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Publication Date

1985-04-01

UCI-ITS-WP-85-3

Part-Time Operators in Public Transit: Experiences and Prospects

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April 1985

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Presented at the 64th Annual Meeting of the Transportation Research Board, Washington, D.C., January 1985.

ABSTRACT

Most U.S. transit agencies have begun to use part-time operators as a means to reduce operating cost. This report, based on five case studies, evaluates the cost savings and organizational impacts associated with this change. Results indicate that cost savings have been small but significant in situations where peak service expansion occurred. But where the schedule was static, contract protections for existing operators have made it difficult to use part-time labor, and hence savings were small or insignificant.

We find that in transit agencies with highly peaked schedules, part-time operators (PTOs) save money for two reasons: they improve schedule efficiency (the ratio of hours-paid to hours-worked), and their wages and fringe benefits are lower than those of full time operators. In agencies with relatively flat schedules the only savings is from lower wages and fringes, and it is possible that this kind of "two-tier" wage system may be bargained away over time. We find that for agencies with flat or static schedules, it may be more effective to concentrate on alternative strategies such as absenteeism control and extraboard staffing which may be more beneficial and easier to implement.

On the organizational side, we find no unusual costs associated with use of PTOs. They have proven to be as reliable, or even more so, than full time operators; they have not created unusual supervisory costs, and there have been relatively few problems between part-time and full-time operators. We also find that instead of creating a permanent force of PTOs, as had been anticipated, most of the PTOs that were hired really wanted full-time work.

PART-TIME OPERATORS IN PUBLIC TRANSIT: EXPERIENCES AND PROSPECTS

INTRODUCTION

During the past decade, the U.S. transit industry has made a concerted effort to contain ever-increasing operating deficits and halt the long term decline in productivity. Faced with the alternatives of cutting service, increasing fares, or reducing service costs, transit agencies have developed and implemented a number of actions aimed at the latter. These actions have frequently focused on improving labor productivity, since labor is the largest single component of transit operating costs.

The use of part-time operators (PTOs) has emerged as one of the most widely adopted, yet controversial, method for improving productivity. Pioneered by a handful of transit agencies during the late 1970's, contract provisions allowing PTOs became nearly universal during the early 1980's. A recent APTA survey indicates that more than nine out of ten U.S. agencies have secured the right to employ PTOs, and the great majority currently exercise that right.

The purpose of using PTO's is to match operators to service patterns. PTOs can be assigned the short pieces of peak-period work that are very costly to operate with full-time operators. Managements' attempt to use PTOs has met with significant opposition from transit unions, however. Unions claim that part-time labor enables management to circumvent hard-won work rules, and they fear that PTOs will replace full-time operators, leading to an actual loss of full-time jobs. Such opposition has resulted in strikes at several major transit agencies.

Despite the obvious importance of these issues, little is known about the actual consequences of utilizing PTOs. This paper examines the fiscal and organizational impact of PTO utilization. It is based on a national survey of the use of PTOs, as well as in-depth case studies of five representative transit agencies. These agencies range

in size from 100 to 1100 vehicles, and are located in medium to large metropolitan areas. Two of the case study agencies are suburban systems; the others operate both local and downtown-oriented commuter services. Data on scheduling, expenses, and personnel were examined, and extensive interviews with transit managers, department heads, union leaders, and operators were conducted.

WHY PART-TIME OPERATORS?

It is expensive for transit agencies to provide peak period service because of its inherent inefficiency (1, 2). The size of the transit agency (number of operators, vehicles, and garages) is determined by peak service requirements, but these resources remain underutilized during the rest of the day.

Labor is a prime example. It is inherently inefficient to assign peak service to a full-time operator, because the operator is not needed during midday, though he is guaranteed a full day's pay. For instance, an operator responsible for two three-hour peak assignments would also receive two hours of guarantee pay, along with six hours of pay for driving. In many cases the operator also receives an additional spread premium payment if there is a long interval between morning sign-on and evening sign-off. Consequently, there is an inefficient excess of pay-hours over driving-hours. PTOs have the potential for reducing this inefficiency because they are only paid for the hours they work; hence the cost of peak service falls. In situations where the peak/base ratio is high and work rules are restrictive, PTOs can offer substantial savings (2).

Transit agencies can use the cost-saving potential of PTOs in three ways. First, PTOs can replace full-time operators (perhaps through natural attrition) on existing peak hour runs, thus reducing the operating deficit. When subsidy constraints are severe, such cost reductions reduce the need for fare increases or service cutbacks.

Second, PTOs can be used to expand peak service. While additional peak service would be prohibitively costly if full-time operators were used, it is relatively less expensive to expand with PTOs. Many transit agencies consider peak service their first priority and wish to expand it whenever possible. In addition, some transit agencies have an implied mandate to provide peak service by virtue of their subsidy arrangements. In many cases, earmarked local subsidies are aimed at providing better transit services for commuters.

Third, PTOs may enable transit agencies to reduce unproductive day-base service. Many transit agencies keep excess vehicles in service at midday because there is little additional cost involved: the peak-period operator is guaranteed eight hours' pay anyway, so he might as well be driving, even if the service is not needed. Thus PTOs enable transit agencies to tailor service to actual demand.

SCOPE OF PART-TIME UTILIZATION

Given the apparent promise of PTOs, it is not surprising that it has diffused rapidly throughout the industry. In 1971 Seattle METRO became the first large district to win the right to use PTOs. By 1981 more than half of the APTA member transit agencies had obtained a PTO provision, and by 1983 the right to use part-time labor was almost universal (See Table 1), (3, 4). However, Seattle remains unique in the proportion of PTO's allowed (100% of full-time drivers). Excluding Seattle METRO, this proportion ranged from 1% - 40% in 1983, with an average of 13%. Thus while almost all agencies have the right to use PTOs, the number permitted is generally quite small.

Table 1
SCOPE OF PART-TIME OPERATOR UTILIZATION^a

	1981	1983
PART-TIME OPERATORS ALLOWED (AS PERCENT OF SURVEY TOTAL)	58%	92%
PART-TIME OPERATORS ALLOWED (BUT NOT HIRED)	18%	13%
NUMBER OF PART-TIME OPERATORS ALLOWED AS PERCENT OF full TIME OPERATORS:		
AVERAGE	NA	13%
RANGE ^b	< 1% to 100%	< 1% to 100%
	N = 207	N = 182

^aCompiled from APTA data (3, 4)

^bIncludes Seattle METRO. Without Seattle the range is < 1% to 40% in 1981 and 1983.

In addition to limiting the number of PTOs, most contracts also restrict the amount and type of work they may do. To preserve the distinction between part-time and full-time operators, total work time is restricted: the limitation ranges from 15 to 40 hours, with an average of 28 hours. Where the limit is 40 hours, there are other restrictions which generally prevent the PTO from actually working 40 hours. PTO's are most commonly restricted to trippers.¹ Other assignments include charter, holiday, night and weekend work.

To protect existing full-time jobs, many contracts (35%) require that PTOs be laid off first during any general cutbacks. Some contracts also require that all full-time operators be rehired before any PTOs, while others require that the size of the full-time workforce be guaranteed. As long as the agency is stable or expanding, these provisions cause no problem. However, if budget problems ever cause a service reduction, the agency must layoff its most productive operators first, namely the part-timers.

FISCAL IMPACT OF PART-TIME OPERATORS

The use of part-time labor can reduce costs in two ways. First, substitution of part-time for full-time operators increases schedule efficiency (the ratio of pay-hours to vehicle-hours) by reducing guarantee and spread premium payments. Second, PTOs generally receive an effectively lower wage rate, and a significantly lower fringe benefit rate, than full-time operators. Against these savings must be balanced any cost-increasing bargaining concessions (such as increased wages or fringe benefits for full-time operators) necessary to secure union acceptance of part-time labor provisions. We examine these three issues in turn.

Schedule Efficiency

Chomitz & Lave estimated that using PTOs could reduce operator cost up to 13%, depending upon the service profile, spread limit and premium provisions, and the percent of part-time operators allowed (1). Given "most typical" work rule restrictions, (spread limit of 13 hours; premium pay after 12 hours), estimated saving are 1 to 4%, depending on the particular peak/base ratio, if PTOs are limited to 10% of full-time operators, and 2 to 6% if PTOs are limited to 20%. Since operator compensation comprises about half of total costs, this translates into total cost saving of 0.5 to 3%.

The Chomitz & Lave estimates were based on experimental runcuts, using actual schedules from five different transit agencies. The schedules were recut using the RUCUS automated runcutting procedures, and savings estimates were based on the change in scheduled pay hours resulting from using PTOs. The estimates assume everything else is held constant: the schedule remains unchanged; and no significant concessions are given in return for the right to use PTOs, either in the form of more expensive work rules, more fringe benefits, or wage increases.

How does actual experience compare with those experimental runcuts? It would be easy to measure the financial impact of PTOs if an agency's service schedule remained unchanged: just calculate schedule efficiency before and after the introduction of PTOs. Unfortunately for the analyst, schedules do change -- and to some extent they change as a direct consequence of the decision to employ PTOs. In many cases the motivation for adopting PTOs was a desire to expand peak service. In other cases, since the contract guarantees the jobs of existing full-time operators, the agency must expand service in order to provide openings for the PTOs.

If an agency simultaneously introduces PTOs and alters the service schedule, it becomes difficult to even define, let alone measure, the savings from PTO implementation. Consider, for instance, a hypothetical transit agency which adopts PTOs and changes to a more peaked service schedule at the same time. Table 2 shows that there are four possible combinations for work rules and schedules whose costs we can compare. Which comparison yields the "true" value of cost savings? If we compare the old rules/old schedule combination with the new/new combination, there is no change in costs. All the potential savings from PTOs have been spent on expanded service. To evaluate changes in labor productivity, we must hold constant the service schedule, i.e., examine costs within a single column. But the left-hand

Table 2
HYPOTHETICAL OPERATING COST OF SCHEDULE/WORK RULE COMBINATIONS

	SERVICE SCHEDULE	
	OLD (flat)	NEW (peaky)
WORK RULES		
OLD: pre-PTOs	\$10	\$20
NEW: post-PTOs	\$ 8	\$10

column indicates a 20% saving, from \$10 to \$8; while the right-hand column shows a 50% saving, from \$20 down to \$10. Alternatively stated, under the old service schedule, use of PTOs could save 20%; under the new service schedule, if management were to give up use of PTOs it would double the operating costs. (Note that columnwise comparisons require experimental runcuts, since the old/new and new/old combinations were never actually put on the street.) This is not an unreasonable example, nor is it a semantic game. The savings from part-time labor can be discussed only in the context of a given service schedule.

Case Study Results For four of the five case study agencies, expansion of peak service was the primary motivation for using PTOs: it would have been prohibitively expensive to undertake the new service without PTOs. The fifth agency planned to expand base service. Only two of the case study agencies actually sustained the increased service. Financial problems, brought about by loss of subsidy money or by insufficient farebox revenue, resulted in service cutbacks at the other three. The

contracts at these three agencies specify that PTOs must be laid off first. Consequently, two agencies lost all their PTOs, while the third was able to keep some part-time positions through an aggressive early retirement program for full-time operators.

In all cases, the use of PTOs was one of several productivity improvement strategies being pursued by management during the period of our study. Other strategies included absentee reduction programs; changes in wage scales, cost-of-living adjustments, and vacation pay; reductions in extraboard staffing; work rule changes; and a host of minor policy changes. To isolate the impact of PTOs, it is necessary to take all of these other changes into account as well. Accordingly, we chose a disaggregate approach. Cost impacts can be broken down into savings on scheduled costs and on fringe benefits. Each will be discussed in turn.

Impact on Schedule Efficiency Schedule efficiency is expressed here as the ratio of pay hours to platform hours. This ratio is always greater than one, because operators are paid for report and travel time. The minimum possible, e.g. if no make-up, premium, or overtime were paid, is about 1.06. There are two possible ways to estimate the impact of PTOs on schedule efficiency. One is to use actual "before" and "after" schedule data, and attempt to control for service and other changes. Referring back to Table 2, this is equivalent to moving diagonally from "OLD/OLD" to "NEW/NEW," while trying to estimate "OLD/NEW." A second method is to use experimental runcut data: take the new schedule, perform a runcut under the old rules, and compare the results. This gives the within column comparison we need. However, since the new schedule would never have been adopted under the old rules, it could be argued that such a comparison may not be appropriate.

We used both methods in our case study analysis, and the results are summarized in Table 3. Actual "before" and "after" schedule data were available from two

Table 3

IMPACT OF PART-TIME OPERATORS ON SCHEDULE EFFICIENCY

Observed Data:

	<u>Service</u>	<u>Peak/Base</u>	<u>Change in Pay/Platform</u>
Agency "A"	increased	peaky; increased	-5.0% total -1.7% due to PT
Agency "B"	stable	flat; decreased	-2.0% total -1.0% due to PT

Experimental Data:

	<u>% PT</u>	<u>Peak/Base</u>	<u>Change in Pay/Platform</u>
Agency "C"	15%	3.5	-2.9%
Agency "D"	10%	2.0	-2.5%

agencies. Agency "A" increased service by about 40%, and the peak/base ratio increased from 2.25 to 2.65. The pay/platform ratio dropped by 5% during this period; most of this drop was due to the efficiency of the new service: either peak work assigned to PTOs or base service incorporated into straight runs. Taking this into account, a 1.7% drop is attributable to the use of part-time labor to operate the pre-existing service.

Agency "B" reduced peak service and increased base service after adopting PTOs. The result was a decrease in the pay/platform ratio of 2%. By assuming two part-time runs are equivalent to one split run and using the change in the ratio of straight to split runs resulting from the change in peak/base, we estimate that about half of the pay/platform reduction is due to PTOs.

Because of anticipated service cutbacks, two agencies had performed experimental runcuts to determine the impact of losing their PTOs. Agency "C" had a peak/base ratio of 3.5, and they were allowed 15% PTOs. Their runcut simulation of the effects from losing PTOs showed a 2.9% decrease in schedule efficiency. This is substantially less than would have been expected for an agency with such a high peak/base ratio (1). The reason for the small change is that agency "C" already had an exceptionally efficient schedule (1.19 pay/platform ratio), because of pay calculation provisions which were quite favorable to management; thus PTOs could not make as much difference as might have been anticipated from their peaky schedule. Agency "D" had a peak/base of 2.0, and 10% of its operators were PTOs. They performed an experimental runcut to see what would happen if they were to retain their existing service schedule, while changing their labor force from 10% PTOs to no PTOs. The results showed a 2.5% decrease in schedule efficiency.

Wages and Benefits of Part-Time Operators

The rationale behind use of PTOs is their ability to increase schedule efficiency. In practice, most transit agencies gain additional savings by paying PTOs lower fringe benefits and (effectively) lower wages as well. Table 4 shows the data for fringe benefits: most agencies offer no sick, holiday, or vacation pay, no health insurance, and no retirement pay to PTOs. In cases where these benefits are provided, they are most frequently provided at reduced rates.

Table 4
PART-TIME OPERATOR FRINGE BENEFITS^a

	<u>Same as Full Time</u>	<u>Reduced</u>	<u>None</u>
Sick Leave	10%	13%	77%
Holiday Pay	12%	17%	71%
Vacation	13%	23%	64%
Health Insurance	15%	17%	68%
Retirement	21%	7%	72%

N = 112

^a Compiled from APTA data (4)

Additional wage cost savings are generated by the wage rate progression. In most cases, PTOs have the same pay scale and progression as full-time operators. Since the wage progression is based on work hours, it requires more calendar time for a PTO to reach the top of the scale. For example, the 1983 U. S. average number of work hours to reach top rate was 4938. In full-time equivalents (e.g., 2080 work hours per year) this is about 2.4 years, but in part-time equivalents (national average of 28 hours/week = 1456 hrs/year) this is about 3.4 years. If the tenure of PTOs is 2 or 3 years (the case study data indicates less than 2 years), then most never reach the top of the pay scale.

We can use an example from an experimental runcut to show the relative contribution of each of these factors to PTO cost savings. Using data from the Agency "D" runcuts, a 10% complement of PTOs reduces pay hours by 2.6%. The lower wage rate of PTOs contributes an additional 2% reduction, raising the estimated savings from 2.6% to 4.6%. The savings from reduced fringe benefits brings the total reduction to 5.7% compared to an all full-time operator schedule. This translates to 2.5% of total operating cost.

What Does It Cost to Get Part-Time Operators

A central issue in this research is the cost (in general terms) of winning the right to use PTOs. In view of staunch union opposition, it was anticipated that management would have to give up something in return for PTOs. Only one of the case study agencies specifically identified a bargained cost: a very small wage rate increase. In all other cases, management had identified a set of possible bargaining issues, and the cost of PTOs was an "opportunity cost": other alternative means of reducing costs were not pursued, and attention was concentrated on gaining PTOs. In at least one case, detailed analyses of the relative merits of these alternatives were conducted; in other cases the choice was largely subjective. In any event, the actual outcome of using PTOs could not be accurately forecast by management because of the complexity of schedule characteristics and work rule provisions that affect PTO utilization, and because of all the other changes affecting labor productivity which were implemented over the same time period.

We are currently conducting additional analysis of the impact of obtaining PTO's on compensation rates. Using data from fifty U.S. transit agencies, we are predicting full-time operator compensation as a function of environmental and service characteristics. By comparing predicted versus actual values, we can

determine whether agencies which obtained the right to use PTO's gave greater compensation increases. Preliminary results show that an initial increase in fringe benefits did occur, but during later contracts benefits returned to normal levels. We also found a similar but statistically insignificant effect on wage rates.

CONSTRAINTS ON PTO UTILIZATION

Our PTO cost-savings estimates are based on the schedule, rather than the actual operating costs of the case study agencies. To the extent that constraints on PTO utilization come into play, these savings may not be realized. The case studies revealed that the transit agency's ability to utilize PTOs can be significantly constrained by a variety of contract limitations. These limitations, together with the characteristics of the service schedule, can make it impossible for an agency to utilize the full number of PTOs the contract allows. For example, PTOs are often restricted to runs which begin and end at a bus depot, whereas full-time operators can be relieved "on the road," without taking the bus out of service. In addition, there is almost always a maximum allowable time limit for part-time runs, and there is sometimes a minimum. Pieces of work smaller than the minimum are reserved as biddable overtime for full-time operators. Another common provision is that the number (or proportion) of PTOs must be same at each division. Since the service profile usually differs between divisions, this provision limits the total proportion of operators to the number that can be used in the division with the least peaky schedule. Two case study agencies also have a provision which prohibits the splitting-up of two-piece runs in order to create part-time work. In practice, this provision is unenforceable, because it is almost impossible to retain the identity of specific runs over several runcuts.

Contract provisions like these tend to reduce the potential efficiency gains from use of PTOs. Transit managers who have been involved in the contract bargaining process acknowledged that the full impact of such provisions is difficult to anticipate, hence savings from PTO are often much lower than had been anticipated. When subsequent contracts come up for renewal, these unanticipated restrictions then become the focal points for bargaining.

ORGANIZATIONAL AND OPERATIONAL ISSUES

When the part-time labor issue was first raised, unions predicted a number of serious negative consequences. It was feared that PTOs would be uncommitted and unprofessional, resulting in higher accident rates, absenteeism, turnover, and passenger complaints. To a large extent, these fears have been unfounded. The unions were also concerned about the impact of PTOs on the job security and overtime opportunities of incumbent full-time operators. There was concern about the working conditions of the part-timers, and apprehension about how well they could be integrated into the union. On these counts, the record is mixed.

Impacts on Full-Time Operators

The right to use PTOs was not easily achieved by most agencies. Full time operators perceived the issue as a threat to both their jobs and their working conditions. While transit management has every incentive to replace full-time operators with PTOs, union opposition is natural. A near universal compromise is to protect the jobs of incumbent full-time operators. This is accomplished by requiring that no full-time operator can be laid off until all PTOs have been dismissed, or by guaranteeing a minimum number of full-time operators or runs. At such agencies, the only way to implement PTOs is to add new service.

A second effect on full-time operators is the reduction in the types of runs available to them. Because management assigns the most costly runs (those with a high ratio of pay-hours to work-hours) to PTOs, there will be fewer runs with premium pay and overtime available to full-time operators. Full time operators can lose the chance to earn such pay in two ways. First, at some agencies, full-time operators can volunteer to drive trippers in addition to their assigned runs. In the absence of a contractual agreement to the contrary, such trippers will generally be reassigned to part-time operators. Second, full-time operators can lose the chance to earn premium pay when split runs are reassigned to PTOs. (At agencies with a high peak/base ratio, split runs pay more than straight runs and can involve less actual driving time.) If there is a contractual minimum number of full-time operators, however, the only way to reassign a split run is to add new base service, creating a new straight run for the displaced full-time operator.

This strategy was used at one of our agencies: it increased both peak and base service; PTOs were assigned all the peak service and some of the old split runs; and the former holders of those split runs were assigned to new straights. Thus, the number of full-time runs has constant, but their composition has been altered significantly: the proportion of splits fell from 41% to 31%. Since the splits had paid about 15% more than straight runs, this is a significant loss to the full-time operators. On the other hand, the work available to full-time operators is now more pleasant (e.g. a higher proportion of straight runs is available). Premium and overtime payments were originally begun as extra compensation for onerous assignments. Thus the loss of premium pay is now offset by better work.

Full time operators may also end up with a less desirable selection of weekly schedules. The proportion of full-time operators who can have the weekend off depends on the ratio of weekday runs to weekend runs. If PTOs, who are generally

restricted to weekday peak service, supplant some full-time operators, the remaining full-timers will face a lower probability of securing weekends off. On the other hand, it is hard to say how important this is to full-time operators. In most instances where management has asked to use PTOs on weekend runs, thus giving full-time operators a regular weekday schedule, the unions have been adamantly opposed.

The Status and Performance of Part-Time Operators

Three issues related to the PTOs were explored during the case study visits: PTO's perception of the job; relationships between part-time and full-time operators, and job performance of the PTOs.

Both transit management and union members expected that those people who applied for PTO positions would be interested in permanent part-time work, e.g., college students, mothers of younger children. In fact, it has turned out that most PTOs are seeking full-time work. As part-time work is now scheduled it is not surprising that few PTOs are permanent. Work hours are inconvenient for those who need childcare, and work schedules change too frequently for students or people working other jobs.

Both union and management officials estimate that 60-80% of PTOs would really prefer full-time work. All of the case study transit agencies have contract provisions which give preference to PTOs when full-time jobs become available. In some cases, a majority of PTOs move on to full-time positions, and most full-time positions are filled this way. Thus the part-time position has become a steppingstone to full-time employment. It should be noted that the case studies took place during a period of economic recession and high unemployment. Given that most PTOs would prefer full-time work, it remains to be seen whether part-time recruitment will become more difficult as the economy improves.

Transit managers cited several indirect benefits of the part-time to full-time progression. In effect, the part-time position becomes a longer probation period, and managers and supervisors have more opportunity to evaluate the operator before he/she is hired into a full-time position and thus feel they can make better choices. In addition, an already experienced operator is hired, lessening the need for training.

A major concern in bringing PTOs into the transit agency has been whether they would be accepted by full-time operators, and whether a good working relationship between part-time and full-time people could be established. In spite of the initial opposition to part-time contract provisions, no hostility appears to have carried over to PTOs themselves. Discussions with operators indicated that PTOs are not treated differently. Some part-time people felt that the union did not seem committed to them, but no specific problems were identified.

PTO Job Performance

When the right to use PTOs was won, unions claimed that qualified people willing to take part-time jobs would be difficult to find and that safety problems and customer complaints would consequently increase. In contrast, the performance record of PTOs has been at least as good as that of full-time operators. At the case study agencies no evidence could be found to indicate that PTOs behave any differently on the job. As one supervisor put it, "once they have the uniform on, there's no way to distinguish a PTO from a full-time operator."

Absenteeism Absenteeism is one aspect of job performance of great concern to transit management. Table 5 shows comparative sick rates, PTO versus full-time operator (FTO), for our five case study agencies. The rates are based on

Table 5
Comparative Sick Rates: Part-Time and Full-Time Operators

	AGENCY <u>"A"</u>	AGENCY <u>"B"</u>	AGENCY <u>"C"</u>	AGENCY <u>"D"</u>	AGENCY <u>"E"</u>
FTO Sick Rate ^a	3.75 %	3.52 %	2.31 %	4.29 %	3.06 %
PTO Sick Rate	1.41 %	1.71 %	1.02 %	1.59 %	1.60 %

^aProportion of yearly work days an operator will call-in sick. Agency "C" is an unrelially small sample.

approximately one year of data at each agency, and they are computed as percentage of work-days per year when an operator calls in sick. The FTO sick rate exceeds the PTO rate at every agency and on average is 2.3 times higher.

Why do PTOs have lower sick rates? The most obvious explanation is that PTOs do not receive sick benefits. However, at two of our agencies it is possible to compare groups of drivers with identical sick benefits. Table 6 shows a comparison at Agency "E" where PTOs receive no sick benefits, and FTOs receive no sick benefits during

Table 6
Comparison of Part-time and Full Time Operators
When Neither Receive Sick Pay

	Rate # 1	Rate # 2
	No Sicks	No Sicks
	<u>>40 Days</u>	<u>>30 Days</u>
<u>FULL TIME WITH 0 SICK PAY</u>		
Hired in 1982, 1983 Data, 18 operators	3.56% ^a	3.03%
Hired in 1983, 1984 Data, 18 Operators	3.27	2.39
<u>PART-TIME WITH 0 SICK PAY</u>		
Hired in 1982, 1983 Data, 18 Operators	1.67	1.67
Hired in 1983, 1983 Data, 41 Operators	1.64	1.64
Hired in 1983, 1984 Data, 23 Operators	1.52	1.52
Hired in 1984, 1984 Data, 33 Operators	1.58	1.58

^aProportion of yearly work days.

their first year of employment. The rates are expressed as percentage of work-days when the operators call-in sick. In small samples like this, the presence of a few random instances of major illness can substantially bias the apparent rate. Hence, rate #1 excludes any operator who was sick more than 40 days (8 weeks); and rate #2 sets a tougher standard by excluding any operator who was sick for more than 6 weeks. (Neither #1 nor #2 screening ever exclude more than 10% of the sample.)

Since the FTOs are on probation for much of this period, their sick rates should be biased downward. Despite this bias, Table 6 shows that the PTO sick rate is lower.

Agency "B" has a class of PTOs who receive the same sick benefits as their FTOs. Using the #2 rate definition discussed above, we found that the absence rate was 3.52% for FTO's and 2.44% for PTO's. We therefore conclude that PTOs have less absenteeism than full-time operators, and that this effect is even true in those instances where both groups of operators receive identical sick benefits.

Accident Rates The analysis in this section is still in progress and the results should be regarded as tentative. Table 7 presents comparative accident rates, PTO versus FTO, as a function of amount of experience for one of the case study agencies. The data shows that the number of accidents per year declines with experience, and that PTO accident rates are lower than those of FTOs. The

Table 7
Comparative Accident Rates: Part-time And Full-Time Operators^a

	<u>FTO</u>	<u>FTO</u>	<u>FTO</u>	<u>FTO</u>	<u>PTO</u>	<u>PTO</u>
Years of Experience	3.7	2.6	2.3	1.3	1.3	0.6
Accident Rate: Total	1.33	1.50	1.17	1.59	1.17	.95
Chargeable	.49	.27	.34	.59	.58	.38
Non-Chargeable	.84	1.23	.83	1.00	.59	.57
Sample Size	9	28	18	18	23	33

^aAccidents per year; total of all vehicle and passenger incidents. Rates are not standardized for driving exposure.

table also breaks down the accidents into "chargeable" (i.e., whether the driver could have prevented the accident) and "non-chargeable."

Table 8 shows comparative accident rates at a different agency, and this time the data is structured by the type of work assignment. The PTO accident rate is higher

Table 8
Comparative Accident Rates, Agency "D"

	<u>REGULAR RUN</u>	<u>REGULAR RELIEF</u>	<u>EXTRA BOARD</u>	<u>VACATION RELIEF</u>	<u>P-T RUN</u>
Accidents per Year	0.68	2.35	2.20	1.38	1.39

POTENTIAL "REPORTING" BIAS AGAINST PTOs

	<u>EXTRA BOARD</u>	<u>REGULAR DRIVERS</u>	<u>PTOs</u>
% of Total Accidents Judged "Preventable"	45%	51%	60%

than that of FTOs who do regular runs, but lower or equal to that of regular drivers who do relief runs or extraboard work. The table also breaks down the accidents by preventable/non-preventable. The PTOs are judged to have a higher proportion of preventable accidents. This might be an indication that PTOs are worse drivers or that the drivers who evaluate the accidents are biased against PTOs and thus more likely to decide that PTOs were at fault.

Accidents per year is not a wholly adequate statistic for judging the quality of the two driver groups because it does not take into account other factors which may affect full-time and part-time accident rates. FTO's do more driving, and thus might be expected to have more accidents. On the other hand, FTO's also have more experience, and experience should lower the rate. PTO's do more driving in congested conditions, when accidents are more likely to occur. Moreover, there

may be substantial differences in the drivability of the vehicles (e.g., size, age) used by the two groups. Ideally, the accident rates should be standardized for all of these different "exposure" factors.

In their study of accident rates at Boston MBTA, Attanucci, Wilson and Vozzolo reported that standardized PTO accident rates were clearly higher during the PTO introductory period, but appear to be converging with the FTO rates since then (5). Given the unusual nature of the MBTA data and the tentatively positive evidence in Tables 7 and 8, evidence on accident rates appears to be quite mixed. Our tentative conclusion is that FTO and PTO accident rates are roughly similar.

CONCLUSIONS

The results of this research indicate that PTOs can be utilized to expand peak service economically. However, few transit agencies today are in a financial position that permits service expansion. Whether part-time labor can be used to reduce the cost of a static service schedule depends a great deal on contractual restrictions. Many apparently minor restrictions can prevent full or efficient utilization of the nominal quota of PTOs. Above all, the efficiency gains from part-time labor depend on the existing ratio of pay-hours to platform-hours: where this ratio is high, (say greater than 1.15,) there are significant opportunities to increase productivity. The ratio itself is primarily dependent upon schedule peaking, but an agency with generous work rules may have a low pay/platform ratio despite substantial peaking. Additional savings have been realized at many properties by restricting fringe benefits of PTOs. However, there is some evidence that unions are successfully pressing for increased PTO benefits: sick and vacation benefits have recently been granted to PTOs at two of the case study agencies.

Observed changes in schedule efficiency are consistent with the experimental runcut predictions of Chomitz and Lave (1). Because the indirect effects of PTOs are negligible, experimental runcuts are an effective tool for exploring the potential cost effects of changes in labor provisions. A new generation of runcutting software makes such experimentation feasible for transit districts with adequate computational resources.

There is no appreciable indirect effect of PTOs on absenteeism, supervision, hiring, or training costs. It may however become more expensive and difficult to recruit part-time workers as the burgeoning economy provides more alternatives for full-time work. There is no definitive evaluation of accident effects as yet.

Finally, there appears to be some opportunity for better utilization of part-time drivers. First, the limitation of PTOs to weekday work seems to be unnecessarily restrictive. If PTOs were permitted to work weekends, full time operators would have proportionately more weekends off. In addition, PTOs would have the opportunity work more hours, making the job more attractive. The weekend schedule might also be better suited to permanent part-time work. Two of the case study agencies have recently allowed a limited amount part-time weekend work.

Second, the option to work part-time on a temporary basis might be given to FTO's. Two of the case study agencies have such a provision. In one case, the full-time/part-time distinction was replaced with a two-class system. Class I operators can have up to 4% part-time positions. Class II operators are all part-time and limited to 6% of the full-time force. Class I operators, whether full or part-time, receive the same fringe benefits. The assignment of part-time work thus depends on the seniority roster. This system allows full-time operators the option of choosing part-time work without losing seniority or benefits. Several

full-time operators took advantage of the opportunity and chose part-time runs at the summer shake-up. At the same time, low seniority part-time operators were able to work full-time. Both of these alternatives provide benefits to full-time as well as part-time operators.

Use of part-time labor has not been a panacea. While it has permitted some agencies to expand peak service or increase efficiency, it has made relatively little difference at others. Alternative strategies for increasing labor productivity may be more beneficial and easier to implement; two areas with particular promise are absenteeism control and extraboard staffing. Operator absenteeism is very costly because a corps of standby operators (the extraboard) must be maintained to cover the absent operators' assigned work. Moreover, the costs of reducing absenteeism may be relatively low: improved record-keeping coupled with increased supervision and counselling. The political costs of implementing an absentee control program may also be relatively small. Since a small number of operators account for a disproportionate number of absences, the majority of operators may be sympathetic to a more equitable enforcement of absence rules. Two of our case study agencies implemented absenteeism control programs with relative ease, decreasing absenteeism by 2-5%, which is more than they had saved by implementing part-time labor. The use of PTOs is thus just one of many possible strategies for increasing labor productivity.

Acknowledgement. This paper is based on work conducted for the Urban Mass Transportation Administration, Office of Service Methods and Demonstrations, under grant CA-06-0187, "Fiscal and Organizational Impacts of Part-Time Drivers in Public Transit." The views expressed herein are those of the authors.

Footnotes

¹Short pieces of work which cannot be paired together to create a full-time split run.

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