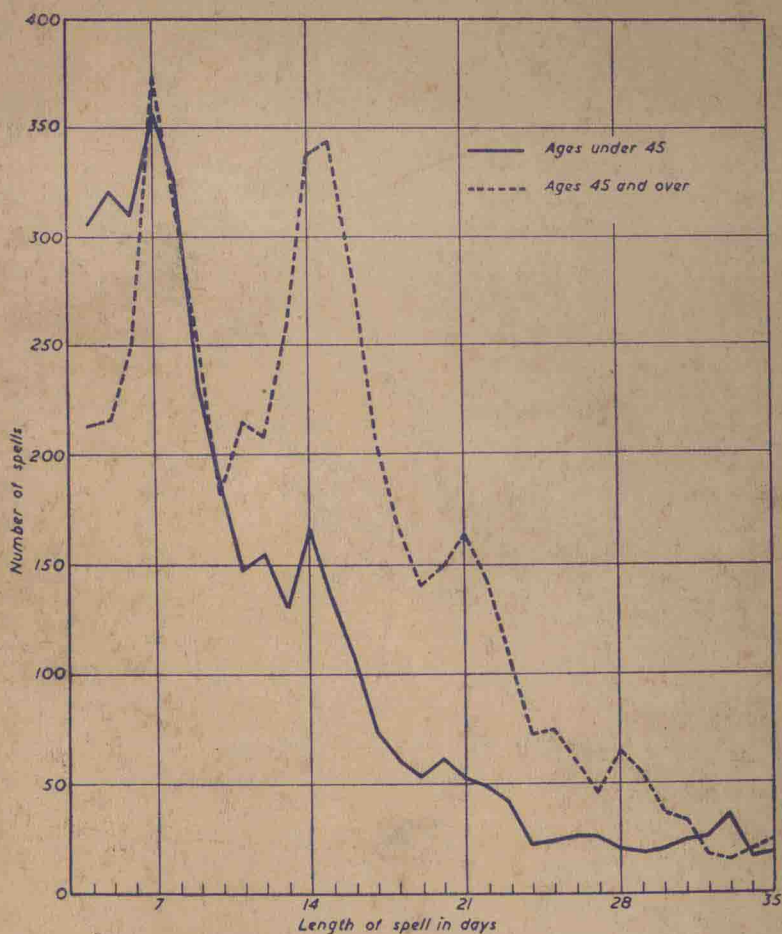


# HEALTH *in* INDUSTRY

## *Sickness Absence Statistics*



Published on behalf of LONDON TRANSPORT EXECUTIVE  
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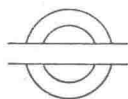
# HEALTH IN INDUSTRY

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A Contribution to the Study of Sickness Absence

Experience in London Transport

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*published on behalf of the*  
**LONDON TRANSPORT EXECUTIVE**

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## HEALTH IN INDUSTRY

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## FOREWORD

By

THE LATE LORD HORDER, G.C.V.O., M.D., F.R.C.P.

THE relations between Health and Industry may be thought of in terms of a two-way track. Advances in the science and art of medicine can be of great service to industry if properly applied, and industry can make very useful contributions to medicine by studying the environmental conditions of large groups of workers and the influence of these conditions upon the health of the individual.

This conception appealed strongly to that dynamic leader in industry, Lord Ashfield, when he was Chairman of the London Passenger Transport Board. The idea was never absent from his mind.

At the invitation of the Board, in 1945 I prepared, in conjunction with Mr. John Cliff, Deputy Chairman, a report which contained plans for strengthening and rationalizing the medical service. These plans have been carried out and a modern industrial health service has been developed.

One special circumstance acted as an incentive to the progress of the Board's plans. Allegations had been freely made that the work of the bus drivers and conductors was unduly exacting and was injurious to their health. There was, in particular, a widespread belief that gastric disorders were disproportionately common amongst them. Concerning this question there was insufficient evidence of a reliable kind to justify a conclusion and in 1934 the problem was placed before the Industrial Health Research Board of the Medical Research Council. The Transport and General Workers' Union evinced special interest in the problem.

The result of all this was the setting up of a special committee which should seek to answer the question whether bus workers did in fact suffer from digestive complaints more frequently or more severely or both than other groups of industrial workers. The committee consisted of three members from the London Passenger Transport Board, three from the Transport and General Workers' Union and three independent scientific members. Dr. Bradford Hill (now Professor of Medical Statistics in the University of London) conducted an investigation on

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behalf of the committee. His report was published in 1937 (*Report No. 79 of the Industrial Health Research Board: An Investigation into the Sickness Experience of London Transport Workers, with Special Reference to Digestive Disturbances.*) The statistical data available at the time were limited and, in some respects, incomplete; the report was based on comparisons between the sicknesses lasting 15 days or more of bus workers in the years 1933–35 and those of tram workers.

This enquiry was followed by conferences between representatives of the three bodies already named, under the chairmanship of Sir John Forster. A report of the conferences was published in 1939 under the title, *The Health of London Central Busmen*. The report recognized the Board's acceptance of full responsibility for taking all steps within their power shown to be necessary to ensure that conditions of work of the bus crews were not detrimental to their health. The signatories expressed their confidence that this responsibility would continue to be borne as readily as it had been in the past, and that the Board would study any further evidence that became available to them on the question of the health of the men.

As part of its plans for post-war development, the Board decided to strengthen its medical service and also to make more satisfactory arrangements for recording particulars of the sickness absence of members of its staff. I was appointed Consulting Medical Adviser. So soon as breathing space allowed after the 1939–45 war, under the direction of the Deputy Chairman, the necessary arrangements were made and approved by the Board. These have been continued and further developed by the London Transport Executive. A fully equipped modern industrial health service was set up and was developed in two directions; first on a functional basis and secondly, by geographical decentralization. Functionally, an increasing proportion of the work of the Medical Department has been directed towards the health control of environmental working conditions. This side of the work expanded during the years covered by the statistics set forth in the present publication; it seeks to ensure that the working conditions of all grades in the service of London Transport are conducive to good health. Geographically, the medical service has been developed on the basis of four medical centres, each covering a quarter of the London Transport area. By this means, close and friendly co-operation has been developed between the staff and the doctors, resulting from the more intimate relationship which has become possible in the smaller area covered by each centre.

These two developments took place along with the installation of greatly improved facilities for clinical medical examinations, the strengthening of the industrial nursing and first aid provisions, and a

## FOREWORD

number of other technical developments which together fulfil the requirements of an industrial health service. My colleague, Sir Stewart Duke-Elder, accepted the newly-created appointment of Consulting Ophthalmologist; he advises on lighting problems and the prevention of injuries to eyesight in addition to clinical matters and the formulation of standards of eyesight required for particular types of work. The medical staff consists of the Chief Medical Officer, who reports to the Deputy Chairman and who is responsible for the general administration and control of the service; two Senior Medical Officers, one responsible for the medical supervision of environmental working conditions, and the other for clinical medical examinations, and seven medical officers. The medical centres are each staffed by two medical officers.

The London Passenger Transport Board also authorized the establishment at its Headquarters of a Central Record of Staff Statistics, using punched cards, in order to provide accurate and comprehensive statistics of its staff, and of the incidence of sickness absence among groups of staff engaged in different occupations. The punched-card records for certain groups of staff were established with effect from 1st January 1948. Thereafter, cards for additional groups were added progressively.

Under the direction of the Deputy Chairman of the London Transport Executive, the Executive's Staff Administration Officer, Mr. F. H. Spratling, has been responsible for the establishment and maintenance of the Central Record of Staff Statistics and for the preparation and presentation of statistical material derived from it. There has been continuous collaboration between the Staff Administration Officer and the Medical Department in relation to all aspects of the statistical work where a medical opinion is required, including for instance the coding of diagnoses and the development of a system of grouping of diagnoses for presentation of statistical data. This work has been undertaken by Dr. P. A. B. Raffle under the general direction of the Chief Medical Officer, Dr. L. G. Norman.

In considering the matters which have arisen from these activities, the London Transport Executive has been impressed by the fact that no standards exist for the measurement of the incidence of sickness absence. Accordingly, the Executive has decided to publish certain of the statistical material bearing on the incidence of sickness absence, which has been derived from the first few years' operation of the Central Record of Staff Statistics, with the object of providing bases of measurement for the use of others concerned with questions of industrial health.

The Executive intends to continue its activities in the field of industrial health and in the compilation of sickness-absence statistics. A



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substantial period of time must be spent in marshalling data of this kind before reliable conclusions can be drawn from them but the data already obtained provide a basis for action in certain directions and pursuance of the study may be expected to yield information of increasing value in the future.

HORDER.

London Transport Executive,  
55, Broadway,  
Westminster, S.W.1.

July, 1955.

## PREFACE

WHEN we started to work on the measurement and study of sickness absence, we had only the most general ideas of its characteristics.

That the incidence of sickness absence probably varied with age and sex, that among employed women relatively more was recorded for married women than for single women, that the amount of sickness absence varied from one job to another and was governed perhaps as much by the standard of fitness required as by the influence of working conditions—all of these, and many other possibilities, were suggested, but could not be confirmed, by *a priori* reasoning from crude statistics thrown up in the course of day-to-day administration. Nor were there any recognized standards of measurement to help us to arrive at firm opinions on such matters.

We therefore considered that our first objective must be to build from the experience of our own organization tables which could be used as standards of measurement in the further study of sickness absence. London Transport employs a large number of people in many different occupations. Sets of tables relating to employees engaged in different occupations, each based on the experience of a period of years (a single year can be deceptive) were compiled with that object in view. These are the tables published in this book. Each set is prefaced by a brief description of matters relevant to a study of the incidence of sickness absence in the particular occupation to which the tables relate. The facts are published as they were observed and recorded, for we feel that the tables have been based on a sufficient body of data to make them of value as they stand.

Certain of the sickness-absence data have been subdivided into broad diagnostic groups. The usefulness of any such analysis depends on the reliability of the recorded diagnoses, and it is sometimes questioned whether the diagnoses shown on medical certificates given by general practitioners are sufficiently precise to justify their use as a basis for classification. Our experience suggests that they are. Within the groupings we have used, there is a high degree of agreement between the diagnostic findings of London Transport Medical Officers on examination of employees who have been ill, and the diagnoses recorded on the medical certificates provided by the employees' general practitioners. We have no doubt that these medical certificates can safely be used as

## PREFACE

the basis of analysis of sickness absence into broad diagnostic groups.

Questions may be asked as to the value of sickness-absence statistics to an industrial organization. In the case of London Transport, they have already been of considerable service. They are useful to the study of the influence of the working environment upon health, and to medical research. From time to time, questions arise as to whether the level of sickness absence in particular occupations, or the amount of absence attributable to specific causes in particular occupations, is increasing. The minds of the employees themselves and of their departmental or sectional managers may be troubled by such beliefs. Reliable statistics compiled over a period of time enable such questions to be examined objectively. Trends can be detected. They may be favourable or unfavourable and if the facts so require, corrective or preventive measures can be taken. A knowledge of the incidence of sickness absence in different occupations is a useful guide when placing applicants for employment in suitable jobs after a pre-entry medical examination, and in deciding suitable alternative employment for those whose health has fallen below the standard required for the work they have previously been doing.

We hope that the tables in this book will provide acceptable standards of measurement for others who are concerned with questions of industrial health. We hope also that they will be stimulated to compile statistics on similar lines, for much can be learnt from comparisons between the sickness absence of different groups. A method of using the London Transport tables to make comparisons is given in Appendix B to the Account of Principles and Methods which follows this Preface.

A continuous method of collecting the statistical data appears to us to be essential, for it is almost impossible to re-create records of sickness absence retrospectively with any assurance of accuracy. The system used for collecting data in London Transport was determined with due regard to existing office procedures and, in fact, has enabled the basic data to be supplied to the Central Record of Staff Statistics without the employment of a single additional clerk in the departments where the data originate. The punched-card records of the staff and the machines are used for other purposes besides the compilation of sickness-absence statistics. Other undertakings would no doubt use different methods of collecting data, adapted to their own particular administrative structures, but we feel entitled to suggest that if sufficient ingenuity be brought to the design of procedures, the data can be collected with little expense either of money or of effort.

We have found great interest and value in the studies which have

## PREFACE

led to the publication of this book. We wish to place on record our thanks to Mr. John Cliff, Deputy Chairman of the London Transport Executive, and to Lord Horder, Consulting Medical Adviser, for their continued encouragement, and to those of our colleagues who have assisted in preparing the material published in this volume.

London Transport Executive,  
55, Broadway,  
Westminster, S.W.1.

July, 1955.

L. G. NORMAN,  
*Chief Medical Officer.*

F. H. SPRATLING,  
*Staff Administration Officer.*



# AN ACCOUNT OF THE PRINCIPLES AND METHODS FOLLOWED IN COMPILATION OF THE LONDON TRANSPORT SICKNESS-ABSENCE STATISTICS

BY

F. H. SPRATLING

*Fellow of the Institute of Actuaries*

THIS account provides an outline\* of the principles and methods followed in the compilation of the London Transport sickness-absence statistics; they have been collected and recorded by means of a punched-card system designed to serve this and other purposes. The terminology used is related as closely as possible to the recommendations of the Statistics Sub-Committee of the Registrar General's Advisory Committee on Medical Nomenclature and Statistics.†

## **Definition of sickness absence**

The term "sickness absence" is used to mean absence from work accepted by the employer as attributable to sickness or injury.

When absence is supported by a medical certificate, it is classified automatically as sickness absence. Medical certificates are required by London Transport for all spells of absence lasting 4 days or more, in most cases for spells of absence lasting 3 days and, in certain circumstances, for spells of absence lasting 1 or 2 days. When an employee returns to work after a spell lasting 1, 2 or 3 days, and the absence proves, on enquiry, not to have been due to sickness or injury, it is excluded from the sickness-absence statistics.

## **Characteristics of sickness-absence statistics**

Records of sickness absence provide a measure of the extent to which employed persons are prevented from following their usual employment by sickness or injury, but not of total morbidity, for the records do not cover the following cases.

(a) Sickness or injury which does not incapacitate the sufferer from following his or her usual employment.

(b) Chronic sickness of persons whom ill-health or injury has compelled to give up employment, for they pass out of an employer's range of observation.

(c) Sickness or injury of persons who are not employed, for they do not come within an employer's range of observation.

\* A more detailed description of the principles and methods followed in compilation of the London Transport sickness-absence statistics is given in a paper submitted by the writer and Mr. F. J. Lloyd to the Institute of Actuaries and printed, with a report of the ensuing discussion, in the *Journal of the Institute of Actuaries*, Volume LXXVII, Part II, No. 346. The terminology differs from that used in the present account.

† *General Register Office: Studies on Medical and Population Subjects—No. 8.* London: Her Majesty's Stationery Office, 1954. Price 1s. 6d.

On the other hand, sickness-absence statistics include many short spells of absence which are not registered for National Insurance or friendly society purposes because of "waiting days" for benefit.

*Sickness absence in relation to particular occupations*

*Physical requirements.*—In relation to a particular occupation and employment, sickness-absence statistics reflect the experience, for so long as they continue to serve in it, of persons who have originally satisfied the physical and other requirements for admission to that occupation and employment. For every occupation there is a process of self-selection in the sense that people do not seek to engage in it unless they consider themselves capable of meeting at least the minimum requirements. Also, they do not remain in it if opportunities arise of other employment which they consider preferable; persistence in a particular occupation is itself a process of continuing self-selection. Superimposed on the self-selection are the employer's selective processes, designed to admit and to retain in his service only those who satisfy physical standards and standards of proficiency and character appropriate to the particular occupation. The physical and other requirements for admission to a particular occupational group may have varied from time to time in the past; if that is so, it is important that it should be borne in mind in examining the sickness-absence experience.

*Nature of work.*—The nature of the work done, the environment in which it is performed and the conditions of employment vary widely from one occupation to another. There are, for example, obvious differences in these respects between office workers and factory workers. In the particular sphere of passenger transport, the environment and conditions of employment of large groups of employees engaged in the operation of services and equipment are very different from those of either office workers or factory workers.

For these reasons, separate statistics have been compiled for different occupational groups in London Transport. Other employers will, no doubt, find it useful and informative to compile separate statistics for reasonably homogeneous occupational groups whose experience they may desire to examine.

*Sickness absence and age*

In most cases, the amount of sickness absence varies substantially with age; for a group of men in the late fifties, for example, it may well be two or three times as much as it is among a corresponding number of men in the twenties or early thirties. If, in a particular occupational group, the amount of sickness absence does not vary substantially with age, the fact is of sufficient importance to warrant special investi-

## LONDON TRANSPORT SICKNESS-ABSENCE STATISTICS

gation. It is, therefore, axiomatic that investigations of sickness absence should take full account of the age distribution of the group under examination.

### *Sickness absence and length of service*

It may also be desirable to analyse sickness absence by reference to length of service in a particular occupation, though still with due regard to the age distribution of the employees concerned.

### *Men, unmarried women and married women*

Examination of sickness-absence statistics shows that it is necessary to compile separate statistics for men, unmarried women and married women. The last group includes wives with husbands living, and widows. It is not homogeneous to the same extent as the other two groups, but usually no further division for statistical purposes can be made by reference to the information available to an employer.

### **London Transport data**

The detailed procedures used in collection and recording of the data have been designed to secure the highest attainable degree of accuracy and completeness.

### *Punched-card records*

For each London Transport occupational group and for each sex-group within an occupational group, the following records are available.

*Staff employed.*—A separate punched-card for each employee showing, *inter alia*, the following.

- (1) Date of birth.
- (2) Date of commencement of service with London Transport.
- (3) Date of commencement of employment in the particular occupation.

The file of cards is continually kept up to date as wastage from the group occurs and as new entrants are admitted.

*Sickness absence among the staff employed.*—A separate punched-card for each spell of sickness absence showing, *inter alia*, the following information.

- (a) The personal details of the employee concerned, as shown above.
- (b) The dates and days of the week of commencement and termination of the spell of sickness absence.
- (c) The length of the spell, in calendar days.
- (d) The diagnosis, expressed in a 3-figure numerical code.



*Use of punched-cards*

From the first group of cards, it is possible to derive the "exposed-to-risk" for the whole group, both in total and subdivided as may be required, according to age and/or length of service. The length of service brought into account can be either the length of employment in the particular occupation in which the employee is currently serving, or in London Transport as a whole, whichever is more appropriate to the particular subject of investigation.

From the second group of cards, it is possible, by using the personal details referred to in (a) above, to group and subdivide the sickness-absence data in any way in which it is possible to group and subdivide the exposed-to-risk, so that the fundamental requirement of exact correspondence between the sickness-absence data and the exposed-to-risk can always be met. In this way, for example, both groups of data can be similarly subdivided by reference to age, length of service, sex and (for women) marital status.

The details punched into the sickness-absence cards are sufficient to permit analysis of the data in many other ways; the tables printed in this book by no means exhaust the possibilities.

In preparing the printed statistical material, the data for each calendar year of observation have been treated independently. Observed sickness absence has been ascribed to the age attained by the employee concerned in the year of observation. For practical purposes, the exposed-to-risk and sickness-absence data have been grouped in 5-year age groups. Where the printed tables cover a period of years, the data for the separate calendar years have been aggregated.

In general, aggregation of the data for successive calendar years has presented no problem, but it has been necessary to develop a convention for the statistical treatment of spells of sickness absence which commence in one calendar year and terminate in the next. In such cases, the number of days of sickness absence from the beginning of the spell up to 31st December inclusive is included in the figures for the year of commencement, while the number of days from 1st January to the end of the spell, is included in the figures for the year of termination. The spell itself is counted only in the year of commencement and not in the year of termination. The numbers of days, and the spell are ascribed to the ages attained by the employee concerned in the years in which they are respectively recorded.

*Calculation of the length of the spell of absence*

One of the items punched into the sickness-absence cards is the length of the spell of absence, in calendar days, as distinct from the number of working days lost. For this purpose, every day of absence