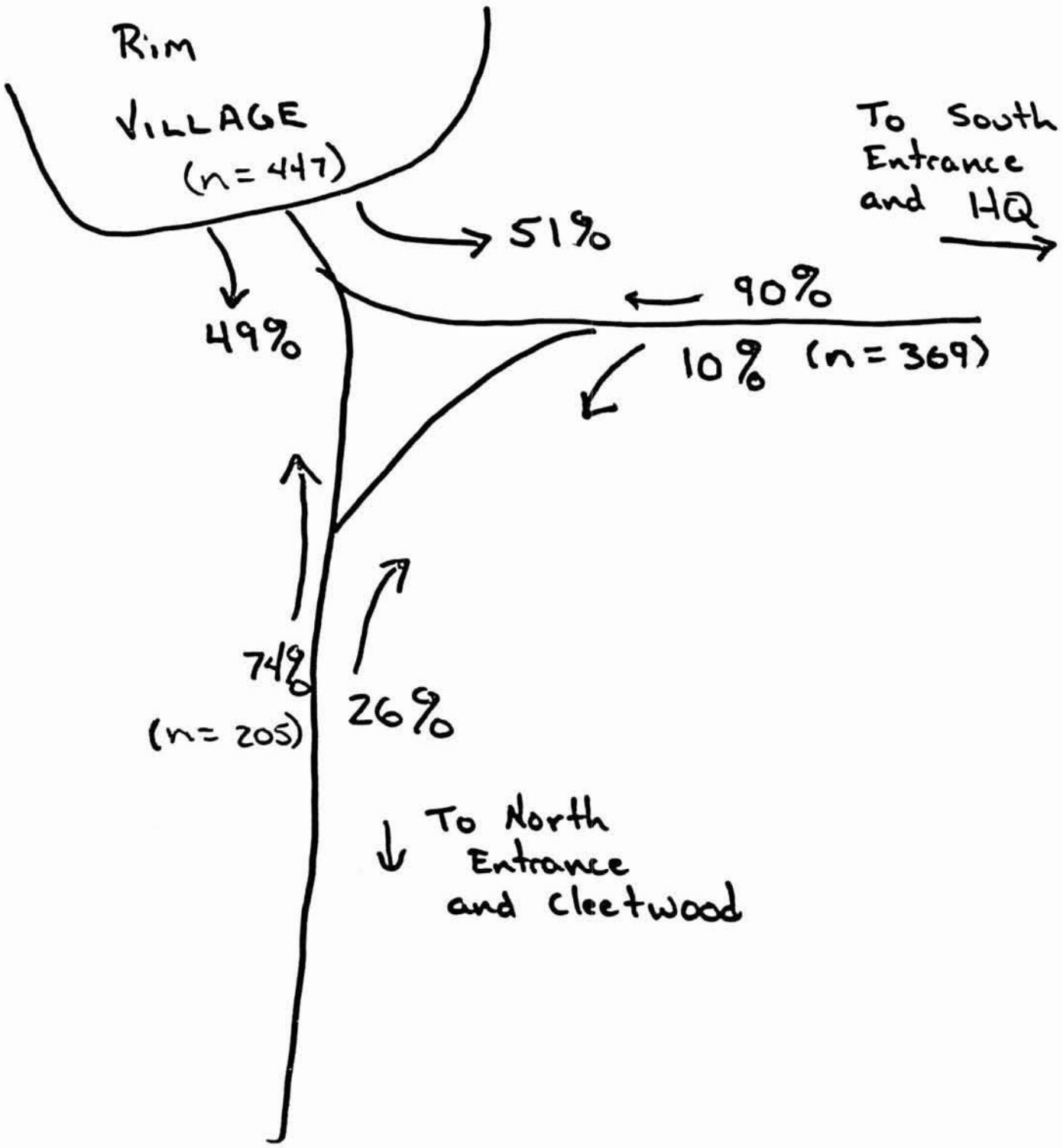
M

Rim Village Parking Lots

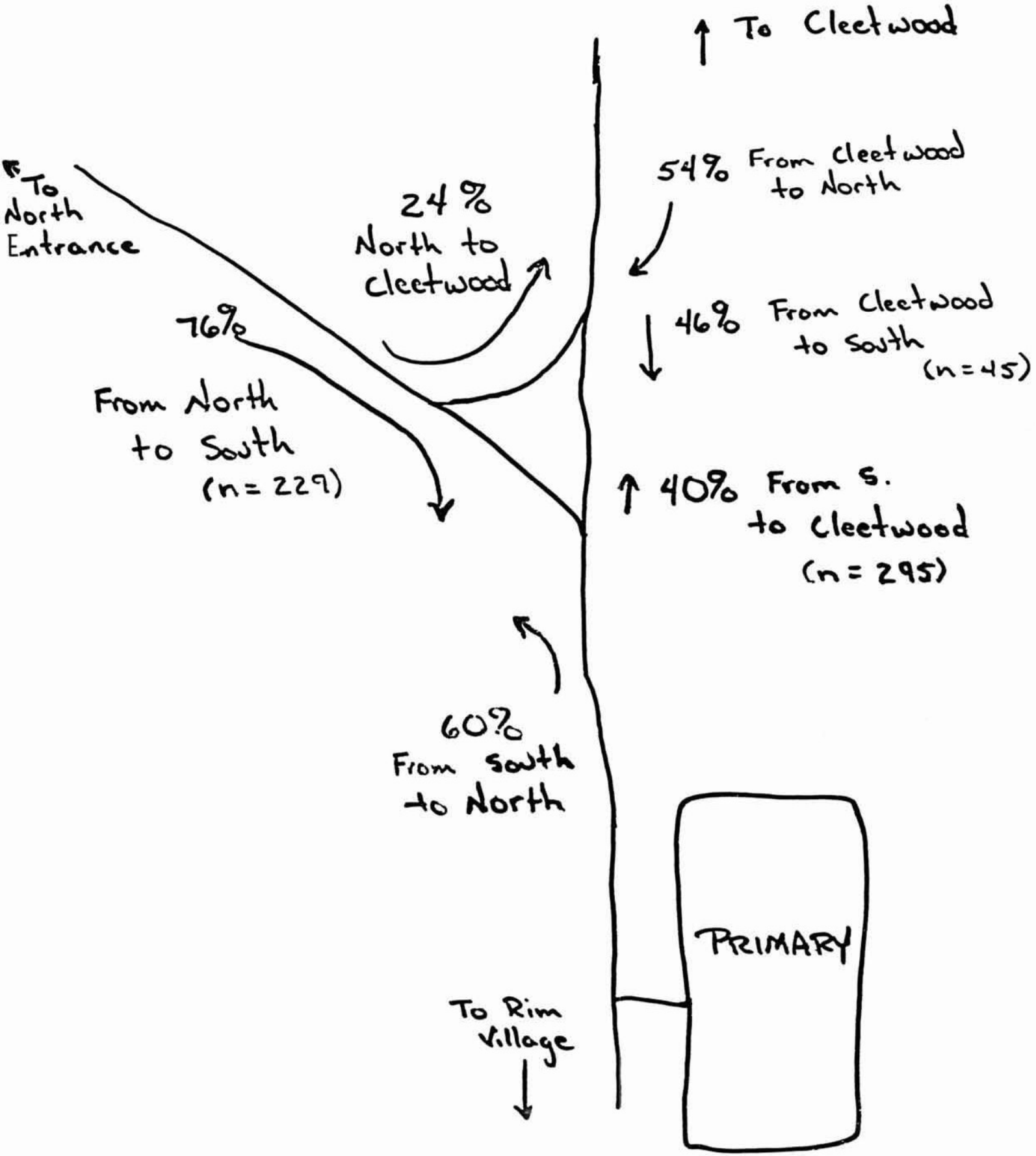
Percentage Occupancy from 0800-1900



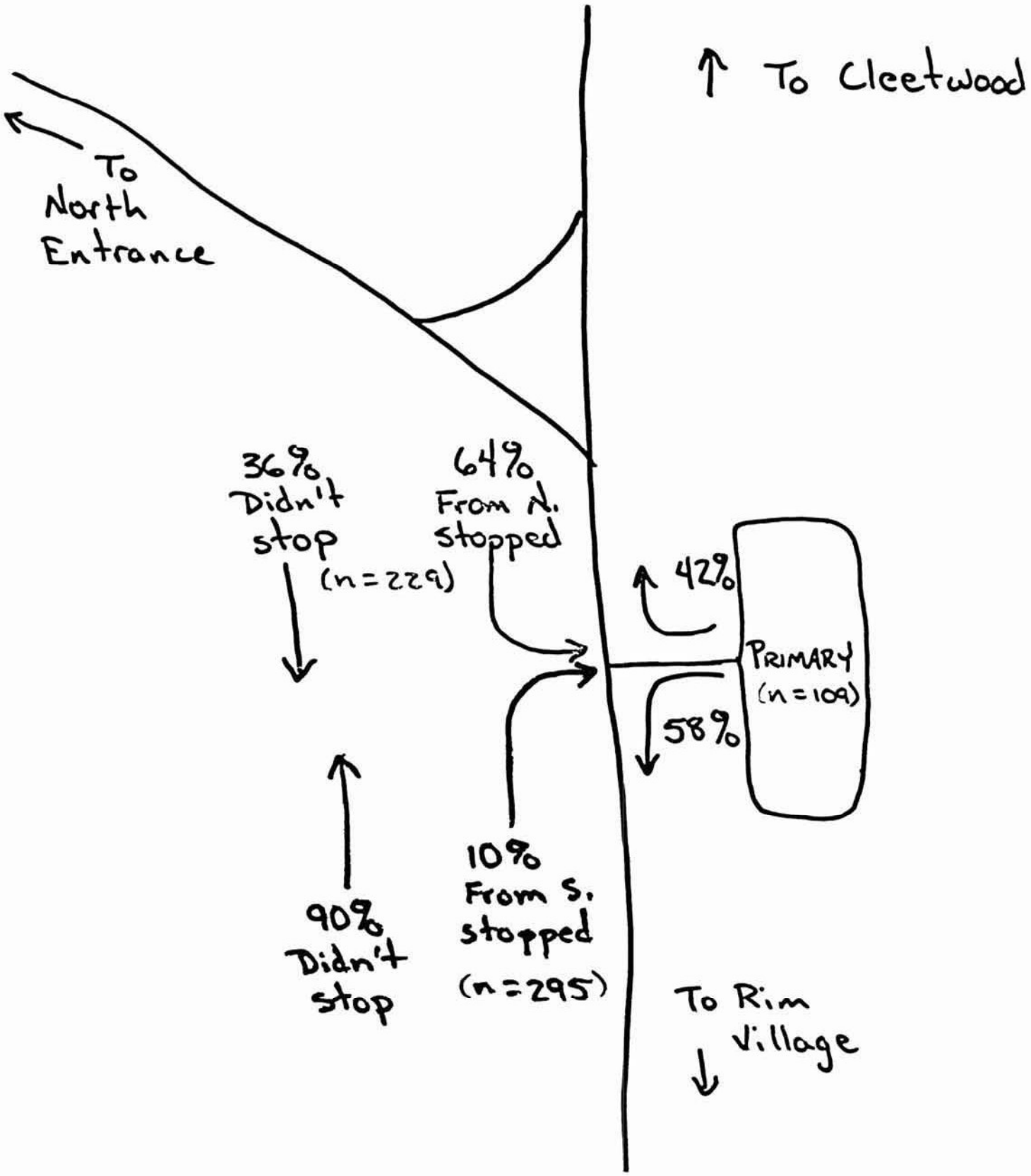
Rim Village Jct.



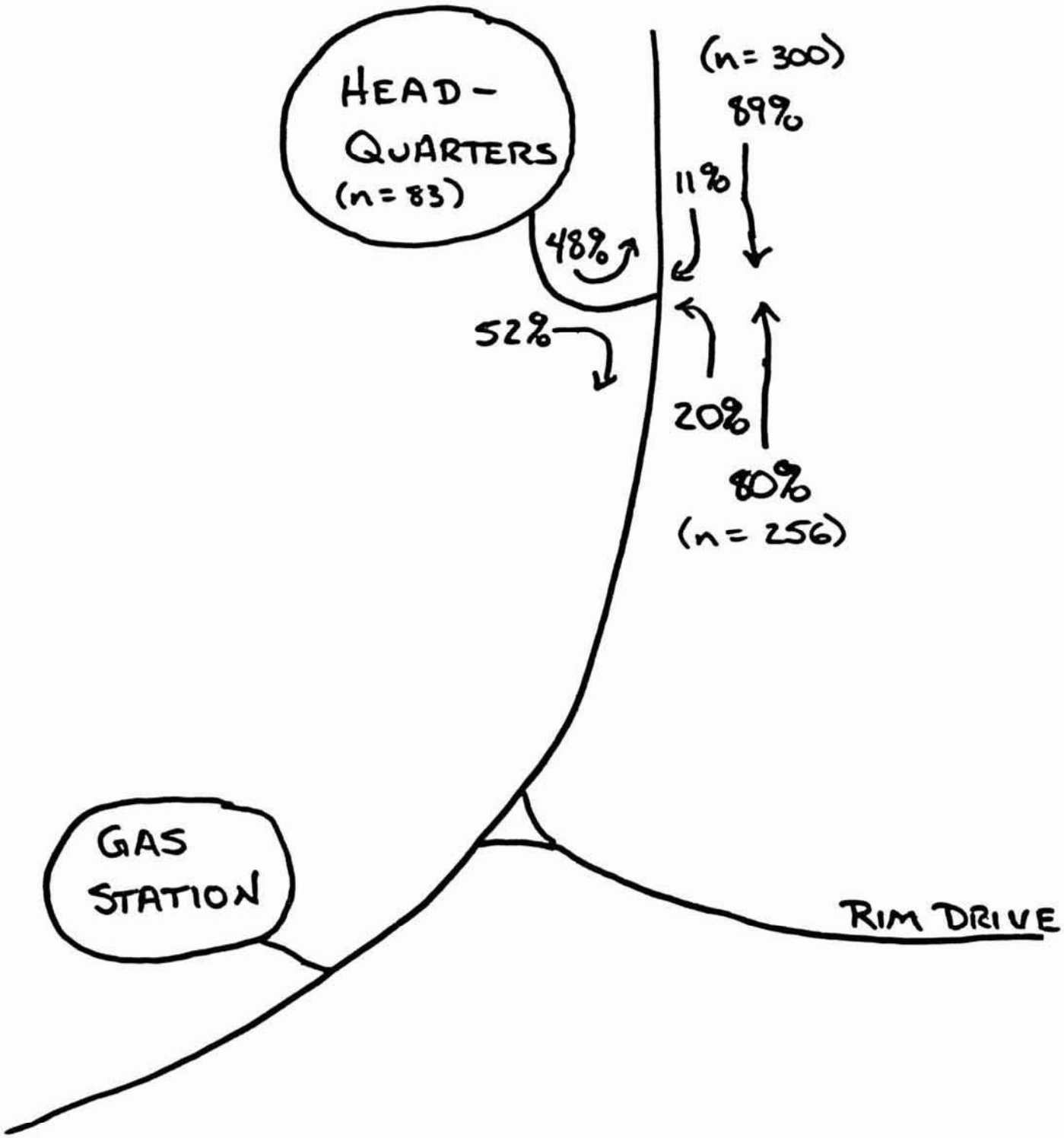
NORTH JCT.


To Cleetwood
To North Entrance
54% From Cleetwood to North
24% North to Cleetwood
46% From Cleetwood to South (n=45)
76% From North to South (n=229)
40% From S. to Cleetwood (n=295)
60% From South to North
PRIMARY
To Rim Village

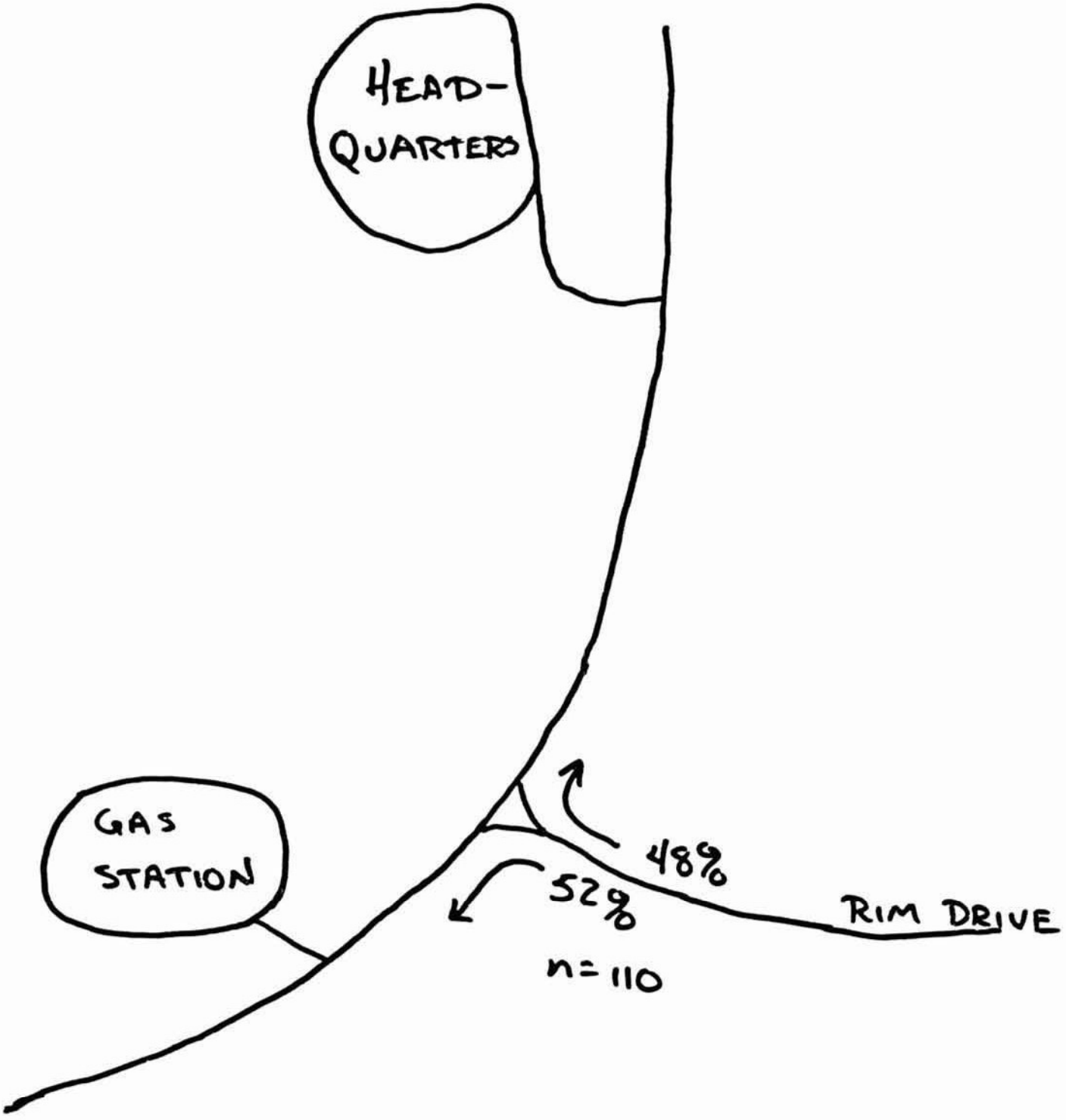
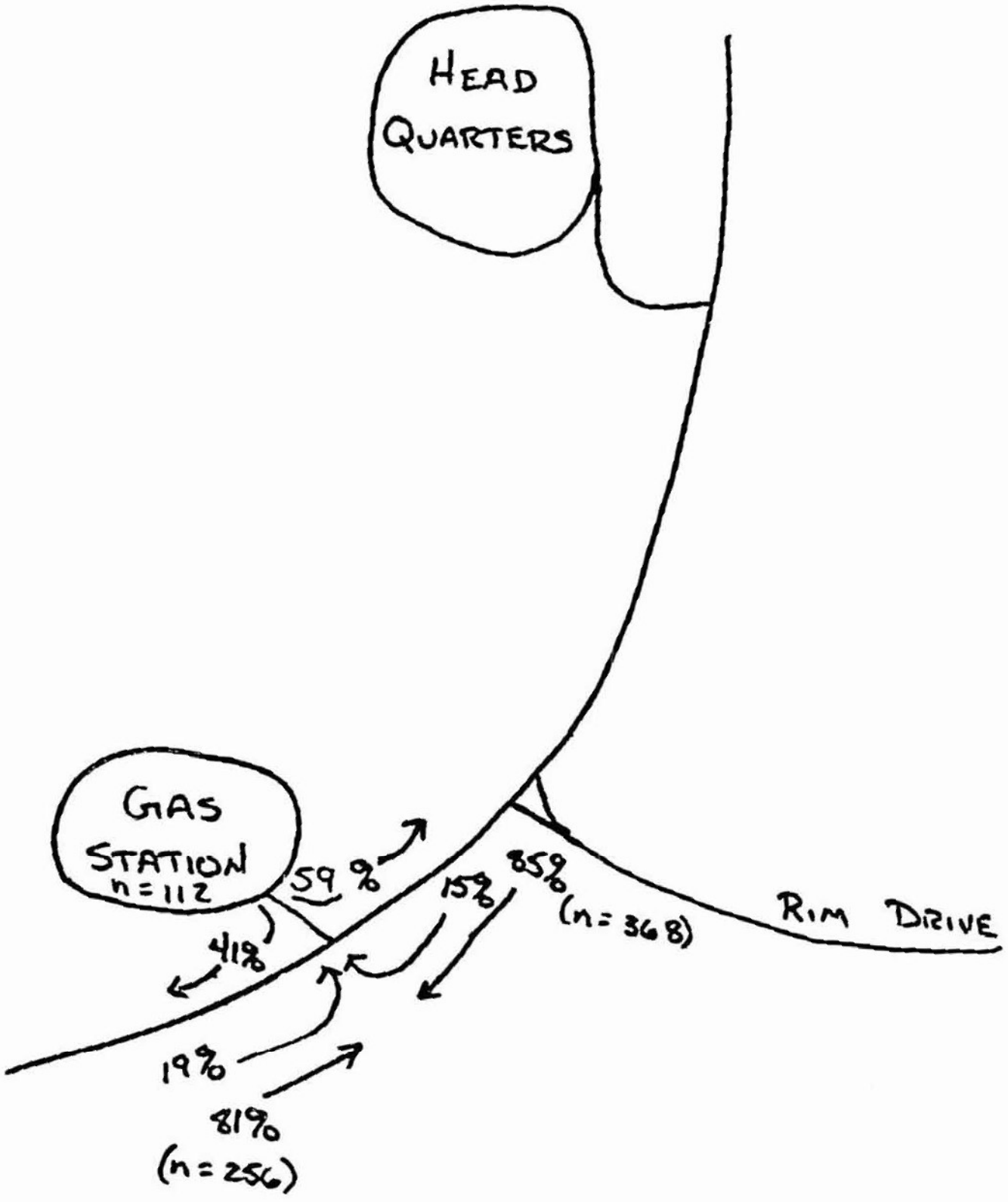
North Jct.


↑ To Cleetwood
To North Entrance
36% Didn't stop (n=229)
64% From N. stopped
42%
Primary (n=109)
58%
90% Didn't stop
10% From S. stopped (n=295)
To Rim Village

HEADQUARTERS – RIM DRIVE JCT.



HEADQUARTERS–RIM DRIVE JCT.



HEADQUARTERS – RIM DRIVE JCT.