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ECONOMIC AND OCCUPATIONAL CAUSES OF  
TRANSIT OPERATOR ABSENTEEISM: A REVIEW OF RESEARCH

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ABSTRACT

Transit operator absence from work is a costly and pervasive problem within public transport organizations. This paper reviews over forty international studies in order to document significant factors related to this phenomenon. We begin with a brief assessment of the magnitude and costs of operator absence and isolate two major theories which have been proposed to explain operator absence behavior: the income-leisure tradeoff and occupational stress. Case study reports from three U.S. public transport organizations are used to illustrate the range of factors which influence employee absence behavior. We conclude with suggestions for organizational changes which may serve to reduce operator absence and suggestions for further research.

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§ 1. INTRODUCTION

Public transit (i.e., public transport) is a labor-intensive industry. In the United States, wages account for between 75% and 80% of transit operating expenses, with driver wages and fringe benefits alone accounting for 50% of total operating costs. Similar ratios are reported for British bus operations (Higginson and White, 1982). Because of the magnitude of these labor costs, even small changes in labor utilization can have significant economic and operational impacts.

One area of increasing concern among policy makers and transit industry officials, both in the U.S. and abroad, is transit operator<sup>1</sup> work attendance. Absence rates among transit operators have increased over the past decade at rates which far exceed those in most other public and private sector industries, imposing significant organizational and operational costs. Overall efficiency is undermined when scheduled operators fail to report for work; replacement operators may be unfamiliar with a given route, resulting in service delays and unreliability; and support for public transit may be eroded by repeated reports of declining labor productivity.

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<sup>1</sup>We use the term "operator" as a generic designation for bus drivers, tram drivers and other operational personnel on-board the vehicle.

While transit officials agree that operator absenteeism is a significant problem, there is considerable disagreement about its causes. Absenteeism among operators has been variously attributed to management's inability to schedule manpower effectively, which results in an endless cycle in which employees work overtime and then take time off to compensate; a subjective income-leisure evaluation on the part of the employee in which the costs and benefits of reporting to work are evaluated and the employee acts accordingly; a diminished work ethic among newer employees; and the stresses of the job, particularly those related to the schedule, difficult interaction with passengers, and threats of physical violence.

The present study reviews over forty international studies in order to identify and document significant factors related to employee absence in the transit industry. We begin with a brief assessment of the magnitude and costs of operator absence from work. Research related to two major explanations for operator absence is then reviewed. Three case studies of U.S. transit organizations are presented to illustrate the wide range of factors which appear to influence operator absence behavior. We conclude with specific suggestions for organizational changes which may serve to reduce operator absence and suggestions for further research.

## § 2. SCOPE OF THE PROBLEM

Comparative studies of industrial absence have, historically, been hampered by a lack of definitional consistency. Muchinsky (1977) reports that at least forty-one different measures have been used to define and measure absenteeism. Perry and Angle (1980) and Jacobs, Shapiro, and Ray (1983) found absence data collection practices to vary widely within the transit industry. Perry and Angle further

reported the tendency of some agencies to report all absences as 'sick leave,' regardless of actual cause. The inconsistency of data reported by transit agencies has made it difficult to determine how many reported absences are legitimate (i.e., the result of actual illness, disability or family emergency) and how many are the result of deliberate withdrawal behavior or 'malingering' on the part of the employee. Yet these are clearly distinct phenomena (Perin, 1982). While it is acknowledged that improvements in traditional record keeping practices are needed, there is, nonetheless, widespread agreement that overall absence rates within the transit industry have grown beyond acceptable limits and that these high rates of absence impose significant organizational costs.

In the first study of its kind, Perry and Angle (1980) documented the problem of transit operator absenteeism and its relationship to measures of organizational efficiency and effectiveness. Within their sample of 29 western U.S. transit organizations, higher levels of employee absence were associated with higher operating expense per vehicle hour and higher operating expense per employee.

Baker and Schueftan (1980) conducted the first nationwide study of operator absenteeism in the U.S. transit industry. On the basis of data from 57 organizations, Baker and Schueftan estimated that the average transit operator was absent from work 29.57 days per year in 1978 (exclusive of vacation or holidays) or 11.9% of the average annual scheduled workdays. This estimate is somewhat higher than, but consistent with, data reported in several other studies (MacDorman and MacDorman, 1982; Orange County Transit District, 1981; Washington Metropolitan Area Transit Authority, 1980). Extrapolating from their sample, Baker and Schueftan concluded that costs for operator absence accounted for more than one fourth of U.S. federal

subsidy for transit in 1978. Cost estimates for the various components of operator absence are summarized in Figure 1.

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In five properties for which longitudinal data were available, Baker and Shueftan found that the most rapidly increasing and most costly category of operator absence was job-related injury and illness. In these five properties, the average number of operator days lost to injury-on-duty (IOD) increased 148% between 1974 and 1978. Within transit organizations, absence due to injury-on-duty appeared to be about 13% higher for operators than for all other employees including maintenance workers.

The reported levels of operator absence have been primarily attributed to two causes. The first may be characterized as an "income-leisure" tradeoff, in which the employee evaluates the economic and social benefits of work attendance versus leisure time and acts accordingly. The second cause, occupational stress, identifies operator absence as a coping mechanism for short-term frustrations or as the result of long-term exposure to environmental stressors. Research related to these explanations is reviewed in the next two sections.

### § 3. THE INCOME-LEISURE TRADEOFF

The income-leisure explanation for work attendance has recently been summarized by Allen (1981). He argues that employers contract (both implicitly and explicitly) with employees for jobs with specified work schedules and wage rates.

Some employees will accept jobs for which the hours of work exceed their preferences given the specified wage. They will thus retain an incentive to consume leisure and thereby be absent from work. Even employees who accept a work schedule at a given wage may choose not to report on days when highly attractive alternatives are available. This theory suggests that both financial incentives and work schedules will have an important effect on the work attendance decisions of employees.

In the transit industry, this income-leisure tradeoff may be encouraged by factors such as the availability of overtime pay which allows an employee to quickly recoup wages lost to absence while benefitting from a "free" or unscheduled day off and by the rigidity of transit scheduling and requirements for operator coverage on days which may conflict with family responsibilities or the desire to participate in leisure activities.

Baker and Schueftan (1980) concluded that a significant portion of transit operator absence is discretionary: "Most health-related absence is not because of complete incapacity, but, rather, there is a broad range of health conditions in which the employee may choose to come to work or not" (p. 20). Interviews with managers and operators indicated that the economic benefits of attendance have become less clear, particularly since wages and benefits are often paid during employee absences. Baker and Schueftan also found that during recent years when workers' compensation benefits have increased dramatically while many sick leave benefits have decreased due to inflation, absence has shifted from sick leave to injury-on-duty (IOD). A significant correlate of increased IOD absence, concluded the researchers, may be the high level of compensation provided by workers'



compensation statutes, which, in some cases provides more disposable income than regular earnings.

Additional evidence of operator absence as an economic outcome is provided by Perry and Angle (1980) and Dalton and Perry (1981) who explored the relationship between employee attitudes, absenteeism, turnover, and organizational efficiency and effectiveness in 29 western U.S. transit agencies. Their research showed operator absenteeism and job satisfaction to be virtually unrelated. Their research, instead, supported a "decision model" of absenteeism, i.e., absences as the result of an employee's subjective cost-benefit analysis of the consequences of being absent. All other related organizational practices being the same, operator use of sick leave was a direct function of both the number of sick days granted to employees available and the relative wage rates of operators. Simply stated, as operator wage levels improved with respect to an absolute or relative standard of living, employees were less likely to work the full amount of their scheduled time. In an economic sense, employees whose financial needs were adequately met appeared to be relatively indifferent to the monetary rewards of working on every scheduled day choosing, instead, to 'purchase leisure' by being absent from work.

More recent research by Chomitz and Lave (1981) provides further evidence of the discretionary nature of some absences. Using regression analysis, Chomitz and Lave plotted absences of extraboard<sup>2</sup> versus regular drivers by day of the week, day of the year and start-of-the-sick-day year. While on an annual basis regular and extraboard drivers showed similar patterns of absenteeism and sick leave use,

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<sup>2</sup>The 'extraboard' (also called 'spare board') is the group of operators responsible for covering runs left open because of the absence of regular operators. In addition, these operators may also be used for short runs not selected by regular operators, charter runs, or other special assignments.

extraboard drivers tended to be absent on Tuesday and Wednesday, apparently compensating for the absenteeism of regular operators whose absence tended to cluster around weekends.

Perin (1982) has addressed the role that job-specific operator attitudes may play in the income-leisure tradeoff. Drawing upon the research of Angle and Perry (1980), she notes that transit vehicle operators appear to have a set of unique attitudes about their work that should be taken into account in analysis of absenteeism. In their study of a sample of 1224 employees in 24 public transit organizations, Perry and Angle compared job-related attitudes of bus drivers to attitudes of other occupational groups. While levels of organizational commitment among transit operators were found to be comparable to others in similar occupations, their level of job satisfaction was found to be lower. Yet transit operators included "independence, variety, security, social service, ability utilization, co-workers and achievement" in their assessment of job factors providing them with strong sources of satisfaction. This is a pattern of "specific job-facet satisfaction and dissatisfaction [that] is not duplicated in any other blue-collar occupation of which we are aware." Perry and Angle observe that in comparison to "the routinized, oversupervised nature of lower-level organizational work [of other blue-collar occupations] . . . the transit operator performs, within general limits, as a relatively autonomous agent of the organization" (p. 22).

Perin concluded that the same independence and willingness to accept responsibility characteristic of the personalities of those choosing the occupation may play a part in the absence rate. Deciding how much they wish to earn relative to the leisure they accrue may be one manifestation of these traits.

#### § 4. OCCUPATIONAL STRESS

While the preceding discussion provides persuasive evidence that transit operator absence is driven, in part, by economic factors, there is considerable evidence that it is also associated with the demands of the work. Employee absence may be a means of avoiding or mediating the stress associated with the physical or emotional hazards of a transit operator's work. The Transport Workers Union of America (1981) and the British Transport and General Workers Union (1978) have both identified a variety of stressors of particular concern to transit operators. Transit operators also appear to be exposed to relatively significant occupational hazards. The State of California Department of Industrial Relations (1979) found that in terms of occupational injuries and illnesses per 100 full time workers, public transit employees suffered the fourth highest incidence of illness and injury out of 20 local government occupations surveyed, exceeded only by police, fire and sanitary workers.

While the subject of job-related illness has received little attention in the U.S., a large body of international research provides evidence that transit operators are exposed to occupational stressors that are significant determinants of health, performance, and longevity on the job. We have grouped this research into two categories. The first category involves studies of occupational disease per se. These studies did not explicitly address the relationships between occupational disease and work attendance outcomes, such as sick leave usage, absenteeism or injury claims. The second category encompasses research that directly investigated relationships between occupational stress and work attendance. Characteristics of each study are summarized in Table 1.

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#### 4.1 Stress and Occupational Disease

In the first study of its type, Morris and his associates (1953a, 1953b) studied 31,000 male bus drivers and conductors employed by London Transport. They found that serious coronary heart disease occurred three times more frequently among drivers of double-decked buses in the central city than among conductors on the same vehicles. In a subsequent longitudinal study, Morris et al. (1966) found that the incidence of coronary heart disease among the bus drivers was again higher than among the conductors; 8.5% for drivers compared with 4.7% for the conductors. The investigators concluded in each of these studies that the critical difference between the two groups was the extra physical activity of the conductors, who constantly move in their jobs, particularly on the double-decked buses.

Rusconi et al. (1975) studied cardiovascular disease among 300 employees of a suburban bus company in Italy. The sample included 200 drivers and a control group of 100 conductors. The drivers were found to have a higher incidence of heart disease than the conductors, a result that could not be explained by other physiological parameters (e.g., known coronary disease risk factors). On Italian buses the conductors are stationary. This study, therefore, tends to refute Morris and his associates (1953a, 1953b, 1966) who attributed the higher incidence of cardiovascular disease among drivers to their relatively lower levels of physical activity. Instead, Rusconi et al. concluded that the increased incidence of

cardiovascular disease among the drivers was due to the environmental and occupational stresses of the driving task.

Pikus and Tarranikova (1975) studied the frequency of hypertensive illness among bus drivers in the Soviet Union. The total number of bus drivers with hypertension was 41.6 percent, a percentage far exceeding that found in other occupational groups. The evaluation showed that the frequency of hypertension rose sharply with increased length of service, particularly after 10 or more years. The proportion of hypertensive subjects reached 58 percent in the group with 21 to 25 years of service. This high hypertensive morbidity led to an increase in early retirement among driving personnel, particularly those between the ages of 40 to 44 years.

Three studies of bus drivers in Scandinavian countries arrived at similar results concerning rates of heart disease. Among the male population of Oslo (Holme et al., 1976) bus and taxi drivers had very high risk levels for coronary disease in comparison with other occupational groups, and had correspondingly high levels of mortality from coronary disease. Netterstrom et al. (1981) evaluated cardiovascular disease morbidity and mortality among Copenhagen bus drivers, using other Copenhagen males as controls. While both groups had similar rates of death from all causes, the bus drivers were found to have a higher rate of mortality due to cardiovascular disease, and an incidence of chest pains associated with cardiovascular disease twice that of the controls.

In a Swedish study, Gardell (1980) found hormones related to stress (serum catecholamines) to be elevated in both male and female bus drivers at a higher rate than would normally have been expected for that population. The rate of elevation was also higher among city drivers than their rural and suburban counterparts.

Gardell concluded that this difference was attributable to the fact that the city drivers experienced greater pressure from a traffic situation which they could not control and more threat and aggressiveness from passengers.

Two other recent studies have provided insights into the job stresses underlying the occupational diseases of transit operators. From a study of occupational illness in the Paris Metropolitan Transportation System, Foissin (1978) concluded that the job of the bus driver is "biotechnically illegitimate" because it combines two fundamentally incompatible tasks: driving in heavy traffic and identifying and checking bus tickets for an increasing number of passengers, while simultaneously observing all operational requirements, such as respecting the speed limit and ensuring passenger safety. In similar field research, Reimann (1980) measured physiological stress in a sample of drivers in Berlin and found higher levels of a hormone indicative of stress among drivers working split shifts and drivers whose schedules involved high levels of traffic congestion. He concluded that environmentally-based stress variables (noise, carbon monoxide, steering and braking forces) play a subordinate role to task-specific stress variables (i.e. characteristics of route and shift).

#### 4.2 Stress and Work Attendance

Norman (1958) studied absenteeism and illness among male drivers and conductors employed by London Transport. To determine the role of occupational stress in illness-related absenteeism, absence rates for drivers and conductors were compared with data for a control group of male workshop employees also employed by London Transport. For the three groups of employees, data were gathered on average annual duration of absence caused by functional nervous disorders and

diseases of the stomach and duodenum--two disease groups which consist mainly of psychosomatic illness. All three groups were found to experience roughly similar rates of absence from these diseases until the age of 50, when absence rates began to diverge considerably. At the ages of 55-59, conductors experienced about twice as much absence due to these illnesses as the workshop staff, with drivers occupying a middle position. About a third of this excess in conductors was due to the functional nervous disorders and two-thirds to diseases of the stomach and duodenum. Norman inferred that the marked increase in functional nervous disorders among conductors after age 50 was due to a number of occupational factors, including the strain of the job, constant interaction with difficult passengers, and the need to work at a rapid pace. The high rates of gastrointestinal disorders among both drivers and conductors was considered to be a function of the effects of irregular shift work not experienced by the workshop personnel.

Berlinguer (1962) conducted a similar, longitudinal study of illness and industrial accidents among employees of the public transportation agency (ATAC) in Rome. In comparison with the white-collar workers, drivers and conductors were found to be absent due to illness almost 2.5 times as frequently, and were twice as likely to be absent due to disability. Like Norman (1958), Berlinguer concluded that there was a close relationship between the public transportation workers' illness and their working conditions. Absenteeism among drivers was fostered by uncomfortable and fatiguing working conditions, long hours of work, the tendency of drivers to work overtime or on regularly scheduled days off, and a frequent need to "call in sick" when denied the leave requested.

Garbe (1980) conducted a comparative cross-sectional study of the frequency of illness in bus drivers versus administrative employees in Berlin. Compared to

administrative employees, bus drivers showed a higher frequency of individual risk factors for coronary disease (smoking, lack of physical exercise and metabolic disorders); cited more gastric and digestive complaints and more involuntary nervous disorders (headaches, loss of appetite, trembling hands and insomnia); and complained much more frequently about back pain, particularly in the areas of the cervical vertebrae and lower back. Compared to administrative employees, drivers left their jobs an average of 10 years earlier and were 10 years younger when they left. Four major disease groups were isolated as the underlying causes of premature retirement from duty: cardiovascular disorders, degenerative changes in the spinal column, involuntary nervous disorders, and diseases of the gastrointestinal tract. More than 75% of the drivers who left their jobs prematurely were found to have these diseases. Garbe concluded that the bus driver's job is a model stress occupation with stress arising from the complex interaction of the content of the work, working conditions, and scheduling practices.

Aronsson (1976) studied sick leave and illness patterns among employees of the metropolitan Stockholm transit agency. Data for a one-year period were drawn from the records of 4500 full-time operating and 865 office personnel. Results indicated that transit personnel had a significantly higher rate of absence than office personnel. Gardell, Aronsson and Barkloff (1982) continued this line of research through a survey of local transit employees in six Swedish cities. They hypothesized that stress-related illnesses were a function of the interrelationships between the employees' work load, resources for control of stress (personal and organizational support), demographic and personality variables, and the degree to which the individual's schedule conflicted with social and family demands.



Results of their statistical analysis showed a strong correlation between the work load, resources, and reported ill health. Work load and resources were systematically related to health conditions (e.g., psychological and physiological exhaustion, back and joint pains, stomach trouble) and sick leave. The pattern showed that with increased work load, health problems also increased at every resource level, and that health problems lessened at each work load level when resources increased. In the group with the lowest work load level and highest resources, 13 percent were absent from work in a one year period, while for the highest work load/lowest resource group, the corresponding figure was 52 percent.

To supplement the results of their questionnaire analyses, the research team conducted an intensive physiological study of 52 bus drivers at the Greater Stockholm transport company. The results indicated that drivers operating in congested traffic reported more time pressure, irritation, and effort. They also showed a somewhat greater increase in adrenalin excretion. The elevation of cortisone during peak traffic was systematically greater in drivers subjected to high time pressure than in those with low time pressure; the increase in blood pressure during peak traffic, in relation to the baseline from the medical check-up, was greatest with high time pressure. Drivers who dealt with troublesome, threatening, or querulous passengers tended to have greater adrenalin and cortisone excretion while driving than those with fewer such encounters. It was also found that these hormonal increases were related to health and absenteeism, with drivers who worked in high density traffic reporting more stomach, heart, shoulder, and back trouble than drivers in low-density traffic. These somatic complaints were found to be directly related to illness-related absence.

Two Scandinavian studies have also documented physiological differences in stress responses for drivers identified as 'high' versus 'low' absence individuals. Meijman, et al. (1982) undertook a pilot investigation employing two groups of six drivers per group who differed in their absence rates during the previous year. Hormonal excretion rates were measured from urine samples obtained at 3-hour intervals over two working days, and for control purposes, over the first and second consecutive non-work days. Overall adrenaline excretion rates at work were found to be higher in the high absence group. The authors concluded that the different reactions of the groups during and after the driving task provided evidence of differences in individual stress reactions that might be responsible for other objective manifestations, including absence from work. Similar conclusions were reported by Mulders, et al. (1982).

In the first U.S. study of its kind, researchers at the University of California are investigating stress and hypertension among operators in the San Francisco Municipal Railway (Fisher, 1982; Ragland, et al., 1984). Preliminary results have revealed an unusually high incidence of hypertension among operators, with rates of hypertension increasing dramatically with years of service. Forty-five percent of all operators were found to have borderline or elevated blood pressure, an incidence far greater than normal for the general population matched for age, sex and ethnic origin. Younger operators had lower than average blood pressure readings, making the sharp rise in their middle-aged counterparts even more striking.

#### 4.3 Summary of Occupational Stress Research

The occupational stress research reflects a consistent pattern of results about the health risks for transit operators. From research in European and Asian

countries, transit operators appear to be more susceptible to health disorders such as hypertension, gastrointestinal disorders, nervous disorders and back problems than a variety of occupational control groups. These disorders appear to be directly related to absences from work, intent to leave the organization, and early retirement. Some absences are probably induced by operator efforts to avoid stress on the job. Although injury-on-duty rates have not been clearly linked to stress, it also seems reasonable to expect an association between this work attendance outcome and stress.

## § 5. U.S. CASE STUDIES

While U.S. research on operator absenteeism is limited, several case studies have recently been completed on absenteeism patterns within individual U.S. transit organizations. These studies provide a rich source of information about the characteristics of absence in different organizations and factors associated with it. Three case studies are summarized here to illustrate the wide range of factors which appear to influence operator absence behavior. Table 2 summarizes common characteristics and sources of absence in the three case studies.

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### 5.1 Southern California Rapid Transit District (Los Angeles, California)

In response to widespread absenteeism among operators, the Southern California Rapid Transit District (SCRTD) conducted a study (Leahy, Sprague, and

Schlegel, 1979) using weekly manpower reports and in-depth analysis of the personnel files of moderate and high-absenteeism drivers. More than 30% of drivers had more than seven absences per year, with the system average per driver over five absences per year. The highest absenteeism drivers (6% of the total) accounted for 20% of all absences.

Manpower shortages generated cycles of increased absenteeism. Operator shortages created the need for operators to work on their days off, resulting in more absenteeism plus an apparent increase in operator shortage, resulting in more work on regular days off, resulting in an increase in absenteeism, and so on. The opportunities for (or demands on) drivers to perform work on their days off seemed to induce absenteeism for both economic and social reasons. For economic reasons, employees could afford to take sick leave because of the availability of overtime pay; for social reasons, because the availability of leisure time was reduced, employees responded by taking compensatory time off.

One-day absences accounted for about 22% of all lost days and were strongly linked with weekends. Regardless of the driver's regular days off, there was a tendency for drivers to be absent on a Saturday and/or a Sunday. Aside from the almost universal preference for weekends off, much of this tendency was attributed to those drivers whose working spouses had weekends off but whose seniority would not allow them to select a run with a Saturday and/or a Sunday off.

Significantly, problem attendance operators earned an average of 40 pay hours per week. Even with high absenteeism (14 or more absences per year), operators were able to earn 40 hours per week due to the length of work runs and the availability of overtime pay. Further, many problem attendance operators claimed little or no sick pay, seemingly "banking" it in anticipation of actual illness. In a

sample from one division, 30% of problem operators had claimed no sick pay during the period under review.

In a subsequent study for the Southern California Rapid Transit District, Taylor and his associates (1980) explored attitudinal and behavioral correlates of operator performance. The study was designed to examine and describe the operator's experience at work, to identify sources of job stress, and to identify ways of reducing human resource costs to the District, i.e., accidents, workers' compensation claims, passenger complaints, absenteeism, and turnover.

Operators who reported problems in one performance or human resource cost area also tended to report problems in four or five others. Frequency of absence, major rule violations, running ahead of schedule and missouts (i.e., failure of an operator to report for his assignment on time without prior notification) were strongly correlated with other variables and appeared to be convincing predictors of operator performance and human resource costs. High levels of operator stress were related to high absence, disability, frequent missouts, and major rule violations. Operators reporting high stress symptoms were subject to higher drug and alcohol use, were more acquiescent and submissive with problem passengers, and reported substantial reliance on family and friends for emotional support. Taken together, these findings highlighted the existence of a group of drivers who may be attitudinally and behaviorally prone to absence and other dysfunctional behaviors.

## 5.2 Washington Metropolitan Area Transportation Authority (Washington, D.C.)

The Washington Metropolitan Area Transportation Authority (1980) analyzed operator and mechanic sick leave and workers' compensation claims (1976-1979) to document absenteeism patterns and identify factors that appeared to influence

employee attendance. WMATA bus operators lost an average of 20.17 workdays in 1979 compared with 15.85 days in 1976. Days lost to workers' compensation were three times the national average and rising rapidly.

To isolate factors believed to underlie WMATA's absenteeism problem, ten separate meetings were convened with representative employees of those groups that either had high levels of absenteeism or were directly affected by employee absenteeism. These included bus operators, mechanics, supervisory personnel, and labor union officials. Each meeting was conducted informally with a minimum of structured questioning. A wide range of concerns was expressed by these groups. These included: lack of peer pressure for employees to improve their performance and attendance; a "new breed" of operator who is unwilling to accept direct supervision and the realities of the job; unsafe working conditions and poorly maintained equipment; communication gaps between operators and mechanics; unrealistic running times; and negative interactions with supervisory personnel. A number of individuals expressed the feeling that sick leave and workers' compensation represented an alternative method for the employee to obtain time off for personal reasons indicating that if an employee is denied a day off there is a strong likelihood that he or she will report sick or take time off on a work-related injury. It was also noted that both sick leave and workers' compensation claims followed a seasonal pattern, with certain times of the year (e.g. Christmas, hunting season) producing a predictable number of absences.

To gather more substantive data on the absenteeism problem, a detailed analysis was made of the records of a sample of operators ( $n = 402$ ) and mechanics ( $n = 120$ ) for 1976-1979. Forty-five percent of WMATA's operators did not use any paid sick leave during a given year, while, at the other end of the scale, 3.7% of the

operators used the 12 days earned per year, and another 11.7% used in excess of 12 days per year. Workers' compensation claims revealed a similar pattern. Seventy-eight percent of operator years included no claims for workers' compensation. Multiple claims were not frequent: 15% of operators filed one claim, 5% two claims and only 1% filed three and four claims respectively.

To isolate problem operators, a separate tabulation of operators with more than twenty workdays lost in at least three of the four study years was made. For these operators, the tabulations were expanded to include number of missouts, accidents, and supervisory interviews for operating problems. The average for problem operators was then compared to averages for all other operators in the sample.

Analysis revealed that problem operators lost three times as many workdays per year as other operators (36.0 days versus 12.0 days), had about four times as many missouts (4.2 versus 1.3) and slightly more interviews for operating problems. Female operators exhibited more problem behaviors than their male counterparts. Compared to the male operators, female operators tended to have more frequent absences, more workdays lost per year, longer absences, more paid sick leave, more compensation claims, more missouts, and more accidents. They also had slightly more supervisory interviews for operating problems and more suspensions per year than their male counterparts.

### 5.3 Orange County Transit District (Garden Grove, California)

The Orange County Transit District (1981) adopted the WMATA study methodology to analyze operator absence from 1978-1981. Data were drawn from the personnel records of approximately 750 operators from two operating divisions

and

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supplemented by informal interviews with fifteen groups of operators, supervisors, and labor representatives.

The research team determined that OCTD was experiencing increased levels of absenteeism in its Bus Operations Department, from 18.4 average sick days/operator 1978-1979 to 21.6 days in 1980-81. Short-term absenteeism was definitively associated with operators' working on regular days off, and was strongly linked with Saturdays, Sundays and holidays, regardless of regular days off. Operators with high levels of absenteeism also had a missout problem. Use of sick leave was polarized, with operators tending to use all of their available sick pay allowance or none at all.

A number of factors believed to underlie the absenteeism problem were isolated through the informal interview process. These included the inability to take a day off for personal reasons, negative contact with management, lack of incentives or rewards for outstanding performance, stress of the job, easy availability of scheduled and unscheduled overtime pay, lack of a consistent disciplinary policy for absenteeism, little inquiry into past attendance records during the pre-employment screening process, and scheduling of assignments.

The high number of split runs, lack of sufficient recovery time on routes, tight schedules, poor bus maintenance, and difficult interaction with passengers and supervisors were frequently mentioned by operators as particular sources of stress. The inability to take a day off for personal business was highlighted as a particularly strong precursor of absenteeism, with many operators expressing the feeling that the district did not make allowances for the operator's personal life.



#### 5.4 Conclusions from the Case Studies

What can we learn from these case studies? The roots of transit operator absenteeism appear to be multiple and complex, but the case studies reveal three general factors to be of particular importance: widespread availability of overtime pay, which has made the economic benefits of regular attendance less clear; scheduling inflexibility, which reduces the driver's opportunity to take time off when needed; and occupational stressors, among them tight schedules, long hours and split shifts, poorly maintained equipment, difficult interaction with passengers, and threats of physical violence.

### § 6. MANAGERIAL IMPLICATIONS OF THE RESEARCH

The large number of variables influencing absenteeism in transit preclude simple solutions. Because some of the causes appear to be occupational in nature, radical changes may be necessary in order to make significant strides in reducing absenteeism. Our previous research on this subject (Perry, 1983; Dalton and Perry, 1981) leads us to conclude that a strategy composed of several elements is necessary for reducing absenteeism.

1. Develop an attendance policy and related programs. Transit organizations need clear and consistent attendance policies for their employees. Such policies must explicitly state the organization's attendance standards and the consequences of frequent unexcused absences or sick leave abuse. These attendance policies must then be communicated effectively and reinforced by disciplinary, recognition and other motivational programs (Peat, Marwick & Co., 1983).

2. Optimize staff levels. Transit organizations must avoid the type of understaffing that initiates cycles of overtime followed by absenteeism. Managers must be equally concerned about overstaffing that produces large extraboards and incentives for employee absence. These types of problems could be avoided by systematically evaluating staffing levels (Smith, Kiffe & Lee, 1980). As part of an evaluation program, performance data on regular and extraboard operations should be collected and reported regularly. These data could be gathered in conjunction with current organization-wide or route-specific data collection activities. This type of monitoring system has several uses, including serving as a warning device to indicate when staffing inefficiencies occur, development of staffing standards, and establishment of goals for managerial performance. In addition, transit agencies need to make greater use of scheduling optimization techniques (MacDorman and MacDorman, 1982; Perry, 1983).

3. Monitor and control overtime. Although optimal staffing may reduce dysfunctional overtime (e.g., amounts of overtime that result in employee turnover or physical strain), it is unlikely to eliminate it. Thus, it might be useful for transit agencies to develop means for monitoring and controlling overtime. Payroll reporting systems could easily be modified to call the appropriate manager's attention to large amounts of overtime. If management or joint labor-management committees identify instances of dysfunctional overtime, then corrective action will need to be taken. As part of a program to control dysfunctional overtime, transit agencies should consider developing incentive systems that allocate overtime to employees with good attendance records.

4. Increase the flexibility of work schedules. Large percentages of transit employees apparently find their work schedules inadequate for meeting needs such

as interaction with their families. Work schedules which provide more leisure time each week, more break time each day, and more integration between work and non-work pursuits need to be developed (Gardell, Aronsson & Barkloff, 1982). Among the options that might increase the suitability of schedules are: a four-day work week; 9-hour shifts with an extra day-off every second week; availability of more break time during shifts; integrating split shifts with nonwork activities; and permitting employees to more readily "schedule" absences given some advanced notice.

5. Initiate actions that will increase employee perceptions of the supportiveness of their work environment. Although certain aspects of an urban environment may be immutable (e.g., crime and violence), how an operator copes with his job environment and with environmental stressors is to some extent a function of his perceptions of social support. Management needs to focus effort, therefore, on modifying these perceptions. In particular, management should direct attention to improving the quality of first-line supervision as a way of reducing operator stress and strain (Angle and Perry, 1981; Blau, 1981; Aronsson, 1982). Attention should also be directed toward programs which will increase the driver's ability to deal with passenger demands (Transportation Research Board, 1982). Actions that reduce the driver's feelings of alienation and increase the feelings of supportiveness from top management, supervisors, unions, passengers, and the general public should help to reduce the impacts of job stress, associated health problems and operator absenteeism.

Although our research suggests that these strategies should significantly reduce absenteeism, further research needs to be directed toward identifying the causes of absenteeism and evaluating the effectiveness of absence reduction strategies. For

example, we know relatively little about absence proneness (Johns & Nicholson, 1982), but most absence in transit organizations is accounted for by the "absence prone" individual. Higher frequencies of absence have been reported for operators who are female (Washington Metropolitan Area Transit Authority, 1980; Gardell, Aronsson & Barkloff, 1982; Jacobs, Shapiro & Ray, 1983; Perry, 1983), single and/or divorced (Perry, 1983), and operators who express an imbalance between their work schedules and their desire to participate in family or other off-work activities (Gardell, Aronsson & Barkloff, 1982; English, 1982; Perry, 1983). Yet these demographic factors, and absence reduction programs which could be targeted to the unique concerns of these operator sub-groups, have been virtually ignored by transit industry analysts (Perin, 1982).

Future research must also be sensitive to the different types of absence encountered in transit organizations. This research should carefully differentiate between absences caused by illness, disability and injury-on-duty; those caused by the operators' need for more flexibility in their schedules; and those which appear to be the result of deliberate withdrawal behavior or 'malingering.' Research alone will not resolve absenteeism in transit, but a clearer understanding of the forces which underlie operator behavior can provide a substantial foundation for remedial action.

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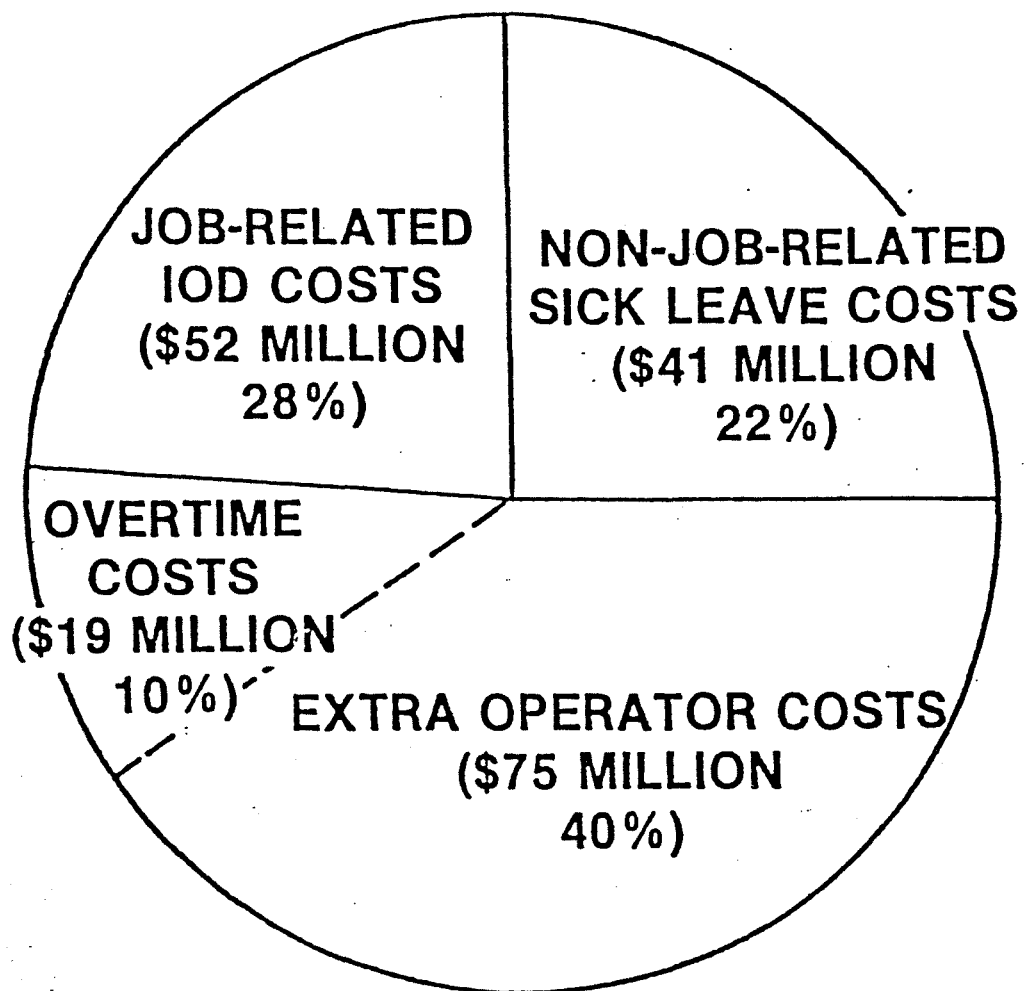
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Figure 1

Estimated U.S. Industry Costs of Transit Operator Absence for 1978



Disruption costs (e.g., waiting time, travel time, and spread premium) and administrative costs (e.g., dispatching, recruiting, hiring, accounting, and claims) are not included in these estimates.

From Baker and Schueftan (1980).

Table 1

## International Studies of Bus Driver Health and Occupational Illness

Author(s), Title, & Year of Publication	Country	Year(s) data were collected	Sample
Morris, et al. (1953; 1953a) Coronary heart disease and physical activity at work	England	1949-1950	31,000 male drivers and conductors aged 35-64
Norman (1958) The health of busdrivers: A study in London Transport	England	1949-1952	14,000 male drivers and 12,000 male conductors aged 24-65; control group of male workshop employees
Berlinguer (1962) Maladies and industrial health of public transportation workers	Italy	1956-1960	6,000 drivers, 4,000 laborers, and 900 office workers
Morris, et al. (1966) Incidence and prediction of ischaemic heart disease in London busmen	England	1956-1960	687 male drivers and conductors of double deck buses aged 30-69
Pikus & Tarranikova (1975) The frequency of hypertensive disease among drivers in public transportation	Soviet Union	5 year period	1,200 drivers aged 20-54
Rusconi, et al. (1975) The frequency of hypertensive disease among drivers in public transportation	Italy	Study included a review of employee medical records for a 17 year period	200 drivers and 100 conductors aged 21-
Wronsson (1976) Sick leave and illness patterns among transit personnel in metropolitan Stockholm transit	Sweden	1976	4500 transit personnel (including bus, subway and tram drivers) and 865 office workers; both groups included male and female employees
Volme, et al. (1977) Coronary risk factors in various occupational groups: The Oslo study	Norway	1972-1973	15,000 males between 40-49 representing 43 occupational groups
Boissin (1978; 1978a) Study concerning the job of bus driver in road system	France	not specified	775 drivers
Harbe (1980) Health and health risks among city bus drivers in West Berlin	West Germany	1974-1977	811 male drivers between 40-49 years of age; control group of 417 administrative employees matched for age and sex
Harrell (1980) Stress research and its implications in Sweden	Sweden	not specified	Sample of male and female bus drivers
Reimann (1980) Investigations on the reduction of stress of drivers in regularly scheduled buses in inner city traffic	West Germany	not specified	354 male bus drivers aged 40-49; physiological field test of 28 male drivers
Stetterstrom, et al. (1981) Incidence and prevalence of ischaemic heart disease among urban bus drivers in Copenhagen	Denmark	not specified	1741 drivers; control group of Copenhagen males
Harrell, et al. (1982) The working environment for local public transport personnel	Sweden	1977-1979	1,500 transit employees and 10,000 civil service employees; separate sample of 52 drivers
de Gijmen, et al. (1982) Neuroendocrine and self-assessment measures of activation in intracity bus drivers	Netherlands	not specified	12 drivers
de Gijmen, et al. (1982) Heart rate variability and task performance of city bus drivers during pauses and after work	Netherlands	not specified	12 drivers

Table 2

## Summary of Concerns Expressed in Case Study Agencies

CHARACTERISTICS OF ABSENTEEISM	Southern California Rapid Transit District	Washington Metropolitan Area Transit Authority	Orange County Transit District
Polarized (i.e., some drivers having exemplary attendance, others extreme offenders)	X	X	X
Clustered around weekends and holidays	X	X	X
<b>MAJOR CONCERNS</b>			
<u>Environmental</u>			
Poorly maintained equipment	X	X	X
Threat of physical violence	X	X	
Too fast a pace/unrealistic schedules		X	X
Unsafe working conditions		X	
Long hours or irregular shifts	X	X	X
Problems with passengers	X	X	X
<u>Organizational</u>			
Lack of peer pressure for good attendance		X	
Lack of pre-employment screening		X	X
Negative interaction with supervisors	X	X	X
Easy availability of overtime	X	X	X
Lack of discipline for high absenteeism	X	X	X
Lack of incentives for good performance		X	X
Feelings that management is unresponsive to driver concerns	X	X	X
<u>Individual</u>			
Changing work ethic/workforce composition	X	X	X
Need for more leisure time	X	X	X
Lack of flexibility in schedule assignments	X	X	X
Family problems caused by schedule	X	X	X