PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

Seminar Paper No. 25

September 1977

LENGTH OF WORKING LIFE OF MALES IN PAKISTAN 1973

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by

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The length of working life is an index of how long an average male
or female can expect to spend in the labour force. Those who are
actively employed as well as those classified as "unemployed" are
included in the total civilian labour force. The length of working life
is determined by the level of mortality of the particular cohort that is
being studied and its level of participation in the labour force.
Therefore an improvement in mortality would tend to increase the length
of active life and a deterioration would tend to shorten this measure.
The level and distribution of labour force activity over the life-cycle,
would affect the average age of entry and retirement in the labour force
and thereby affect the length of working lives. Although mortality and
labour force participation rates are the factors which directly affect the
length of working life, there are factors which indirectly also determine
this index. For instance, morbidity would have an impact on how many
people were disabled and therefore unable to participate in economic
activity. An improvement in morbidity may reduce the rate of retirements
which were caused by physical ailments or disorders. Reduced morbidity
would generally lengthen the average length of working life in a society.

Similarly fertility and migration will influence the level of
activity in the labour force by persons of a specific age and sex. For
example migration from the rural to the urban areas in substantial

proportions would tend to lower the activity rates of the age-sex group which has migrated and thereby reduce its length of working life. The activity in the labour force, of females especially will necessarily be affected by their marital status (distribution of women's ages at marriage, frequency of divorce and widowhood etc).

Fertility will also have an indirect impact on the length of working life, especially of females. A large family size may raise the pressure on parents and older children to work for a longer part of their lives. However, the magnitude and direction of the impact of fertility on length of working life of males and females will vary from one society to another. School attendance amongst younger members of the population and educational levels of the whole population will also be another indirect determinant of the length of working life. However the method used in this paper incorporates only the net effect of mortality and labour force activity on the length of working life.

The net expected years of active life of males at birth and at the age of entrance into the labour force, are seen to vary with the level of development of societies. This measure is seen to be higher for industrialized countries, than for predominantly agricultural societies[1]. The difference is largely attributable to better mortality conditions in the industrialized countries. However it has also been noted that labour force activity rates for males are higher in agricultural societies than in industrialized societies, for the youngest and eldest age groups. This phenomenon acts in the opposite direction, to that of worse mortality conditions in agricultural societies, in lengthening the net expected years of active life.

[1] U.N. Determinants and Consequences of Population Trends. Vol. I, 1973. (p. 319)

Pakistan is a predominantly agricultural country with the majority of its population residing in the rural areas. Although the mortality conditions in Pakistan have been improving in this century[2], they are still low in comparison to the levels of industrialized societies. The labour force participation rates are however high for the youngest and eldest age groups, which is also in concurrence with international patterns. Thus the length of working life for males in Pakistan will be jointly determined by the relatively poor mortality and the relatively more spaced out labour force activity. The results will show which of these factors will have a larger impact on determining whether the length of working life is lower or higher as compared to other agricultural and industrialized societies.

The purpose of this paper is to provide estimates of the length of working life at birth and at five year intervals (up to the age 65) for males in Pakistan, in the urban and rural areas. Although there is an alternative way of computing the length of working life[3], the method used here is to calculate the net expected years of active life for a cohort of males or females, at the time of birth or at other ages in their life cycle. This measure is calculated by using age-specific activity rates and the functions of a life table for each of the corresponding age groups to compute a table of working life. In this paper, tables of working life are prepared for males in Pakistan and not for females. This is because there are additional problems in considering data on female labour force participation rates which are very low and erratic in Pakistan. The more frequent movement of females, in and out of the labour force, presents problems which have only recently

[2] M. Afzal. The Population of Pakistan. P.I.D.E./ p. 17 /.

[3] U.N. Determinants and Consequences of Population Trends. Vol. I, 1973 / p. 318 /.

been tackled by some countries where data sources are highly developed[4].

The tables of working life, which are used to compute the length of working life are also used to compute some dynamic functions of the labour force. In a life-table population, under given conditions of age and sex specific activity and mortality the rate of increase or decrease of the labour force is calculated. This rate will be the net balance of the rate of entry (or re-entry) into the labour force and the rate of depletion (due to deaths and retirements) and is known as the replacement rate (where net migration is assumed to be zero). The age-specific rates for entry, retirement and losses by death are then applied to the actual numbers in the corresponding age-groups in the civilian labour force, to calculate the total number of entries, retirements and losses by death in the actual (not life - table) population.

The intent of this paper is to use the most recent available estimates of mortality and labour force participation rates, and thereby make available more 'representative' estimates of the length of working life for the male population of Pakistan in the seventies. An attempt is also made to compare the results of this paper with earlier studies for Pakistan[5] and other countries. The paper will also calculate the loss of years due to mortality. The final section will be used for drawing conclusions and making some policy suggestions.

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[4] Some problems about data n female labour force participation are considered later in the paper.

[5] G. M Farooqui. Dimension and Structured of Labour Force in Relation to Economic Development. PIDE . and Lee Bean . Provisional Estimates of the Length of Working Life in Pakistan" Pakistan Development Review. Summer 1967 .

Data

The data required for the analysis proposed, are life tables for
males in Pakistan and in it's rural and urban areas. Age-specific labour
force activity rates would be required also. Tables of working life
could be computed for single years but here they have been constructed
for five years age groups as the data are more readily available in
this form.

Data on numbers in the civilian labour force by five year age groups
are drawn mostly from the Household, Economic, Demographic Survey of 1973
(HED '73'). Another source for labour force statistics is the Labour
Force Survey of 1974-75. Data on mortality in the form of abridged life
tables is taken directly from the "Provisional Abridged life Tables for
Urban and Rural areas in Pakistan" based on the PGS 1968 and 1971. These
tables were prepared by N. Farooqui and I. Alam and are based on the
Population Growth Survey of 1968 and 1971 and are to my knowledge the
most recent abridged life tables for Pakistan.

Data Limitations

Most of the results arrived at in this paper are bound to be affected
by the quality of data used. The quality of data are determined by how
representative they are of the actual situation in the country.

Most of the data on labour force were drawn from the Household,
Economic Demographic Survey 1973, which was a post-censal survey designed
to supplement information on socio-economic characteristics of the
population which were not covered by the 1972 census. Here the question
asked pertaining to employment was " Did he/she do any work at all

last week for pay or profit (for a minimum of 15 hours if worked as unpaid

family helper)". Those who answered yes to the question of "was he or she

able to work and looking for work" (unemployed) were also included in the

labour force by HED classification. Shortcomings of the data will have

arisen out of the sampling errors of the HED survey; the time reference

of the questions asked and of course the non-sampling errors of the survey

(e.g. undernumeration, exclusion of unpaid family helpers due to the way

the question was phrased etc). Also the question about labour force

were asked of the head of household in the HED survey which may have

reduced the accuracy of the answer about other members of the household

especially females relatives.

As pointed out earlier, the restriction on the number of hours worked

by unpaid family workers will lead to undernumeration of large numbers of

females and younger boys and girls. Questions about economic activity were

asked only for those ten and above and will be excluding many young children

who enter the labour force at ages less than ten, who may be working for

pay, or working part-time to supplement family income. There is a possibility

of inclusion of those children under 10, who are working in the above 10 age

group (because of bad age recall), thereby inflating those in the labour

force in 10-15 group. When looking at the data on labour force participation

for each of the family members, as reported in the HED survey, one must keep

in mind that in Pakistan the income producing unit is the whole

family and therefore the contribution of each individual to household

work is not really reported accurately. In the 1961 census, the definition

of labour force included all those who were ten and above "who were working

for profit or earning wages or salary, helping any member of their family,

or were not working but looking for work during the previous week". This definition of those to be included in the labour force is different from that in the HED survey and would probably lead to a more liberal inclusion of unpaid family helpers (children and females especially) in the labour force.

The other main source of data, used in this study are the abridged life tables prepared by N. Farooqui and I. Alam based on the 1968 and 1971 PGS results. The PGS mortality estimates for 1968 and 1971 showed a non-substantial change in mortality (except infant mortality) from the PGE estimates of the CS for 1962-65[6]. However it is suggested that the increase perceived in infant mortality may be due to differental age reporting in the two data sources rather than due to an actual change in the rate[7]. Also the differences in the sampling errors in the PGS and PGE may have narrowed the differences, which are expected to have occurred in mortality between the dates of the two data sources[8].

Some Demographic Dimensions of the Labour Force
Labour Force Participation Rates.

The demographic characteristic which comes to mind first is the age-sex structure of the labour force. Figure 1 shows the population age pyramid and the relative contributions of each age and sex group to the labour force in Pakistan. The male contribution is obviously much higher than that of females; and amongst males almost all are employed in the middle of their adult lives. Female contribution to labour force activity in Pakistan at all ages, is very low.

[6]CIRCRED (Mohammad Afzal) The Population of Pakistan PIDE, /p. 17_7.
[7]Ibid.
[8]Ibid /p. 18_7.

The simplest index of the level of overall labour force participation is the crude participation rate which is the percentage of the total population classified as economically active. Crude activity rates are calculated for the males and female population separately in table 1 showing to what extent the two sexes contribute to income producing workers. In the HED survey, the question about economic activity was only asked of those persons ten years of age or above. This age limit may have excluded the counting of many children below the age of ten who were economically active, even if employment may have been part-time. It is therefore useful to calculate refined activity rates by relating the labour force totals to the population above the specified minimal age, which is at risk of employment. These refined activity rates are also shown for females and males in table 1. These rates ought to be free from distortion's produced by including children too young to be classified in the economically active population. Variation in the refined rates may differ quite a bit from crude activity rates where the age structure of population differ. However the largest differences in these indices will depend on the definition of economic activity used by data collectors.

Next we proceed to see the way in which economic activity is distributed within the male and female population of potentially employable age. The measure for the proportion of economically active persons in each specified category is $r = \dfrac{P_e}{P_t} \times 100$ and is known as a "specific activity rate" or "labour force participation rate " (Pe is the number of economically active persons and P_t is the total number of persons in each category). Table 2 and 3 show the age specific activity rates for males and females in Pakistan, urban and rural areas. These rates could have been calculated for various

FIGURE : 1 AGE PYRAMID OF LABOUR FORCE PARTICIPATION (1973 HED)
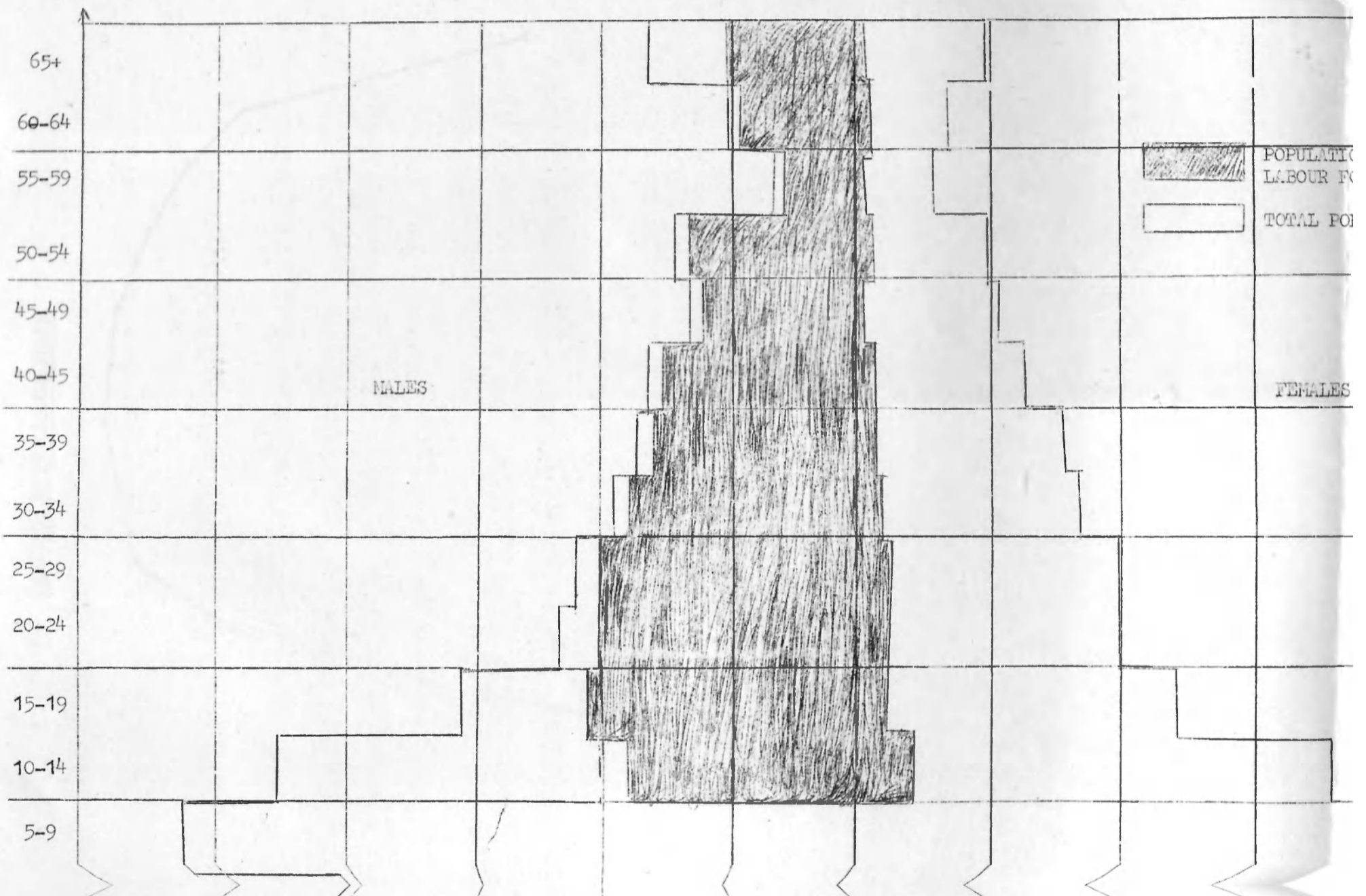
PERCENTAGE IN LABOUR FORCE
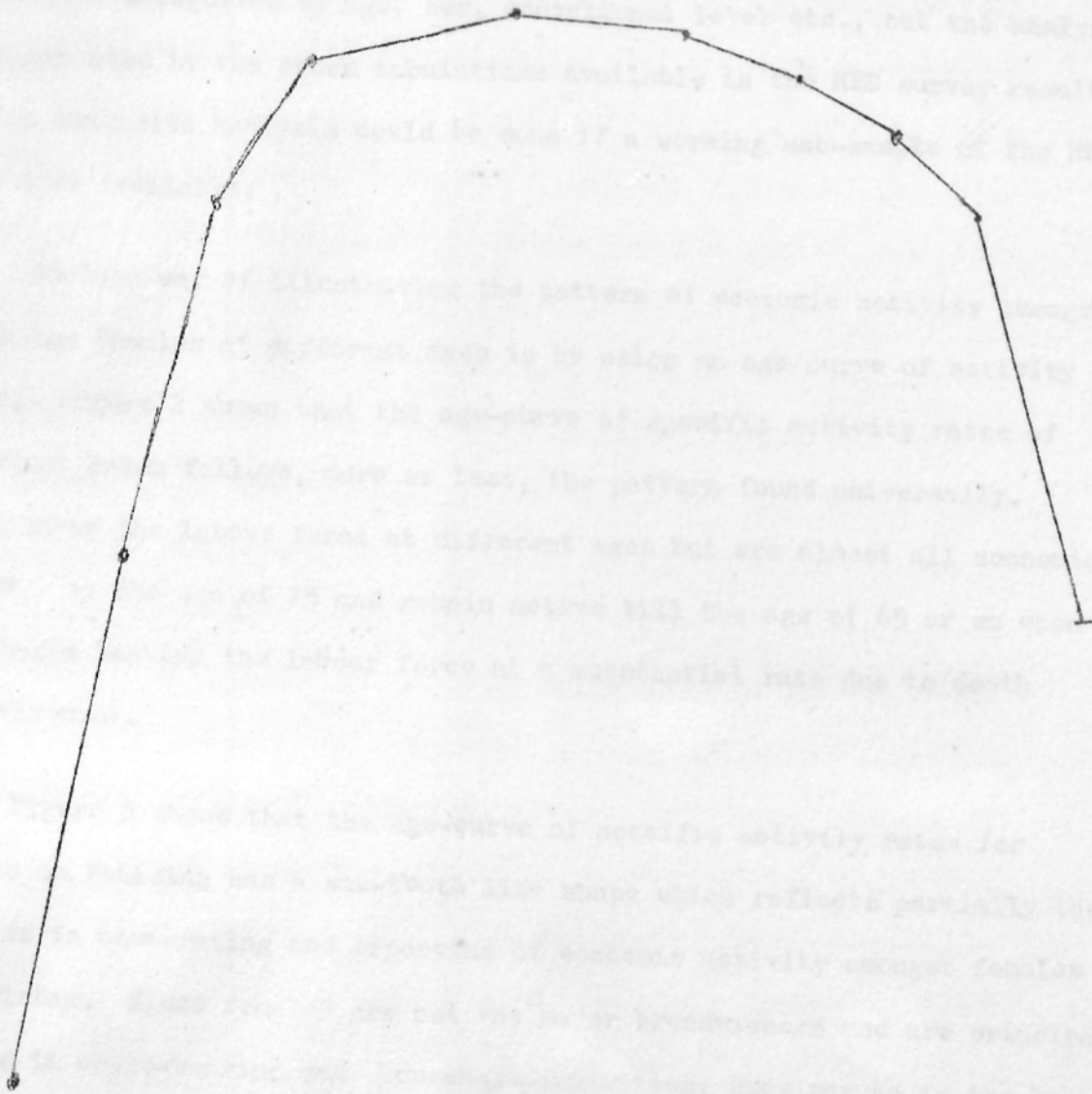
population categories by age, sex, educational level etc., but the analysis
is restricted by the cross tabulations available in the HED survey results.
A more extensive analysis could be done if a working sub-sample of the HED
were made available.

Another way of illustrating the pattern of economic activity amongst
males and females of different ages is by using an age curve of activity
rates. Figure 2 shows that the age-curve of specific activity rates of
Pakistani males follows, more or less, the pattern found universally.
Males enter the labour force at different ages but are almost all economically
active by the age of 25 and remain active till the age of 65 or so when
they begin leaving the labour force at a substantial rate due to death
or retirement.

Figure 3 shows that the age-curve of specific activity rates for
females in Pakistan has a saw-tooth like shape which reflects partially the
problems in enumerating and reporting of economic activity amongst females
in Pakistan. Since females are not the major breadwinners and are principally
engaged in child-bearing and household activities, they may be in the labour
force for some years and out of it for most of their life span. Therefore
by nature their participation in the labour force is more erratic (entry and
retirements) as compared to males who are expected by society to engage in
some form of economic activity throughout their adult lives. In the case
of Pakistan, the HED data is known to be particularly defective for females
due to defenitions used and other problems. The Pakistan data on female
labour force participation probably incorporates, in addition, the effects
of misreporting of ages which distort age specific activity rates even further.

In general the shape of female labour force participation curve i
flat in developing countries relative to the one typical of industrial
societies which has a peak before the age of marriage and at the end of
child bearing [8]. In the HED survey, the female participation rates may
have been lower than the actual situation because of the restriction in
the questionaire, on hours worked by unpaid family helpers[9]. Partially
a result of this, the percentage of females classified as unemployed se
too high at 52%. Nasra M. Shah points out that the Impact Survey report
"19% of all currently married women were working at the time of the su
while 23% of them had ever worked". Also the PGS 1975, according to her
reported similar levels of labour force participation amongst the women
questioned[10]. She points out that the wider definition of work in the
Impact Survey, as compared to the HED, may explain the difference in
figures. In the HED survey, those women who were working less than
15 hours as unpaid helpers were excluded. Also in the HED Survey, questio
were asked from the head of household, whereas in the NIS and PFS, the
respondent was the female herself. This would make a difference in the
level of reporting of economic activity.

The religious and social norms are against the idea of female
participation in any activities outside the home. Even though women in a
family may be working, the social stigma attached to work outside the hor
may prevent questions on economic activity from being correctly answere
For similar reasons, educational levels of most females in Pakistan are
low and therefore women may not be "skilled" enough for many jobs. A l
percentage of females in Pakistan probably fall into the category of
"unpaid family helpers" and as pointed out earlier, any difference of

[8] Lee Bean "Utilization of Human Resources: the Case of Women in P
ILR, April 1977 /p. 6/.

[10] N. Shah "Fertility of Working vs Non-Working Women in Pakistan".

[11] Ibid.

PERCENTAGE IN LABOUR FORCE
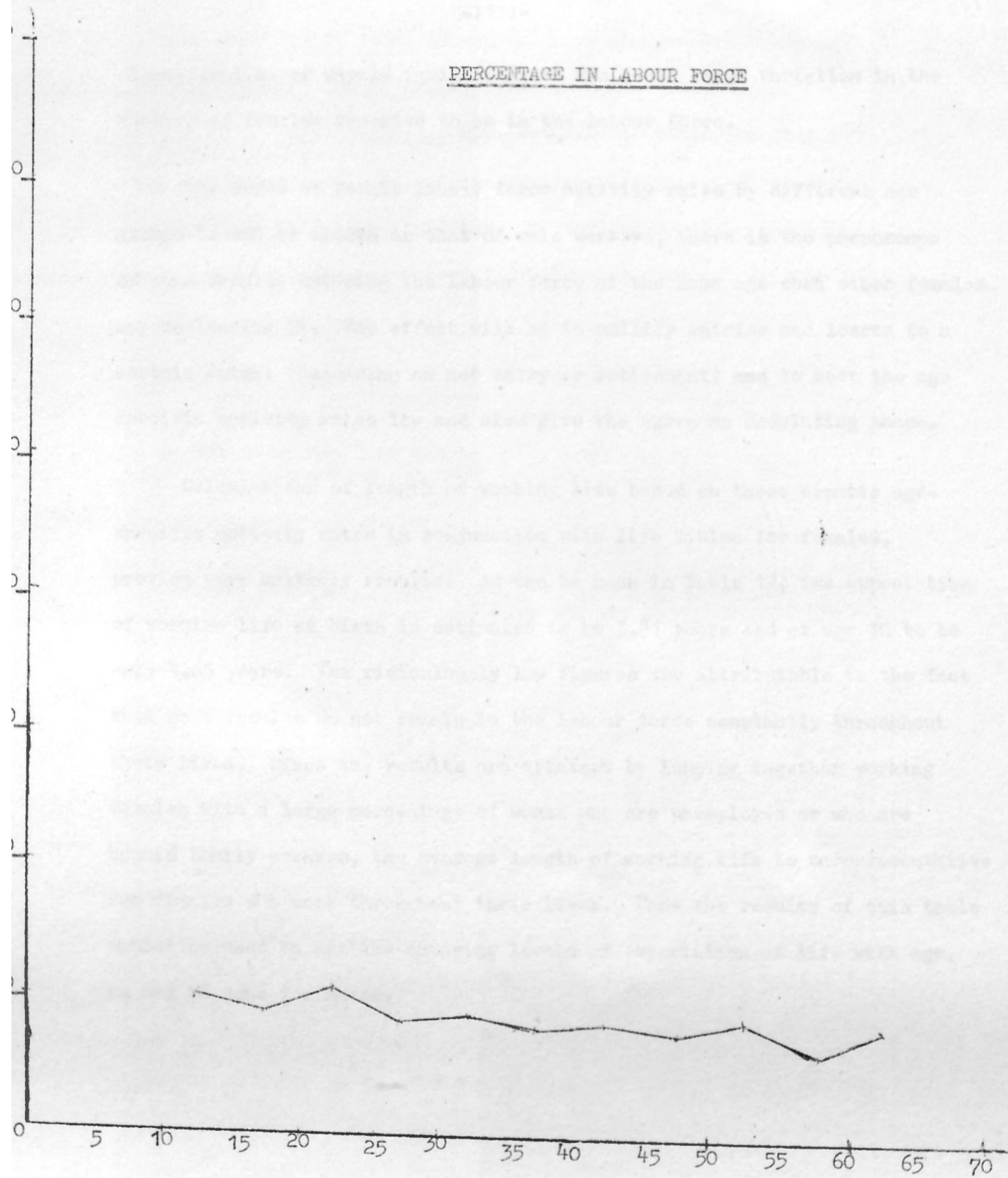
FIGURE 3 : AGE SPECIFIC ACTIVITY RATES FOR FEMALES
IN PAKISTAN – HED 1973

classification of unpaid family workers can cause large variation in the numbers of females reported to be in the labour force.

The curve of female labour force activity rates by different age groups is not as smooth as that of male workers, there is the phenomenon of some females entering the labour force at the same age when other females may be leaving it. The effect will be to nullify entries and losses to a certain extent (depending on net entry or retirement) and to keep the age specific activity rates low and also give the curve an undulating shape.

Calculations of length of working life based on these erratic age-specific activity rates in conjunction with life tables for females, provide very unlikely results. As can be seen in Table 12, the expectation of working life at birth is estimated to be 3.81 years and at age 10 to be only 4.65 years. The ridiculously low figures are attributable to the fact that most females do not remain in the labour force constantly throughout their lives. Since the results are attained by lumping together working females with a large percentage of women who are unemployed or who are unpaid family workers, the average length of working life is unrepresentative for females who work throughout their lives. Thus the results of this table cannot be used to see the changing levels of expectation of life with age, as can be done for males.

Economically Active Life of Males

These tables represent the life-cycle of economic activity in
a hypothetical cohort, assuming the persons in this stationary life
table population are subject to certain given levels of mortality
and labour force activity. The methodology used to develop these
tables for Pakistan is taken from a manual presented by Durand and Mille:
The concept behind the construction of these tables of economically
active life is very much similar to that used in developing abridged
life tables and nuptiality tables[12].

The calculation starts off with age specific activity rates of
each interval listed in column 2. In column 3, the specific rates for
the beginning of each age group is calculated as an average of two
successive pairs of age groups. Columns 4, 6, 8 and 10 are drawn
directly from the abridged life tables and represent l_x, $_5L_x$, T_x and
e_x^o values respectively. Column 4, (l_x) represents the survival
function of the life table; column 6 ($_5L_x$) represents the number who
would be alive within each 5 year interval of the stationary population;
column 8 (T_x) represents the numbers in the stationary population above
each given age (derived by cumulating $_5L_x$ values from each given age to
the end of life); column 10 (e_x^o) represents the expectation of life
at each age and is derived by dividing T_x by l_x for each age.

The corresponding functions are calculated for the economically
active population of Pakistan by multiplying the life table values with
the appropriate specific activity rates. Column 5 represents the

[12]U.N. Methods of Analyzing Census Data on Economic Activities of
the Population. 1968 /_p. 19/.

[13]Naushin Iftikhar and Mohammad Afzal "Marriage Patterns in Pakistan
through Net Nuptiality tables - 1968 & 1971". Pakistan Development Review
Summer 1975.

economically active survivors in each age group out of a cohort of
10,000; column 7 represents the numbers of economically active persons in
the stationary population; column 9 is the cumulated economically active
stationary population in ages (x -∞) and column 11 is the expectation of
economically active life beyond each age; column 12 is a measure of
expectation of inactive life derived by substracting column 11 from
column 10.

Economically Active life of Males in Pakistan 1973 HED

Tables number 4 of economically active life for males uses
mortality data from the life table prepared for all males in Pakistan
and age specific activity rates for all males in Pakistan [14]. The
expectation of economically active life at birth is 37.25 years and
rises to a maximum at age 10, which is the official age of entry into
the labour force by HED defenition. At   age 10 the expectation of
years of working life is 45.83 years and declines slowly till the
age of 65 when it is 3.13 years. Column 12 of this table shows another
measure of expectation of inactive life i.e. the number of years a male
in Pakistan can expect to be out of the labour force, at each age.
At birth this is computed as 15,65 years and is 1.64 years at the
age of 65.

Economically active life of Males, in Pakistan Using Labour Force Participation Rates from the 1974-75 Labour Force Survey

In table number 5 the same life tables prepared by Farooqui and
I. Alam[15] are used in conjunction with labour force participation

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[14] Farooqui and Alam "Provisional Abridged Life Tables for Urban and
Rural Areas in Pakistan, Based on PGS 1968 and 1971". Pakistan Development
Review, Autumn 1974 (Appendix Table 1A).

[15] Ibid.

rates from the LFS survey. We will be able to see in comparing the
table results with those prepared using HED 73 data, what different
levels of working life are perceived if the labour force participation
rates are slightly different. In this table the expectation of
economically active life at birth, age 10 and age 65 are the following
37.11, 45.66 and 2.84 as compared to 37.25, 45.83 and 3.13 using HED
figures. As we can see there is not much difference in these levels.
That means that even if the HED figures are not highly accurate (even
if they are roughly representative) then the measurement of the
expectation of working life at each age is quite robust and does not
change much with slight differences in levels of age specific activity
rates.

Economically active life of Males in Urban areas of Pakistan (1973 HED)

In table number 6, levels of expectation of economically active
life at different ages are calculated just for urban males in Pakistan.
Here the expectation of economically active life at birth, age 10 and age
works out to be 36.26, 43.74 and 2.65 years respectively. These figures
are substantially lower than those for all males in Pakistan. These
tables are constructed using the life table values representing the
mortality experience of males in urban areas of Pakistan.[16] The reasons
why the levels of expectation of working life are relatively lower amongs
urban males is because of the combination of urban levels of mortality an
labour force activity. The urban levels of expectation of working life a
less than those of males in Pakistan by almost as much as 1½ years.
This is perhaps because there are more formal restrictions on the age of
entry and retirement from the labour force in urban areas of Pakistan.

[16] Farooqui & Alam. " Provisional Abridged Life Tables for Urban
and Rural Areas in Pakistan, Based on PGS 1968 & 1971". Pakistan Developm
Review, Autumn 1974 (appendix table 7B).

Economically Active Life of Males in Rural Areas of
Pakistan (1973 HED)

Table number 7 is prepared by using life tables prepared
specifically for rural males in Pakistan representing their mortality
experience[17]. These are used in conjunction with age specific activity
rates for the rural labour force from the 1973 HED data. The results
show a higher level of economically active life for rural males than for
all males in Pakistan, and an even higher level than that of expectation
of working life for urban males. The reasons for this difference can be
related to the differential in mortality levels in rural and urban areas
and also to the different patterns of economic activity. Economically active
life in rural areas may be longer because males may be entering the labour
force much earlier and leaving it much later. In the rural areas there is
no defenite   age of entry into the labour force nor an official age of
retirement as such and people who may not actually be working but still
holding family farm finances and decisions in their hands may be
included as economically active.

These tables of economically active life represent the activity of
a synthetic cohort as it proceeds through different ages in its
life. They are used to see the pattern of entry and separation from
the labour force and to see when these rates are maximal or minimal. Members
of this cohort leave it because of death and retirement and in table 8
an attempt is made to compute just the impact of mortality on the length
of working life. To try and separate the number of working years lost
due to deaths, the method used is adopted from the UN Manual "Method of

[17]Ibid (appendix table 1 C).

Analyzing Data from Censuses on Economic Activity". This table number
8 calculated again for Males in Pakistan (using 73 HED data) shows that
without decrements due to death, the " gross years of active life" are
62.80 years. The expectation of life at birth is 37.25 years and so the
loss of years of working life due to mortality is 62.80 - 37.25= 24.55
years. This means that a male in Pakistan loses an average 24.55 years
due to mortality and could have expected to work 24.55 years more had
there been no losses in the labour force because of deaths. If the loss due
to mortality is calculated by subtracting from the gross years of active
life, the expectation of life at age 10 (45.83 years), the loss of active
years by mortality after age 10 (the official age of entry into the
labour force) is 16.97 years.

Next we proceed to analyze the extent of entries into the labour
force and depletion from the labour force due to deaths and retirements.
Table number 9 illustrates the components of change, in the number of
economically active survivors during each age interval. The survival
functions and stationary population figures are taken from table 4.
The Abridged Tables of Working Life for Males in Pakistan (1973 HED)
Column 2, 3, 4 and 5 of this table are directly derived from table 4.
Column 6 of this table shows the increase or decrease in the number of
economically active survivors during each age interval. The purpose of
this table is to separately estimate the two components of the
increase or decrease during each age interval: (a) the number of deaths
of economically active persons and (b) the net balance between entries
of inactive persons into economic activity and retirements of active
persons into inactive status. These two components are first estimated

independently and then the estimates are adjusted to force agreement
with the increases and decreases shown in column 6. Retirements
include those persons who voluntarily or involuntarily withdraw from
the labour force into inactive status[18].

Table number 10 uses the adjusted estimates of deaths of economically
active persons and net balance between entries and retirements, to
calculate the rates of deaths and retirements per 1000 of the economically
active population and the entry rate per 1000 of the economically
inactive population - for each of the five year age groups. The death
rates for those in the labour force grow successively higher as may be
expected; the rate of entries per 1000 of the inactive population are
highest in the 10-15 age group and the 20-25 age group. The reason for the
high entry rate in this youngest age group is probably because many young
boys who do not attend schools will be entering the labour force at these
ages especially if they have not done so earlier. There might be an
over statement of entrants into the labour forces in this age group, as
those who are not yet 10 but already in the labour force may have been
lumped in the 10-15 age group. Entry rates in the 20-25 age group are usually
high as most males would have completed their education and joined the
labour force by this age. Rates of retirement get higher with
successively older age groups, as should be expected and are fairly low
for those below 40 years of age.

Table 11 shows the calculation of annual losses from the labour
force by deaths and retirements and gains by entries from the inactive male
population of Pakistan (1973 HED). The totals of the columns provide

[18] Methodology from U.N. Manual Method of Analyzing Data from
Censuses on Economic Activity ./ p. 29 /.

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[18]Methodology from U.N. Manual Method of Analyzing Data from
Censuses on Economic Activity ./ p. 29 /.

estimates of total number of deaths, retirements and entries connected
with the actual labour force in Pakistan (as shown by HED 1973 data).
The annual crude rates per 1000 of the labour force are calculated as
follows:-

| Entries : 39.8; | Retirements: 9.47 ; | Deaths: 10.67 |

From the difference between the rate of entries, and the sum of the
rates of retirements plus losses by death, the labour force replacement
rate can be acquired. In the case of Pakistan in 1973, under the given
assumptions about patterns of mortality and labour force participation which
have been used in this study, it is calculated to be 19.7 per 1000 in the
labour force.

Comparative Results

It is difficult to ascertain how accurately the results of this
analysis represent the actual situation for males in Pakistan in 1973. Here
some comparison will be made with other estimates of length of life for
Pakistan and some results for other countries. In doing this it may be seen
whether the estimates of length of working life in Pakistan are plausible or
not. There are two studies which have attempted to compute the length of working
life for Pakistan. The first is by Lee Bean in the "Provisional Estimates
of the Length of Working Life in Pakistan" for the 1960's. Data for this
work was drawn from the 1961 Pakistan Census and the 1962-65 Population
Growth Estimation Project. Bean claims that the results are plausible but
views then as an approximation because of limitations and biases of the data[19].

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[19] Bean "Provisional Estimates of the Length of Working Life in Pakistan"
Pakistan Development Review, Summer 1967 /p. 256/.

The PGE is known to have sampling and non-sampling areas, and these errors are likely to systematically bias the life tables used[20]. The 1961 Census from which labour force participation rates are derived, used a "gainful worker" concept for including persons in the labour force which may have inflated numbers of those who were marginally employed in the very young and old age groups. However Bean follows the Sadie and Wolfbein method which is different from the method adopted in the present study, and this makes the results even less comparable. The working life expectancy for males in Pakistan in 1962-63 for ages 10-14 is 53.95 years which is much higher than estimate for 1973 where the corresponding figure is 45.8 years.

The second study on the length of working life is done by G.M. Farooq who also used 1961 Census participation rates and life tables based on the PGE experiment. G. M. Farooq followed the same methodology in his construction of tables of working life and the results seen more comparable. Thus we rely more heavily on a comparison between the work of G.M. Farooq and the results attained here to evaluate the latter results validity.

The comparison begins with a look at the age-sex specific activity rates for the 1960's and 1970's. However a comparison cannot be made straight off because of different levels of enumeration (in the two sources of labour force information) either because of differences in quality of reporting of because of changes in definition used for those to be included in the labour force. The quantity and quality of data derived on labour force activity from two different data collection sources, spaced 12 years apart, makes it difficult to base strong conclusions about changes in labour force activity.

[20] Ibid.

Only after keeping all those differences in mind, can one compare age-sex specific activity rates for the 1960's and 1970's. Also the 1960's age specific activity rates were available by ten year groups after the age of 25 which made a comparison even harder. Rates for five year groups for males in Pakistan have been used by G.M. Farooq[21] and are compared here to the rates from the 1973 HED survey.

Age Group	Age Specific Activity 1961	Rates (for Males in Pak) 1975
0-5	-	-
5-10	-	-
10-15	38.39	39
15-20	72.33	68
20-25	87.89	87
25-30	93.70	95
30-35	94.08	96
35-40	94.45	97
40-45	94.37	97
45-50	94.28	96
50-55	92.63	94
55-60	90.97	91
60-65	86.00	86
65-70	79.00	78
70-75	70.00	69
75+	52.00	54

A comparison of these rates shows them to be very similar. The HED rates are higher for ages 25-60, 10-15 and 75+ and lower for ages 65-75 and 15-20. These rates from the '61 census are then used by G.M. Farooq to construct a table of working life for Males in Pakistan.

[21]G.M. Farooq   Dimensions and Structure of Labour Force in Relation to Economic Development. P.I.D.E. / p. 47 /.

Some of the differences in the sources of labour force and mortality data used for the two different sets of tables of working life have been pointed out earlier in the paper. However we proceed with caution, to look for differences in length of working life as computed for the 1960's by Farooq and for the 1970's using HED Survey data.

EXPECTATION OF WORKING LIFE FOR MALES IN PAKISTAN

Age Group x to x + 5	Expectation of working life at age x		Expectation of Life at age x	
	1960's[22]	1970's	1960's	1970's
0-5[23]	35.4	37.2	51.5	52.9
5-10	45.6	45.1	60.8	58.5
10-15	46.6	45.8	57.2	54.38
15-20	45.3	44.2	52.8	49.78
20-25	42.5	41.2	48.7	45.18
25-30	38.9	37.2	44.7	40.58
30-35	35.0	32.8	40.6	35.96
35-40	31.0	28.4	36.4	31.37
40-45	27.1	23.9	32.4	26.79
45-50	23.3	19.5	28.5	22.23
50-55	19.4	15.1	24.6	17.73
55-60	15.8	10.8	20.8	13.30
60-65	12.3	6.8	17.2	8.98
65-70	9.2	3.1[24]	14.1	4.73
70-75	6.7	–	11.3	–
75+	4.7	–	9.0	–

A quick look at the figures for expectation of working life for males in the 1960's and 1970's will show that there has been a decline in the expectation of working life in the 1970's except at birth where it seems to have risen. The expectation of life at birth also seems to have risen

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[22] G.M Farooq Dimensions and Structure of Labour Force in Relation to Economic Development. PIDE. $\underline{/}$ p. 47 $\underline{/}$.

[23] The 0-1 and 0-4 figures have been taken together to represent the 0-5 group.

[24] These rates are for the male population 65 and above.

in the 1970's but otherwise the expectation of life is lower than the 1960's
levels for all other ages. It is questionable whether the expectation of
life at all ages except at birth has fallen over the decade and it seems
more likely that there are errors inherent in the PGE and PGS mortality
data which may have given rise to this change of mortality.

To try and eliminate the effect of the different mortality schedules
for the two sets of life tables, the earlier table is standardized by
using 1968 and 1971 PGS life table values. The results are shown in table 13
and the expectation of working life at birth is computed to be 37.05 years
and at age 10 to be 45.58 years. The standardization raises the expectation
of working life at birth by almost one and a half years and reduces it for
all other ages. Standardization for mortality brings the expectation of
working life (except at birth) using the 1961 census labour force participation
rates to levels much lower than those for the 1960's and the rates converge
more to the 1970's levels. For ages 0-50, the expectation of working life for the
1970's is higher than that of the standardized levels of the 1960's. For ages
55-65 +, the standardized levels of the 1960's are higher than those of
the 1970's levels of expectation of working life. Another comparison can be
made, again with caution regarding differences in data, about the difference in
the loss of years of working life in the two sets of analysis. As reported
by G.M. Farooq, the length of working life of an average male in Pakistan
was reduced by 9.8 years due to mortality and in this analysis was
reduced by 16.97 years in 1973[25]. These figures if they were to be
taken at face value indicate quite a startling deterioration in the mortality
conditions between the 1960's and the 1970's.

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[25] U.N Method of Analysing Census Data on Economic Activities of the
Population , 1968 / p. 20 /.

Some estimates are also available of annual replacement, entry, retirement and losses by death rates for stable population models with vari levels of fertility and mortality. Pakistan has a GRR close to 3.0 and an e_o^o close to 50 years and therefore its rates should be somewhere between the following ranges:-

	Averages given by UN		Pakistan
Replacement rate	28.8	26.9	19.7
Rate of entry per 1000 males	41.0	41.0	39.8
Rate of retirement per 1000 males.	1.3	3.9	9.4
Rate of losses by death per 1000 males	10.9	10.2	10.67

Although the rates of losses by death falls into this range, the rate of retirement seems too high and the replacement rate is a bit low as compared to the average figures given by the UN. However the table from which these figures are taken, is based on the assumption of a stable population model which may differ considerably from the situation in Pakistan in 1973.

Conclusions

The uses of these tables and estimates of length of working life are multi-fold, despite their limitations due to data inaccuracies. They are instructive for planners and administrators who are concerned with demographic dimensions of the labour force. The tables can be utilized, to take into account the expectation of active and inactive life and its varia in urban and rural areas, when employment policies are being designed.

The components of tables of working life can be used in connection with data on annual earnings to draw up earnings profiles. Similarly the expectation of life-time consumption can also be compiled if data are available on average consumption by age and sex. The average net economic value of persons can be computed by subtracting the expected consumption from the expected earnings, at each age in their life span. The average cost of maintaining a person, after his withdrawal from the labour force, and the average cost of bringing up and educating fresh labour force entrants, can also be computed with this additional information on consumption and earnings[28].

The results provide most recent estimates of length of working life, using the most recently available data on mortality and labour force activity. In the comparison made earlier, of the results attained in this paper and those computed by G.M. Farooq, it was discovered that the length of working life (except at birth) has declined from the 1960's levels.

The separate computations of length of working life of males in urban and rural areas, provided for the first time, evidence of the differentials which exist between these areas in Pakistan. The length of working life in rural areas is computed as much higher than that in urban areas and in Pakistan as a whole. As Pakistan undergoes increasing modernization and urbanization, it can be predicted that the length of working life for all areas in Pakistan will converge more to the present urban levels. The direction of the differential found between the length of working life in urban and rural areas of Pakistan, was in corroborance with differences found internationally[29].

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[28] U.N. " Determinants and Consequences of Population Trends. 1968 / p. 321 /.

[29] Ibid / p. 319 /

The estimates of length of working life help to study the effects of changing activity rates and population structure, upon the burden of dependency. If the length of working life is quite long, as it seems to be in Pakistan, the high dependency burden (determined largely by the broad based age structure) will be reduced. If males in Pakistan can expect to work for a longer part of their lives (than males in developed countries)[30] then they can support their families for a longer interval. Also since children enter the labour force at an early age (as can be seen by the high participation rates of the 10-15 age group) they too are sharing the burden of supporting their family and thereby reducing the dependency burden. The results supporting this pattern of labour force activity would make most early macro-economic-demographic models, such as that of Coale and Hoover[31] inapplicable to Pakistani society. The concept of dependency will have to be revised accordingly when studying any of the economic-demographic relationships in Pakistan.

In the unsuccessful attmept to compute the length of working life of females, it was deduced that the estimates should have been much higher. It is common knowledge that women participate in the labour force to quite a large extent in the rural areas of Pakistan, especially in the seasons of harvest, sowing etc. The data sources used here, were unable to capture fully the extent of female labour force participation and attention should be drawn towards having studies designed especially to improve data in this area. The improved collection of data would enable the computation of more representative estimates of length of working life of females.

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[30]Ibid.

[31]Coale. A and Hoover "Economic Development in Low Income Countries. 1958

The length of working life of males in Pakistan (except at birth) has declined and this is an indication of significant changes in the ages of entry and retirement in the labour force. As was pointed out earlier, in the comparison with G.M. Farooq's work, the annual rate of retirement per 1000 of the labour force has risen almost dualfold, which perhaps reflects retirements at earlier ages than in the 1960's. The same comparison showed the annual rate of entry per 1000 of the labour force to have declined, which may reflect a slightly later age of entry into the labour force, than in the 1960's. The labour force replacement rate has dropped considerably from the 1960's levels, which is in keeping with the declining length of working life in the 1970's.

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Table: 1   CRUDE ACTIVITY RATES & REFINED ACTIVITY RATES FOR PAKISTAN, RURAL & URBAN AREAS
                              (Female & Male Population)

AGE GROUP BY SEX	TOTAL POPULATION (All Ages)	CIVILIAN LABOUR FORCE	CRUDE ACTIVITY Rates (3÷2)	TOTAL POPULATION 10 Years and above)	REFINED ACTIV. RATES (3 ÷ 5)
1	2	3	4	5	6
(Both Sexes)	60,509,535	19,761,978	32.66	42,379,279	46.6
MALE	32,511,190	18,016,181	55.42	23,209,831	77.6
FEMALE	27,998,345	1,745,797	6.24	19,169,448	9.1
RURAL					
Both Sexes	43,767,001	14,705,290	33.60	30,523,312	48.1
MALE	23,493,948	13,424,008	57.14	16,704,008	80.4
FEMALE	20,273,053	1,281,282	6.32	13,819,304	9.3
URBAN					
Both Sexes	16,742,534	5,056,688	30.20	11,855,967	42.7
MALE	9,017,242	4,592,173	50.93	6,505,823	70.6
FEMALE	7,725,292	464,515	6.01	5,350,144	8.7

Table: 2   Age Specific Activity Rates for Males (1973 Med Population 10 years & above).

Age Group	PAKISTAN			RURAL			URBAN		Age Spec
	Total Population	Total Labour Force	Age Specific Activity Rates	Total Population	Total Labour Force	Age Specific Activity Rates	Total Population	Total Labour Force	Activity R
10-14	4,490,914	1,773,226	39	3,215,653	1,440,047	45	1,275,261	333,179	26
15-19	3,114,732	2,108,988	68	2,102,688	1,617,799	74	922,044	491,189	53
20-24	2,386,575	2,034,178	87	1,597,677	1,443,078	90	729,299	591,100	81
25-29	2,193,100	2,074,991	95	1,566,783	1,488,396	95	626,317	586,595	92
30-34	1,859,995	1,791,524	96	1,340,644	1,292,093	96	519,351	498,231	96
35-39	1,677,190	1,626,692	97	1,190,686	1,156,192	97	486,504	470,500	97
40-44	1,593,480	1,541,149	97	1,152,027	1,117,607	97	441,453	423,542	96
45-49	1,283,687	1,235,554	96	905,549	876,730	97	377,130	359,024	95
50-54	1,351,903	1,274,815	94	1,011,143	963,612	95	340,760	311,204	91
55-59	645,054	585,753	91	475,243	440,602	93	169,811	145,151	85
60-64	1,073,180	918,837	86	837,946	741,683	89	235,234	176,554	75
65-69	429,010	335,785	78	322,894	267,459	83	106,116	68,326	64
70-74	543,986	374,745	69	428,192	312,014	73	115,794	62,732	54
75+	627,624	340,742	54	476,883	265,696	56	150,741	75,046	50

Table: 3   Age Specific Activity rates for Females.(1973 HED Population 10 years and above).

	PAKISTAN			RURAL			URBAN		
Age Group	Total Population	Total Labour Force	Age Specific Activity Rates	Total Population	Total Labour Force	Age Specific Activity Rates	Total Population	Total Labour Force	Age Spec Activity
10-14	3,553,880	367,646	10%	2,471,256	257,112	10	1,082,623	110,534	10
15-19	2,390,450	206,753	9	1,689,804	146,109	9	760,566	60,644	9
20-24	2,010,665	217,403	11	1,417,943	152,789	11	592,722	64,614	11
25-29	2,043,970	175,729	9	1,479,524	131,203	9	564,454	44,526	8
30-34	1,726,960	151,790	9	1,261,977	116,184	9	464,903	35,606	8
35-39	1,590,017	130,502	8	1,151,093	100,232	9	438,924	30,270	7
40-44	1,347,712	155,747	9	993,130	90,507	9	354,582	25,840	7
45-49	1,140,749	88,267	8	852,175	68,070	9	296,574	20,197	7
50-54	973,865	92,241	9	744,807	69,919	9	229,058	22,322	10
55-59	608,048	46,562	7	460,727	36,237	7	147,321	10,325	7
60-64	697,169	59,729	8	534,114	44,714	8	163,055	15,015	9
65-69	337,054	25,190	7	254,762	18,393	7	82,292	6,797	8
70-74	326,074	27,058	8	249,918	20,308	8	76,156	6,750	9
75+	374,827	41,200	11	287,993	29,425	10	96,834	11,775	12

Table: 4

Abridged Table of Economically active Life for Males in Pakistan.(1973 H.D)

Age interval (exact ages x to x+n)	Specific Activity Rates		Survivors at age x of 10,000 born alive		Stationary Population in age interval		Cumulated Stationary Population in age x-∞		Expectation of life age x		
	In age interval	At beginning age x	Total(l_x)	Economically active (4)x(3)	Total L_{5x}	Economically active (6 x 2)	Total T_x	Economically active cumulated (col 7)	Total Years e^0_x	Econo- active (9)÷(4)	Inact (10)
1	2	3	4	5	6	7	8	9	10	11	12
0-5	0	0	10,000	0	9141	0	529050	372480.06	52.90	37.25	15.65
5-10	0	0	8,254	0	40954	0	482904	372480.06	58.50	45.13	13.37
10-15	.394	0	8,127	0	40480	15949.12	441950	372480.06	54.38	45.83	8.55
15-20	.677	.535	8,064	4314.24	40154	27184.26	401469	356530.94	49.78	44.21	5.57
20-25	.874	.775	7996	6196.9	39000	34785.20	361315	329346.68	45.18	41.19	3.99
25-30	.946	.910	7923	7209:93	39419	37290.37	321515	294561.48	40.58	37.18	3.40
30-35	.963	.954	7844	7483.18	38988	37545.44	282095	257271.11	35.96	32.80	3.16
35-40	.969	.965	7750	7486.5	38476	37206.29	243107	219725.67	31.37	28.35	3.02
40-45	.967	.968	7639	7394.55	37851	36601.92	204631	182519.38	26.79	23.89	2.9
45-50	.963	.965	7500	7237.50	37042	35671.45	166780	145917.46	22.23	19.46	2.77
50-55	.942	.952	7316	6964.83	35919	33835.70	129737	110246.01	17.73	15.07	2.5
55-60	.908	.925	7051	6522.18	34219	31070.85	93817	76410.31	13.30	10.84	2.44
60-65	.855	.818	6636	5428.25	31376	26826.48	59597	45339.46	8.98	6.83	2.1
65 +	.656	.755	5914	4465.07	28221	18512.98	28221	18512.98	4.77	3.13	1.6

Note: 1. The life table values of l_x, d_x, T_x amd e^0_x are taken from the tables prepared by Iqbal Alam and N. Farooqui in PDR autumn, 1974.

2. The activity rate for 65+' is taken to be .656 and is calculated from table 3 in the labour force participation tables.

Table: 5

Abridged Table of Working Life for Males in Pakistan using Labour Force Survey Age Specific Participation Rates.

Age group (exact age x to x+n)	Specific Activity Rates		Survivors at age x of 10,000 born alive		Stationary Population in age interval		Cumulated Stationary Population in age x-n		Expect life a	
	In age interval	At beginning age x	Total l_x	Economically active (4)x(3)	Total $5L_x$	Economically active 6x2	Total T_x	Economically active 8+4	Total years	Economically all active (9)
1.	2	3	4	5	6	7	8	9	10	11
0-5	0	0	10,000	0	9141	0	529050	371047.84	52.90	37.
5-10	0	0	8,254	0	40954	0	482904	371047.84	58.50	44.
10-15	.325	0	8127	0	40480	13156	441950	371047.84	54.38	45.
15-20	.647	.486	8064	3919.10	40154	25979.64	401469	357891.84	49.78	44.
20-25	.883	.765	7996	6116.94	39800	35143.40	361315	331912.2	45.18	41.5
25-30	.961	.922	7923	7305.01	39419	37881.66	321515	296768.0	40.58	37.
30-35	.978	.970	7844	7608.68	38988	38130.26	282095	258087.14	35.96	33
35-40	.983	.980	7750	7595	38476	37821.91	243107	220756.88	31.37	28.4
40-45	.978	.980	7639	7486.22	37851	37018.28	204631	182934.97	26.79	23.9
45-50	.977	.978	7500	7335	37042	36190.04	166780	145916.69	22.23	19.4
50-55	.958	.967	7316	7074.57	35919	34410.40	129738	109726.65	17.73	15
55-60	.919	.939	7051	6620.89	34219	31447.26	93817	75316.25	13.30	10
60-65	.663	.891	6636	5912.68	31376	27077.49	59597	43868.99	8.98	6
65 +	.595	.729	5914	4311.31	28221	16791.50	28221	16791.50	4.77	2

Note:- Life table values of l_x, $5L_x$, T_x & $\overset{o}{e}_x$ taken from abridged life tables prepared by Alam & Farooqui in PDR Autumn, 1974.

Table : 6

Abridged Table of Working Life for Urban Males in Pakistan (1973 Population 10 years & above).

Age interval (exact ages x to x + 5)	Specific Activity rates.		Survivors at age x of 10,000 born alive		Stationary Population in age interval		Cumulated Stationary Population in age x-∞		Expectation of Life at age		
	In age interval	At beginning age x	Total (l_x)	Economically active (4) x (3)	$5L_x$	Economically active (6) x (2)	Total T_x	Economically ly active cumulated 7	Total years e^0_x (8)÷(4)	Economically active years (9)÷(4)	In active years (10)-(11)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
0-5	0	0	10000	0	9002	0	545287	362602.01	54.53	36.26	10.27
5-10	0	0	8306	0	41692	0	502086	362602.01	59.07	43.24	16.93
10-15	.261	0	8290	0	41405	10006.70	460393	362602.01	55.53	43.74	11.79
15-20	.527	.394	8271	3258.77	41292	21760.80	410987	351795.31	50.65	42.53	8.12
20-25	.810	.660	8245	5507.66	41137	33320.97	377605	330034.43	45.81	40.03	5.78
25-30	.921	.865	8209	7100.70	40922	37699.16	336558	296713.46	41.00	36.14	4.86
30-35	.059	.940	8159	7669.46	40621	38955.53	295635	259084.3	36.23	31.75	4.48
35-40	.067	.963	8089	7789.79	40196	38669.53	255014	220608.77	31.53	27.21	4.32
40-45	.050	.963	7989	7693.40	39590	37966.81	214818	181199.24	26.89	22.68	4.21
45-50	.951	.955	7846	7492.93	38721	36823.67	175227	143232.43	22.33	18.25	4.07
50-55	.913	.932	7641	7121.41	37660	34390.00	136506	106408.76	17.86	13.93	3.93
55-60	.854	.903	7345	6495.63	35662	30455.34	99057	72017.80	13.48	9.81	3.53
60-65	.750	.812	6919	5549.03	33077	24007.75	65375	41562.54	9.46	6.01	3.1
65 +	.553	.651	6311	4108.46	30298	16754.79	30298	16754.79	4.80	2.65	2.1

Notes— Life table values of T_x, l_x, e^0_x, nL_x are taken from abridged life tables prepared by Alam & H. Farooqui in the PDR, Autumn 1974.

Abridged Table of Working Life for Rural Males in Pakistan (1973 HED Population 10 & above)

Age interval (exact ages x to x+n)	Specific activity rates		Survivors at age x of 10,000 born alive		Stationary Population in age interval		Cumulated Stationary Population in ages x –		Expectation of life	
	In age interval	At age x	Total l_x	Economically active (4) x (3)	Total $_5L_x$	Economically active (6) x (2)	Total T_x	Economically active (Cumulated col. 7)	Total years e_x^o =(8)÷(4)	Economically active years (9)÷(4)
1	2	3	4	5	6	7	8	9	10	11
0-5	0	0	10,000	0	9151.0	0	52,4416.8	380631.82	52.44	38.06
10-15	0	C	8,205	0	406,89.0	0	48,1337.3	380631.82	58.66	46.39
15-20	0.447	0	8,070	0	401,51.3	17947.63	44,0647.5	380631.82	54.60	47.17
20-25	0.741	.594	7,989	4745.47	397,44.8	29450.90	40,0496.2	362684.19	50.13	45.40
25-30	0.903	.822	7,908	6500.38	393,34.8	35519.32	36,0751.4	333233.29	45.62	42.14
30-35	0.949	.926	7,825	7245.95	389,16.8	36932.04	32,1416.6	297713.97	41.07	38.05
35-40	0.964	.956	7,741	7400.40	384,83.0	37097.61	28,2499.8	260781.93	36.49	33.69
40-45	0.971	.967	7,652	7399.48	380,20.5	36917.91	24,4016.8	223684.32	31.89	29.23
45-50	0.970	.970	7,556	7329.32	375,05.5	36380.34	20,5996.3	186766.41	27.26	24.72
50-55	0.968	.969	7,446	7215.17	368,90.3	35709.81	16,8490.8	150386.07	22.63	20.20
55-60	0.952	.960	7,309	7016.04	360,68.5	34337.21	13,1600.5	114676.26	18.00	15.60
60-65	0.927	.939	7,117	6682.86	347,57.3	32220.02	95,532	80339.05	13.42	11.29
65+	0.035	.906	6,785	6147.21	320,10.3	28320.12	60,774.7	48119.03	8.96	7.09
	0.688	.786	6,018	4730.15	287,64.4	19789.91	28,764.4	19789.91	4.78	5.29

Note: 1. 65+ Activity rate is taken as 0.688 from Table 2 showing age specific participation rates for Rural Males (Pak 1973 HED)

2. Life Table values of lx, $_5L_x$ T_x & e_x^o are taken form Abridged Life Tables prepared by I. Alam & N. Farooqui in the PDR Autumn, 1974

Table: 8   Calculation of loss of years of working life due to Mortality*

Age Group (Exact Ages)	Number of years in age interval	MALES Specific Activity Rates	(3 x 2) Average no. of active years
1.	2.	3.	4.
0-10	10	0	0
10-15	5	.394	1.97
15-20	5	.677	3.39
20-25	5	.874	4.37
25-30	5	.946	4.73
30-35	5	.963	4.82
35-40	5	.969	4.85
40-45	5	.967	4.84
45-50	5	.963	4.82
50-55	5	.942	4.71
55-60	5	.908	4.54
60-65	5	.855	4.28
65-70	5	.782	3.91
70-75	5	.680	3.44
75+	15	.542	8.13
Total			5?.67
			62.80

1. Gross years of active life   62.80
2. Expectation of active life at birth   37.25
3. Loss of active years by mortality   24.55
     (1-2)
4. Expectation of active life at age 10.   45.83

5. Loss of active years by mortality after age 10 (1-4)   16.97

*The difference between gross years of active life and expectation of active life (net years of active life) represents the loss by mortality.

Table 10:- Extension of Table of Economically Active Life (Calculation of Death, Retirement and Entry Rates for Males in Pakistan HED 1973).

Age interval	Economically active numbers in Stationary Population	Economically inactive Population	Net increase (+) Net decrease (-)	Number of Deaths	Rate of deaths per 1000 active Population	Number of entries	Rate per 1000 inactive Population	Number of retirements	Rate per 1000 active Population
1	2	3	4	5	6	7	8	9	10
10 - 15	15949	24531	+ 4314	26	1.6	4340	176.3		
15 - 20	27184	12970	+ 1813	46	1.7	1929	148.7		
20 - 25	34785	5015	+ 1013	63	1.8	1076	214.6		
25 - 30	37290	2129	+ 273	75	2.0	348	163.5		
30 - 35	37545	1443	+ 3	90	2.4	93	64.4		
35 - 40	37206	1270	- 92	107	2.9	15	11.8		
40 - 45	36602	1250	- 157	134	3.7	-	-	23	0.6
45 - 50	35601	1371	- 273	178	5.0	-	-	96	2.7
50 - 55	33836	2083	- 443	249	7.4	-	-	194	5.7
55 - 60	31071	3149	- 1094	371	11.9	-	-	723	23.3
60 - 65	26826	4550	- 963	587	21.9	-	-	376	14.0
65 +	18513	9708	- 4465	2128	114.9	-	-	2337	126.2

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Table 11:-   Calculation of Annual Losses From Labour Force by Death & Retirement and Gains by Entries From the Inactive Population (Male Population of Pakistan 1973 HED)

Age interval	Population in 1000's	Labour Force in 1000's	Inactive Population 1000's	Annual Losses from Labour Force by Death.		Annual entries into the Labour Force		Annual retirements from Labour Force	
				Rate per 1000 Labour Force	Estimated Number of deaths in 1000's (3)x(5)	Rate per 1000 inactive Population	Estimated numbers in 1000's (4)x(7)	Rate per 1000 Labour Force	Estimated number of retirement in 1000's (3)x(9)
1	2	3	4	5	6	7	8	9	10
10 - 15	4490.4	1773.2	2717.7	1.6	2.8	176.9	480.7	-	-
15 - 20	3114.7	2108.9	1005.7	1.7	3.6	148.6	149.447	-	-
20 - 25	2326.9	2034.2	292.8	1.8	3.7	214.6	62.834	-	-
25 - 30	2193.1	2074.9	118.1	2.0	4.1	163.5	19.309	-	-
30 - 35	1859.9	1791.3	68.7	2.4	4.3	64.4	4.424	-	-
35 - 40	1677.2	1626.7	50.5	2.9	4.7	11.8	.596	-	-
40 - 45	1593.5	1541.1	52.3	3.7	5.7	-	-	0.6	.924
45 - 50	1282.7	1235.6	47.1	5.0	6.1	-	-	2.7	3.33
50 - 55	2351.9	1274.8	77.1	7.4	9.4	-	-	5.7	7.26
55 - 60	645.1	585.8	59.3	11.9	7.0	-	-	3.3	8.55
60 - 65	1073.2	918.2	154.9	21.9	20.1	-	-	14.0	12.85
65 +	1600.6	1051.3	549.3	114.9	120.8	-	-	126.2	132.67
Total:		18016			192.3		717.2		170.7

Death rate = 1067

Entry rate = 39.8

Labour Force replacement rate = 19.7

Retirement rate = 9.47

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Table 12:-   Abridged Table of Working Life for Females in Pakistan (1973 HED Population 10 years & above)

Age interval	Specific Activity Rates In age Interval	at age x	Survivors at age x of 10,000 born alive Total l_x	Economically active	Stationary Population in age interval Total $5L_x$	Economically active (x(2))	Cumulated Stationary Population in ages $\bar{x}$ - oc Total T_x	Economically active cumulated (2)	Expectation of life at age x Total years e^o_x (8)	(4)	Economically active (9)$\cdot$(4)	Inactive years (10)
1	2	3	4	5	6	7	8	9	10	11	12
0-5	0	0	10,000	0	9254	0	51,8011	38121.33	51.8	3.81	47.99	
0-10	0	0	8326	0	41301	0	474284	38121.33	56.96	4.57	52.39	
10-15	.103	0	8194	0	40659	4187.87	432983	38121.33	52.84	4.65	48.19	
15-20	.086	.094	8069	758.48	40031	3442.66	392323	33933.46	48.62	4.20	44.42	
20-25	.108	.097	7942	770.37	39388	4253.90	352292	30490.8	44.35	3.83	40.52	
25-30	.085	.096	7812	749.95	38723	3291.45	312904	26236.9	40.05	3.35	36.7	
30-35	.087	.086	7676	660.13	38024	3308.08	274181	22945.45	35.72	2.98	32.74	
35-40	.082	.084	7532	632.68	37274	3056.46	236157	19637.37	31.35	2.60	28.75	
40-45	.085	.093	7376	612.20	36447	3097.99	198882	16580.91	26.96	2.24	24.72	
45-50	.076	.081	7302	587.81	35502	2698.15	162435	13482.92	22.55	1.84	20.71	
50-55	.094	.085	6998	594.83	34371	3230.87	126932	10784.77	18.14	1.54	16.60	
55-60	.072	.083	6749	560.16	32931	2371.03	92561	7553.90	13.71	1.11	12.60	
60-65	.085	.079	6422	504.12	31026	2637.21	59629	5182.87	9.28	0.80	8.48	
65+	.089	.087	5987	520.86	28603	2545.66	28603	2545.66	4.78	0.42	4.36	

Values for l_x, $5L_x$, T_x, and e^o_x are obtained from life tables prepared by Alam & Farooqui in the

PDR Autumn 1974 ($5L_x$ & l_x & T_x were divided by 10).

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Table: 13

Abridged Table of Working Life for Males Using'61 Census Participation Rates with'68 &'71 PGS Life Table Mortality Rates.

age interval (exact ages x to x+n)	Specific activity rates		Survivors at age x of 10,000 born alive		Stationary Population in age interval		Cumulated Stationary Population in ages x -∞		Expectation of life at x	
	in age interval	at age x	Total l_x	Economically active (4) x (3)	Total $5L_x$	Economically active (6) x (2)	Total T_x	Economically active cumulated (7)	Total Years (8)÷(4) =e_x	Economically active (9)÷(4)
1	2	3	4	5	6	7	8	9	10	11
0-4	0	0	10.000	0	9141	0	529050	370457.65	52.90	37.05
5-9	0	0	8.254	0	40954	0	482904	370457.65	58.50	44.88
10-14	.384	0	8127	0	40480	15544.32	441950	370457.65	54.38	45.58
15-19	.723	.553	8064	4459.39	40154	29031.34	401469	354913.33	49.78	44.01
20-24	.879	.801	7996	6404.80	39800	34984.2	361315	325881.99	45.18	40.76
25-29	.937	.908	7923	7194.08	39419	36935.60	321515	290897.79	40.58	36.72
30-34	.940	.938	7844	7357.67	38988	36648.72	282095	253962.19	35.96	32.38
35-39	.945	.943	7750	7308.25	38476	36359.62	243107	217313.47	31.37	28.04
40-44	.944	.945	7639	7218.66	37851	35731.34	204631	180953.65	26.79	23.69
45-49	.943	.944	7500	7080.00	37042	34930.60	166780	145222.31	22.23	19.36
50-54	.926	.935	7316	6840.46	35919	33260.99	129737	110291.71	17.73	15.08
55-59	.910	.918	7051	6472.82	34219	31139.29	93817	77030.72	13.30	10.92
60-64	.860*	.855	6636	5673.78	31176	26983.36	59597	45891.43	8.98	6.92
65+	.670*	.765	5914	4524.21	28221	18908.07	26221	18908.07	4.77	3.20

*Derived as average of 65 - 69, 70 -74, 75+