



# Input-output Division



## Technical Series

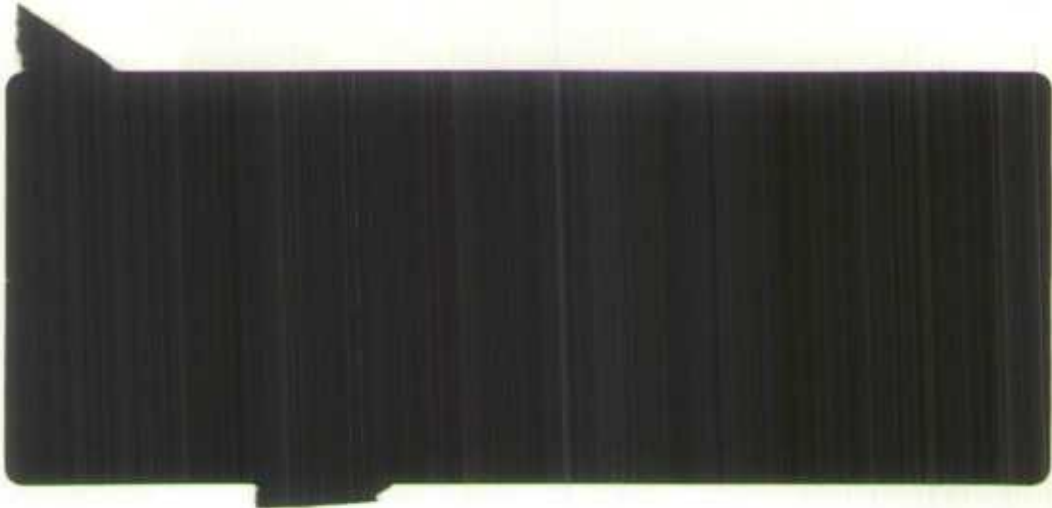
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## **Input-Output Technical Series**

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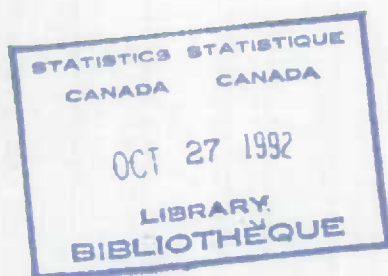
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STATISTICS CANADA  
INPUT-OUTPUT DIVISION

SOURCES AND METHODS OF  
ESTIMATING EMPLOYMENT BY  
INPUT-OUTPUT INDUSTRIES  
FOR THE YEARS 1961 TO 1988  
BY  
KARNAIL S. GILL & MONIQUE LAROSE  
# 47



NOVEMBER 1991

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The objective of writing this note is to document all sources and methods which were used over the years to estimate employment by Input-Output industries for the years 1961 to 1988. During this time number of changes took place e.g. classification changes, changes to some employment surveys e.g. a revised Labour Force Survey was instituted in 1975; Employment, payroll and man-hours survey (ES-1) covering all firms employing 20 or more persons in any one month of the year and the companion sample survey, covering firms employing less than 20 employees (see below) were terminated in 1982 and in their place an establishment based survey called Survey of employment, payroll and hours (SEPH) was started in 1983.

The Input-Output tables for the years 1961-1980 were all on 1970 SIC basis with 190 input-output industries while tables for 1981 and onwards are on 1980 SIC with 216 industries at the most detailed level of these classifications, the worksheet level (w). To overcome the resulting discontinuity an aggregation link (L) level was developed which provides a continuous time series for these years. Aggregation L level has 161 industries. All aggregation levels in the Input-Output system are hierarchical i.e. one can derive S from M, M from L and L from the worksheet level of detail<sup>1</sup>. Some industries had to be redefined in terms of the 1970 SIC to remain consistent with the 1980 SIC and re-estimated over the entire period in order to develop the aggregation link level L<sup>2</sup>.

In estimating employment the preference was given to establishment based data e.g. Census of Mining; Survey of Manufactures; SEPH or industry publications e.g. Air carrier operations; Rail transport; Passenger bus and urban transit statistics; Canada Post Annual report etc.. The household surveys (Labour Force Survey) and decennial censuses were used only as data of last resort i.e. where the above sources were not available, for example, in Agriculture and Fishing. The concept of employment used is total employment i.e. every person engaged in production irrespective of the fact whether the person is paid or not.

During this period major changes took place in Labour Force Survey and Estimate of Employees. These will now be briefly dealt with.

### **Labour Force Survey**

A revised Labour Force Survey was instituted in 1975. In the revised Labour Force Survey, among other changes, the labour force participating rate was changed from 14 to 15 years and information on Multiple job holders was included on a consistent basis for the first time. Revised and non-revised Labour Force Survey was run in parallel in 1975. All data on paid and other than paid workers were linked back to 1961. The number of Multiple job holders were not linked back to 1961. Throughout this note when reference is made to Labour Force Survey it will mean revised Labour Force Survey. All data from Labour Force Survey is based on 1986 population census from the year 1981. No adjustments to the previous data were deemed necessary.

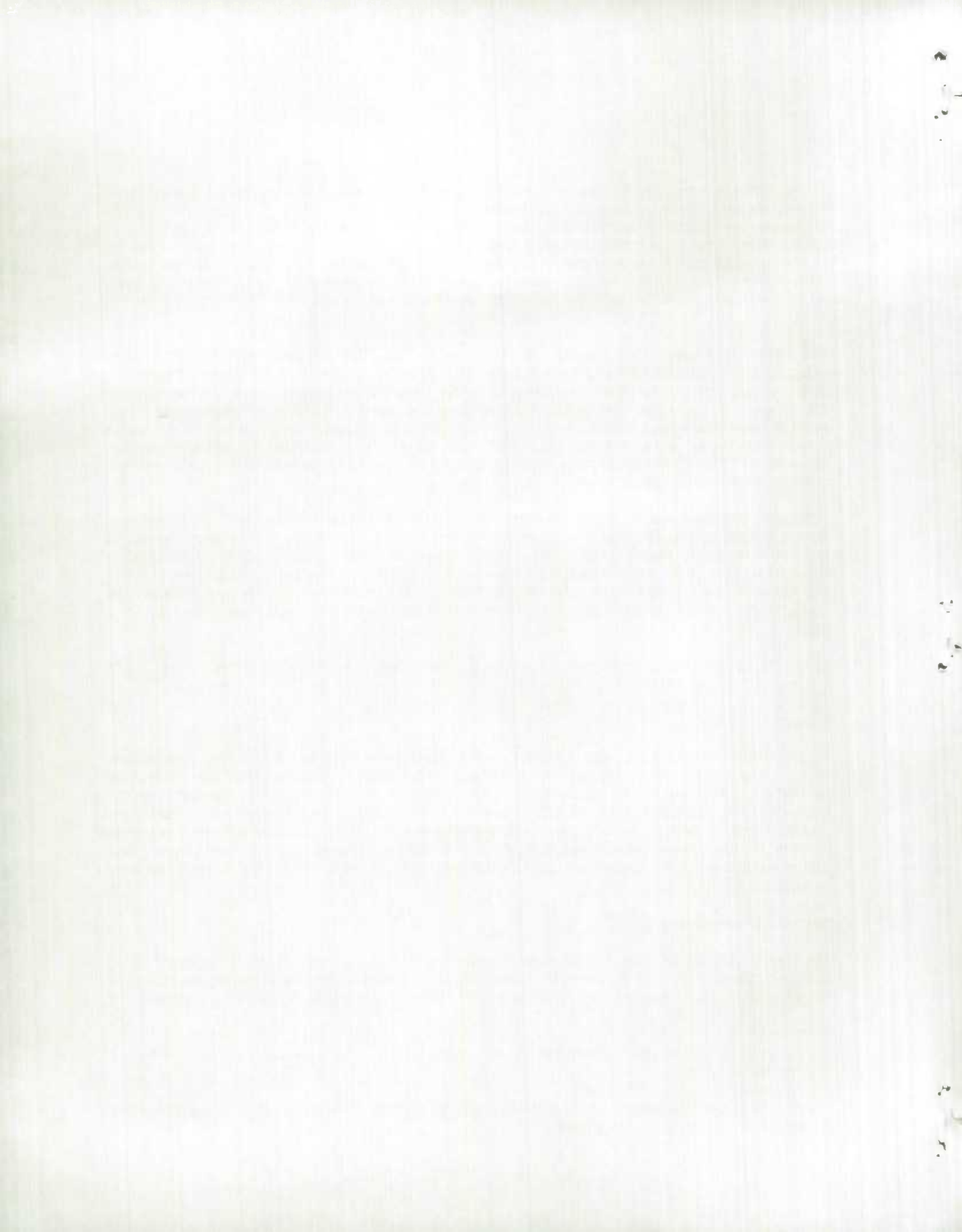
### **Estimate of employees**

The employment data published in Estimate of employees by Province and Industry (Catalogue 72-516) and a monthly publication of the same title (Catalogue 72-008) were derived by combining results from a monthly establishment based survey of employment in larger firms (employing 20 or more employees)

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<sup>1</sup> For further details reader is referred to *Input-Output structure of the Canadian Economy 1961-1981*, (Cat. 15-510) p. 32.

<sup>2</sup> For list of industries affected by this see the *Input-Output structure of the Canadian Economy 1961-1981*, (cat. 15-510) appendix C (pp. 97-99).





(ES-1) and a monthly sample survey of smaller firms (ES-2) supplemented by data from other sources<sup>3</sup>. Both of these surveys were terminated in 1982.

There was a major revision to the industrial classification of the government sector in 1977 and comparative data under the two classifications were available for 1976. Same adjustments were applied to all data from Estimate of employees back to 1961. Data in the above publications were on 1960 SIC basis<sup>4</sup>.

A new establishment based employment survey called 'Survey of Employment, Payroll and Hours' (SEPH), was started in 1983. This survey was designed to measure, on a monthly basis, the levels and month-to-month trends of employment, paid hours and earnings. The industrial classification of this survey is based on 1970 version of the Standard Industrial Classification Manual (Catalogue 12-501).

For the years 1961 to 1982, the control total for paid workers at the division level of SIC comes from the following sources:

**Industry Division (1970 SIC)**

Agriculture;	Labour Force Survey
Fishing and Trapping;	Labour Force Survey
Forestry;	Estimate of Employees by Province and Industry
Construction;	Estimate of Employees by Province and Industry
Transportation, Communication and Other utilities;	Estimate of Employees by Province and Industry
Trade;	Estimate of Employees by Province and Industry
Finance, Insurance and Real Estate;	Estimate of Employees by Province and Industry
Community, Business and Personal Service Industry;	Estimate of Employees by Province and Industry
Mines, Quarries and oil wells;	Census of Mining; Some additional sources.
Manufacturing Industries.	Survey of Manufactures

<sup>3</sup> *Estimate of employees by province and industry 1961-1976 (Catalogue 72-516) Occasional pp. 75-76.*

<sup>4</sup> *Standard Industrial Classification Manual (Catalogue 12-501).*

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### **Sectoring of employment in Input-Output tables**

The first step in the estimation of employment by Input-Output industries is the estimation of Average Salary of paid workers. It is simply the ratio of unsectored labour income and the number of unsectored paid workers. Since the labour income by sector<sup>5</sup> i.e. Business and Non-Business sector is already given in the Input-Output tables, the average salary as determined above is then used to determine employment by sector in case of paid workers. All other than paid workers (self employed + unpaid family workers) are allocated to Business Sector industries.

#### **Business Sector**

**Agricultural and related services Industries (W 1-2);**

**Fishing and trapping Industries (W 3)**

The control total for paid and other than paid workers for all years was taken from Labour Force Survey.

**Logging and forestry Industries (W 4)**

Paid workers:

1961-1982 Estimate of Employees

1983-1988 SEPH

Other than paid workers:

1961 to 1988 Labour Force Survey

**Mining, Quarrying and Oil Well Ind. (W 5-15)**

This division has the following 11 industries at the most detailed level of I/O classification.

5. Gold Mines
6. Other Metal Mines
7. Iron Mines
8. Asbestos Mines
9. Potash Mines
10. Salt Mines
11. Misc. Non-metal Mines
12. Coal Mines
13. Crude Petroleum and Natural Gas
14. Quarry and Sand Pit Industries
15. Service Related to Mineral Extraction

The number of paid workers for industries 5 to 9, 11 to 14 (see 13 and 14 below) is taken from General Review of the Mineral Industries. (Census of Mining). Although the Salt Mines (10) are covered in census of mining, the employment numbers are secure. The number of paid workers for this industry were

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<sup>5</sup> For further details on Business and non-Business sectors, reader is referred to *The Input-Output Structure of the Canadian Economy 1961 -1981 (Catalogue 15-510) pp. 27-31.*



obtained from worksheets of Quips<sup>6</sup> (T. Blais I/O Div.). A major problem of undercoverage was discovered in Quarry and Sands industries (14) when Labour Division started using data from T-4 records. An adjustment ratio (W & S from T4 ÷ W & S from Census of Mining) was estimated for this industry back to 1961. This ratio was then used to change employment back to 1961.

The industry Crude Petroleum and Natural Gas (13) was part of the Major Group 'Mineral Fuels' in 1970 SIC (it is an independent major group in 1980 SIC) and the number of paid workers were published in General Review of the Mineral Industries (Cat. 26-201) except for establishments under Oil Sands industry. The employment for the latter was taken from the schedules of E.S.1. for the years 1971 to 1974. The employment was estimated back to 1968 when the output of Oil Sands industry was included in the output measures for the first time. For the years 1975 to 1982 the employment in Oil Sands industry was estimated using information from Great Canadian Oil Sands and Syncrude (S. O'Brien I/O Division).

From the year 1983 the employment data for oil sands industry is taken from the questionnaire of SEPH (Confidential - not published).

The industry Service Related to Mineral Extraction (15) consist of:

- a) Contract Drilling for Petroleum
- b) Other Contract Drilling
- c) Miscellaneous Services Incidental to Mining

The number of paid workers in (a) and (b) above is obtained from Contract Drilling (Catalogue 26-207) for the years to 1976. Beginning in 1977 the number of paid workers in (b) above is published in General Review of Mineral Industries (Catalogue 26-201) and the number of paid workers in (a) above is estimated using the assumption that the growth in average salary is equal to the change in Consumer Price Index. From 1983 onwards data from SEPH are used. The number of paid workers in 'Miscellaneous Services Incidental to Mining' is estimated using decennial census and interpolation between the intercensal years and extrapolation for the year 1983 and 1984. From 1985 to 1988 SEPH is used.

Other than Paid Workers:

Control total for each year is a moving average i.e.

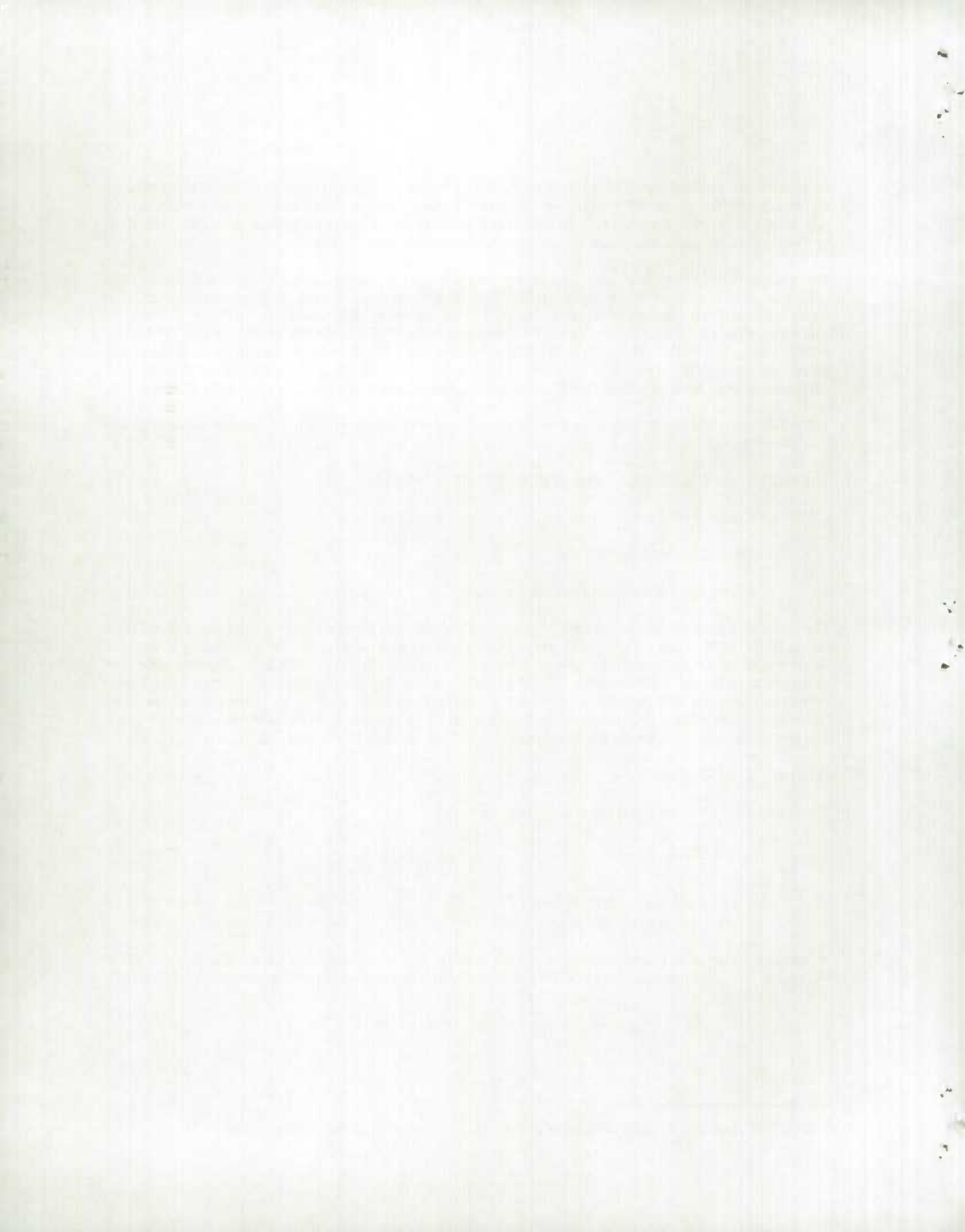
$$N_t = \frac{N_t + N_{t-1}}{2}$$

where  $N_t$  = Number of OTP in year t  
 $N_{t-1}$  = Number of OTP in year t - 1.

Industrial breakdown is based on the percentage share of various industries in the census years of 1961, 1971 and 1981 and interpolation between the intercensal years and extrapolation for 1982 to 1988.

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<sup>6</sup> QUIPS is the most detailed data base of the Industries Division of Statistics Canada.



### **Manufacturing Industries (W 16-152)**

The source of number of paid and other than paid workers for all the Manufacturing industries is Manufacturing Industries of Canada: National and Provincial Areas (Catalogue 31-203). Adjustment for improved coverage for the years 1971 to 1977 is effected. The level of adjustment to employment (paid and self employed) each year is the same as for the labour income (C. Becker I/O Division).

### **Construction Industries (W 153-161)**

There are 9 Construction industries at the worksheet level of Input-Output system. As mentioned earlier all own account construction<sup>7</sup> taking place in any industry is routed to the Construction industry in I/O. Thus the totality of Construction industries under Input-Output system represent all the construction activity taking place in the whole economy irrespective of sector i.e. Business, Non-business (Government or Personal). The number of paid workers in Construction industry is obtained from Estimate of Employees by Province and Industry, 1961-1976 (Catalogue 72-516) and monthly (Catalogue 72-008) for subsequent years up to 1982. For the year 1983 to 1987 data from SEPH are used. Year to year change from Labour Force Survey was used to obtain employment for 1988. The number of paid workers in own account construction of other industries is estimated using the average wage of the parent industry. It is assumed that the own account construction workers in Manufacturing, for example are being paid the average wage prevailing in Manufacturing industry and not the Construction industry. Thus the total number of paid workers in all 9 Construction industries equals the sum of the following:

- (i) Construction industry Business Sector
- (ii) Own account construction Business Sector
- (iii) Construction industry of the Government Sector
- (iv) Own account construction of the Government Sector
- (v) Own account construction of the Personal Sector

Similarly the labour income of all 9 Construction industries is the sum of the labour income of the following:

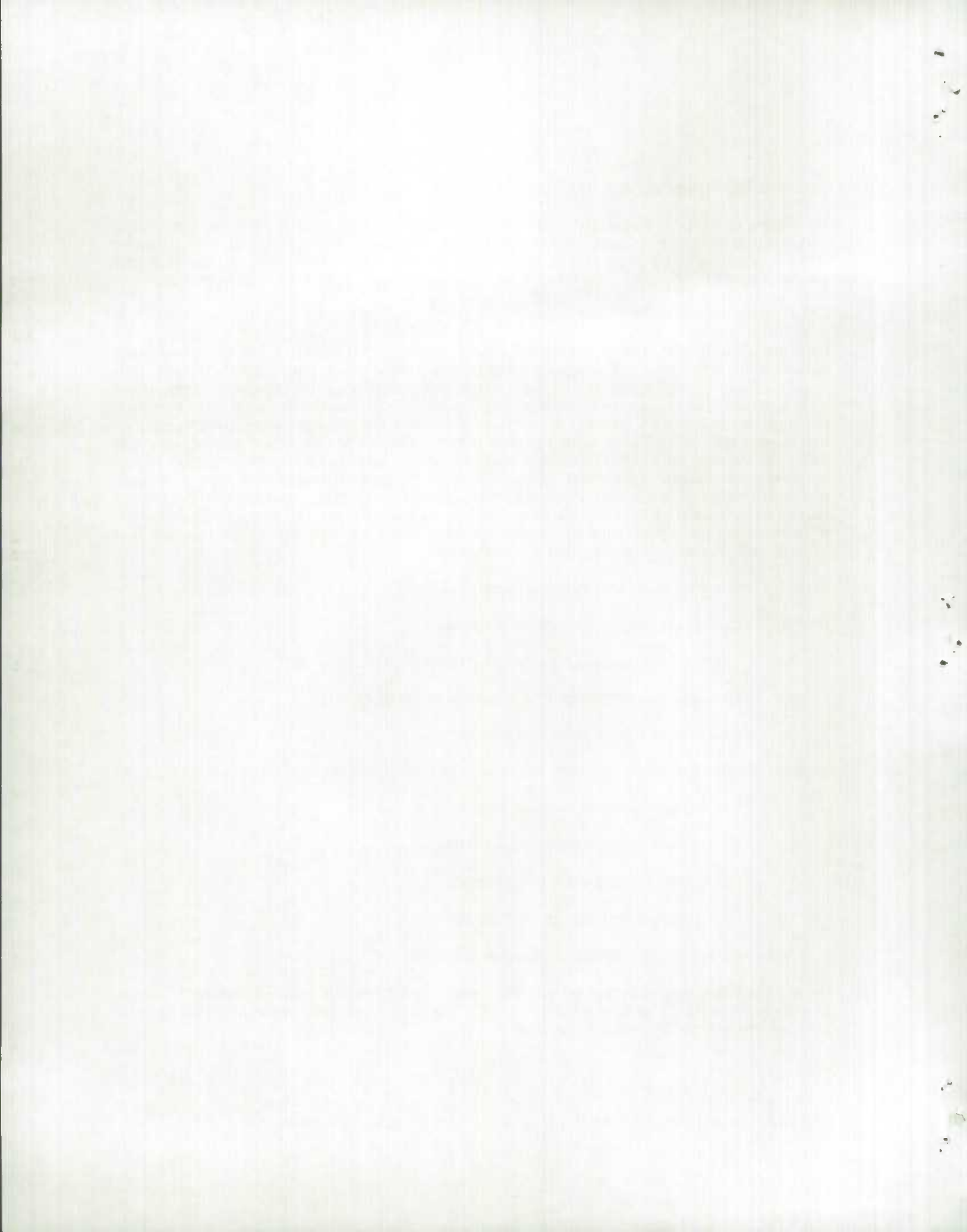
- (i) Construction industry in Business Sector
- (ii) Own account construction Business Sector
- (iii) Construction industry of the Govt. Sector
- (iv) Own account construction of the Govt. Sector
- (v) Own account construction of the Personal Sector

The average wage obtained by dividing total labour income of all nine Construction industries by the total number of paid workers in all Construction industries is then used to allocate the number of paid workers to all nine Input-Output industries in Construction.

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<sup>7</sup> *Construction in Canada (cat. 64-201) for control total of an account construction.*





**Other than paid workers:**

The number of other than paid workers in Construction industry is taken from Labour Force Survey. The allocation to various activities in Construction is effected as follows:

$$\text{Average wage (OTP)} = \frac{\text{Net income unincorporated business (Construction)}}{\text{Number of OTP workers (from LFS)}}$$

This average wage is then used to distribute the number of OTP workers to all nine Input-Output industries in Construction.

**Transportation, Communication and Other utilities (1970 SIC)**

In 1980 SIC the above division is split into following two divisions:

Transportation and Storage Industries Division G (W 162-174).

Communication (W 175-178) and Other utilities (W 179-181) Division H.

These two divisions have 20 industries at the worksheet level of the Input-Output classification (162 to 181). For the years 1961 to 1982 the control total for paid workers comes from the Estimate of Employees by Province and Industry, 1961-76 (Catalogue 72-516) and monthly (Catalogue 72-008) for 1977 to 1982. Some of these industries (163, 171-173, 178-181) were assumed to have no establishments with less than 20 employees and their total was netted out of the control total. The number of paid workers in these industries was either estimated independently or taken from E.S.1. (see below). The balance of the control total was prorated among the remaining industries based on the distribution given against each industry. Beginning in 1983 there is no control total at the divisional level and each industry is estimated independently.

**162 Air transport and services incidental**

1961-1981

E.S.1. index X E.S.1. weight.

1982-1988

Air Carrier operations in Canada (Cat. 51-002).

**163 Rail transport and related services**

1961-1981

Rail transport (Cat. 52-212);

1982-1986

Railway transport in Canada, general statistics (Cat. 52-215);

1987-1988

Rail in Canada (Cat. 52-216).

**164 Water transport and related services**

Absolute values from decennial census of 1961, 1971 and 1981. Percentage change from E.S.1. applied to 1961, 1971 and 1981 values. Following adjustment ratio was applied to years 1962 to 1970.









- 166 Urban transit system industry.  
From 1981 Passenger Bus and Urban Transit Statistics (Catalogue 53-215) is used. 1981 data are linked back to 1961 using percentage change from E.S.1.
- 167 Interurban and rural transit system. From 1981 Passenger Bus and Urban Transit Statistics (Catalogue 53-215). Linked back to 1961 using percent change from E.S.1.
- 168 Taxicab industry
- 1961-1982 Labour Income ÷ Average weekly earnings from E.S.1.
- 1983-1988 Labour Income ÷ Average weekly earnings from SEPH
- 169 Misc. transportation industries  
1961 to 1981  
Employment values are taken from decennial census of 1961, 1971 and 1981. Percentage change from E.S.1. applied to 1961, 1971 and 1981 absolute values. Adjustment ratio (as explained before) applied to years 1962 to 1970; 1972 to 1980.
- 1982-1988  
The average wage from Passenger Bus and Urban Transit (Cat. 53-215) is used to estimate employment for the years 1982 to 1988.
- 170 Other services incidental to transport  
1961-1982  
Decennial census of 1961, 1971 and 1981. Percentage change from E.S.1. applied to 1961, 1971 and 1981 absolute values. Adjustment ratio applied to 1962-1970; 1972-1980 and 1982.
- 1983-1984 SEPH
- 1985-1986 Estimated using average weekly earnings from SEPH.
- 1987-1988 SEPH.
- 171 Highway and bridge maintenance ind.  
1961-1982  
E.S.1. index X E.S.1. weight.
- 1983-1988 SEPH.
- 172 Natural & gas pipeline transp. ind.  
1961-1988  
Gas utilities: Transport and Dist. Systems (Cat. 57-205) for all years.



173	Crude oil and other pipeline transport 1961-1988	Oil Pipe Line Transport (Cat. 55-201) for all years.
174	Storage and warehousing industries	Employment estimated separately for (a) Grain elevators and (b) Other storage. Absolute values from decennial census 1961, 1971 and 1981. Percentage change from E.S.1. index applied to census figures. Adjustment factor (as described before) applied to 1962 to 1970 and 1972 to 1980. The percentage change from Labour Force Survey applied to 1982 absolute values for the years 1983 to 1988.
175	Radio and television broadcasting industries 1961 to 1982 1983 to 1988	E.S.1. weight X E.S.1. Index. Radio and Television Broadcasting (Cat. 56-204).
176	Cable Television Industry 1961 to 1982 1983 to 1988	E.S.1. weight X E.S.1. index. Cable Television (Cat. 56-205).
177	Telecommunication Carriers and other 1961-1982 1983-1988	E.S.1. weight X E.S.1. index. SEPH.
178	Postal service industry 1961-1988	Canada Post Corporation Annual Report 1981 and onwards. Link back to 1961 using year to year change for E.S.1. index.
179	Electric Power Systems industry 1961-1982 1983-1988	E.S.1. index X E.S.1. weight. SEPH.
180	Gas Distribution Systems industry 1961-1982 1983-1988	E.S.1. index X E.S.1. weight. SEPH.





181 Other utility industries NEC

1961-1982

E.S.1. index X E.S.1. weight.

1983-1988

SEPH.

Other than paid workers:

Control total from Labour Force Survey. Industrial breakdown on decennial census for industries 162 to 178. For other utilities (industries 179 to 181) all OTP were allocated to industry 180 (Gas Distribution Systems Industry).

### Trade (W 182-183)

#### Paid workers

The control total for the number of paid workers in Trade is obtained from Estimate of employees. The breakdown of this control total between Retail Trade industries and Wholesale Trade industries is as follows:

The distribution ratio between Retail Trade and Wholesale Trade is available from Labour Force Survey for the years 1975 to 1982 and has been used here. For years back to 1961 different sources have been used and these are enumerated below.

1961 to 1974 The percentage distribution between Retail Trade and Wholesale Trade was available from Census of Merchandising and Services for the years 1961 and 1966. The same distribution is also available from Labour Force Survey (unrevised) from 1966 onwards. The distribution ratio from LFS for 1966 was linked back to 1961 and this ratio was used for the years 1961 to 1966. LFS ratio was also used for the years 1967, 1968 and 1971. For the years 1969 and 1970, the ratio was interpolated between 1971 and 1968 values. For the years 1972 to 1974 LFS (unrevised) ratio was used.

1983-1987 SEPH.

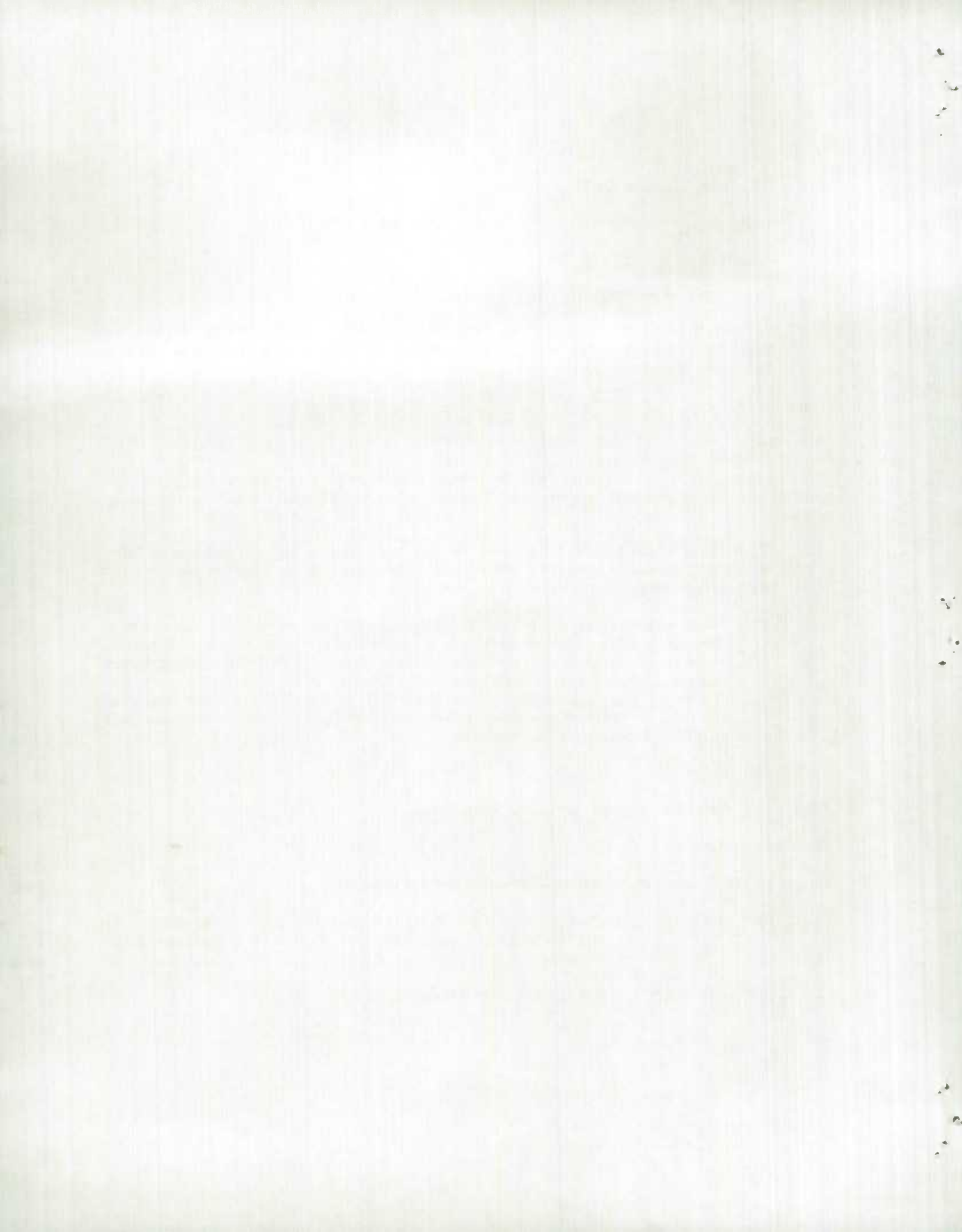
1988 Percentage change from Labour Force Survey.

Other than paid workers:

Control total from Labour Force Survey. Distribution effected as follows:

1961 - 1974 Used constant ratio of 89.11% (average of LFS and Census of merchandising) for Retail Trade and 10.89 for the Wholesale Trade industries.

1975 and onwards: Split of Labour Force Survey is used.



### **Finance, Insurance and Real Estate (W 184-188)**

There are following seven I/O industries in this division. However, the industries 189 and 190 do not have any employment associated with them.

- 184. Banks and Other Deposit Accepting Inst.
- 185. Trust/Deposit Accepting Mortgage Co.
- 186. Credit Unions
- 187. Other Finance and Real Estate Ind.
- 188. Insurance Industries
- 189. Govt. royalties on natural resources
- 190. Owner occupied dwellings

#### **Paid Workers:**

##### 1961-1982

The control total for the number of paid workers for this division comes from Estimate of employees. The sources for the constituent industries vary and are as follows:

#### **184 Bank and Other Deposit Accepting Institutions**

This industry consists of the following establishments:

- (a) Central Bank: The employment is taken from the Annual Report of Bank of Canada.
- (b) Chartered Banks and Other Banking Type Intermediaries and
- (c) Other Deposit Accepting Institutions

Employment is taken from CBA fact book and Canadian Bankers (L. Allen of IPD)<sup>9</sup> up to 1981. This industry also contains Quebec Savings - employment for which is determined using the average salary of chartered banks. For the year 1982 interpolation between 1983 and 1981 is used. (See below).

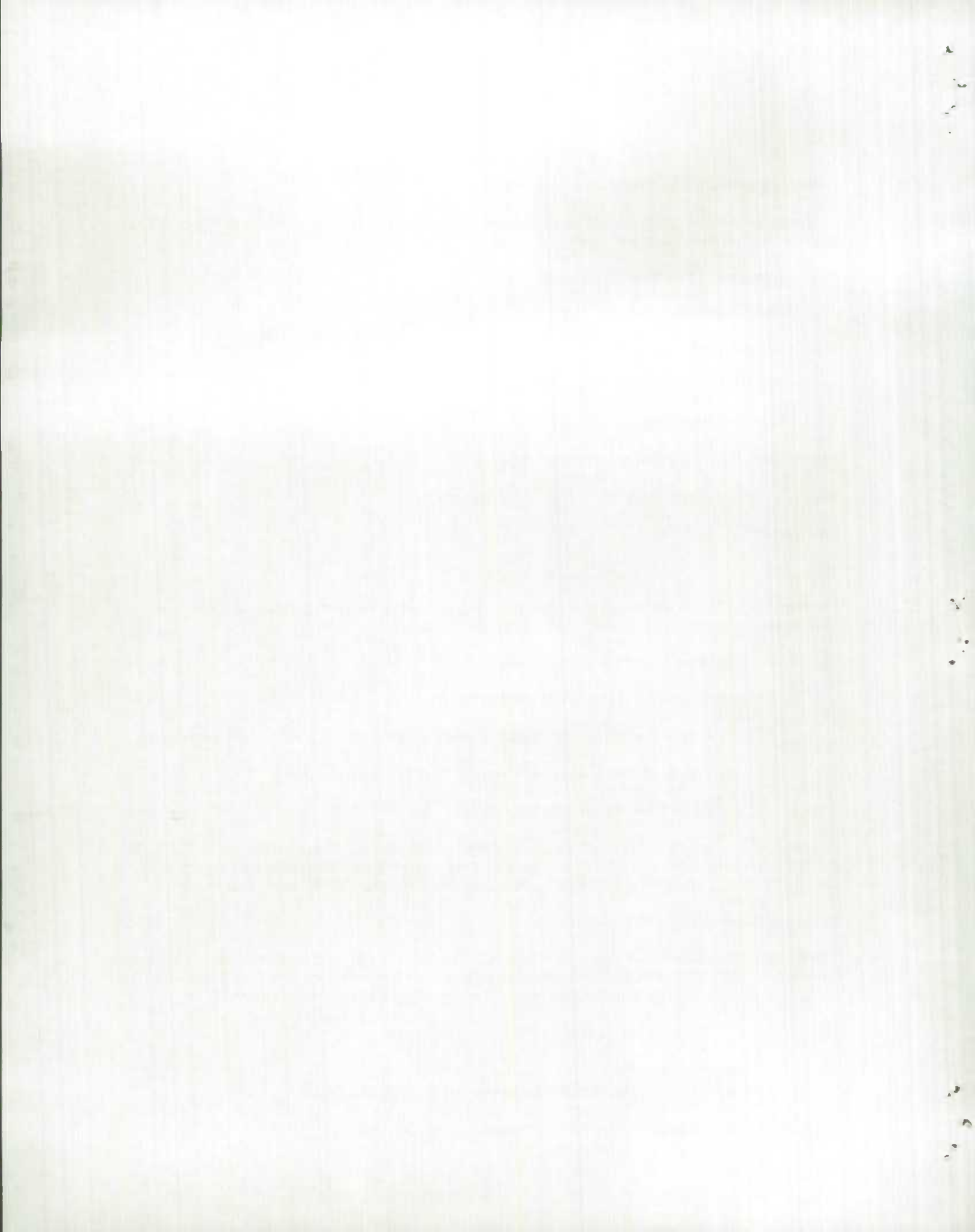
#### **185 Trust/Deposit Accepting Institutions**

This industry includes establishments under Trust Companies (SIC 703) and Deposit Accepting Mortgage Companies<sup>10</sup> (SIC 704). Since this industry used to be part of Other Finance and Real Estate (now ind. W 187) the estimation procedure for employment is given when discussing industry (W 187).

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<sup>9</sup> *Industry Products Division now Industry Measures and Analysis Division*

<sup>10</sup> *Standard Industrial Classification 1980 (Catalogue 12-501E)*



**186 Credit Unions**

The number of paid workers for Credit Unions is taken from a publication Credit Unions (Catalogue 61-209). However, there were difficulties in getting employment from this source after 1975. For the year 1976 to 1981 the number of paid workers in this industry was estimated using the percentage change in compensation per person in FIRE (from productivity programme) and applying it to the average salary of Credit Unions in 1975. Employment for 1982 was interpolated between 1983 and 1981.

**188 Insurance Industries**

The number of paid workers is estimated using E.S.I index and E.S.1. weight for years 1961 to 1982.

**187 Other Finance and Real Estate Industries**

This industry also used to encompass Trust/Deposit Accepting Mortgage Co. in the previous I/O set-up. The number of paid workers in this industry is determined by residual i.e. Control total of paid workers from Estimate of employees.

less: number of paid workers in Chartered Banks and Credit Unions

less: number of paid workers in Insurance Carriers

Equals: number of paid workers in Other Finance and Real Estate industries (including Trust/Deposit Accepting Mortgage Co.).

From the year 1971 paid workers in the industry 'Real Estate Developers' are transferred to the Construction industries.

1983-1988

The number of paid workers for all the above industries is taken from SEPH.

Other than paid workers:

Control total comes from Labour Force Survey. All are allocated to Other Finance and Real Estate Ind. (W 187).

**Community, Business and Personal Services (1970 SIC; In 1980 SIC It is split into many divisions)  
(W 191-209)**

There are 19 Input-Output industries in this division. The control total for the number of paid workers up to the year 1981, comes from Estimate of employees. The I/O industries included in this division are:

- 191. Computer and Related Services
- 192. Professional Business Services
- 193. Advertising Services
- 194. Miscellaneous Business Services
- 195. Educational Service Industries

101	Appendix
102	Notes on the text
103	Index
104	References
105	Tables
106	Figures
107	Maps
108	Photographs
109	Diagrams
110	Flowcharts
111	Forms
112	Tables
113	Figures
114	Maps
115	Photographs
116	Diagrams
117	Flowcharts
118	Forms
119	Tables
120	Figures
121	Maps
122	Photographs
123	Diagrams
124	Flowcharts
125	Forms
126	Tables
127	Figures
128	Maps
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131	Flowcharts
132	Forms
133	Tables
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185	Photographs
186	Diagrams
187	Flowcharts
188	Forms
189	Tables
190	Figures
191	Maps
192	Photographs
193	Diagrams
194	Flowcharts
195	Forms
196	Tables
197	Figures
198	Maps
199	Photographs
200	Diagrams

Table 1.1: Summary of the data presented in the text. The table shows the distribution of the data across the different categories. The total number of observations is 1000. The data is divided into 10 groups, each with 100 observations. The distribution is as follows:

Category	Number of Observations
1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100
Total	1000



- 196. Hospitals
- 197. Homes for Personal and Nursing Care
- 198. Other Health and Social Services
- 199. Accommodation Service Industries
- 200. Food and Beverage Service Industries
- 201. Motion Picture and Video Prod. Distribution
- 202. Motion Picture Exhibition
- 203. Theatre, Sports and Rec. Services
- 204. Race Tracks and Gambling Operations
- 205. Laundries and Cleaners
- 206. Other Personal Services
- 207. Photographers
- 208. Bus. Ass. /Mach. Car Leasing/ Other Services
- 209. Other Repair and Maintenance Services

In the above list of Input-Output industries, the industries 195 and 196 were included in Non-commercial CBP in Estimate of employees. The number of paid workers in industry 195 (Educational service industries) is taken from the Estimate of employees up to 1982 and SEPH from 1983 and for industry 196 (Hospitals) from Hospital Annual Statistics (Cat. 83-232) from 1961. The allocation of number of paid workers in Commercial CBP is effected as follows:

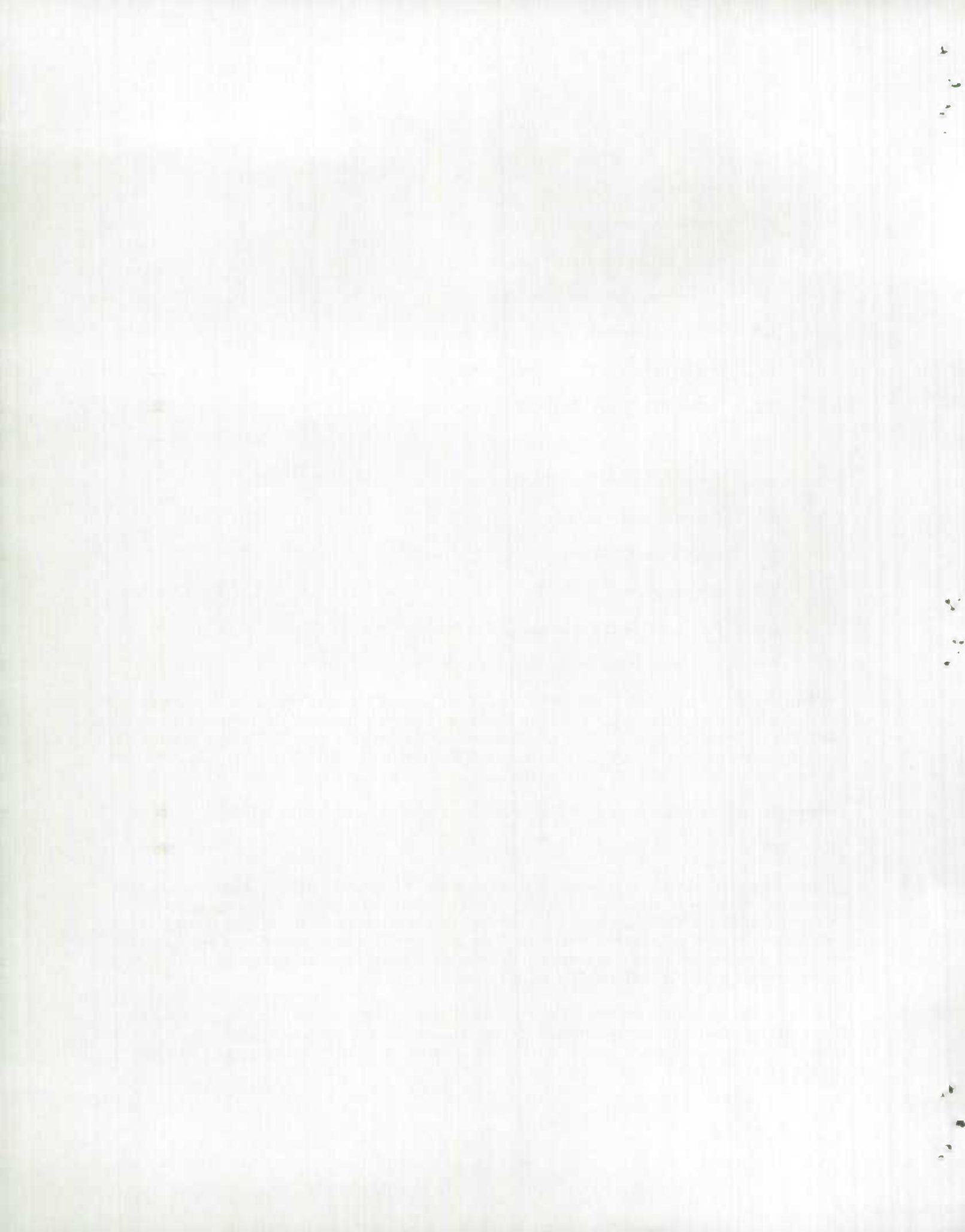
Homes for Personal and Nursing Care (197) and Other Health and Social Services (198)

1961-1982

The sources for the number of paid workers varies over time. For the year 1961 the absolute values were taken from the decennial census where it was grouped with Welfare organizations. For the years 1975 to 1982 the percentage distribution from Labour Force Survey was available and was used to distribute the number of paid workers between Other Health Services and Welfare organizations. For the years 1962 to 1974 the percentage share of other Health Services and Welfare organizations was interpolated using the percentage shares in 1961 and 1975 as end points.

For the remaining industries the total of Commercial CBP less industries 197 and 198 was prorated among the remaining industries based on distribution of census years and interpolated for intercensal years except industry 207 (Photographers) where average weekly earnings from ES-1 were used to estimate employment.





For the year 1983 and onwards, data from SEPH were used for most of the industries. The detailed breakdown of the sources of data is given below:

**Industry No:**

191	Computer and Related	SEPH from 1983. Percent change from LFS for 1982.
192	Professional Business Services	SEPH from 1983. Interpolation 1982.
193	Advertising Services	SEPH from 1983. Interpolation for 1982.
194	Miscellaneous Business Services	SEPH for 1983. Interpolation 1982.
197	Homes for Personal and Nursing Care	SEPH from 1983.
198	Other Health and Social Services	SEPH from 1983.
199	Accommodation Service Industries	SEPH from 1983. Interpolation in 1982.
200	Food and Beverage Service	SEPH from 1983. Industries Interpolation in 1982
201	Motion Picture & Video Prod. Dist.	SEPH from 1983. Industries Interpolation in 1982
202	Motion Picture Exhibition	SEPH from 1983. Industries Interpolation in 1982
203	Theatre, Sports and Rec. Services	SEPH from 1983. Industries Interpolation in 1982
204	Race Tracks and Gambling Operations	SEPH from 1983. Industries Interpolation in 1982
205	Laundries and Cleaners	SEPH from 1983. Industries Interpolation in 1982
206	Other Personal Services	SEPH from 1983. Industries Interpolation in 1982
207	Photographers	SEPH from 1983. Industries Interpolation in 1982
208	Bus. Ass./mach. Car Leasing/Other Service	SEPH from 1983. Industries Interpolation in 1982
209	Other Repair and Maintenance Services	SEPH from 1983. Industries Interpolation in 1982

**Other than paid workers:**

Control total of other than paid workers is taken from Labour Force Survey. Distribution for all industries except industries 197 and 198 is based on decennial census. Interpolation for non-censal years. For industries 197 and 198 the number of self employed were obtained from Taxation Statistics (Cat. no. RV 44-1990) for 1988 and publication of the same title back to 1961.



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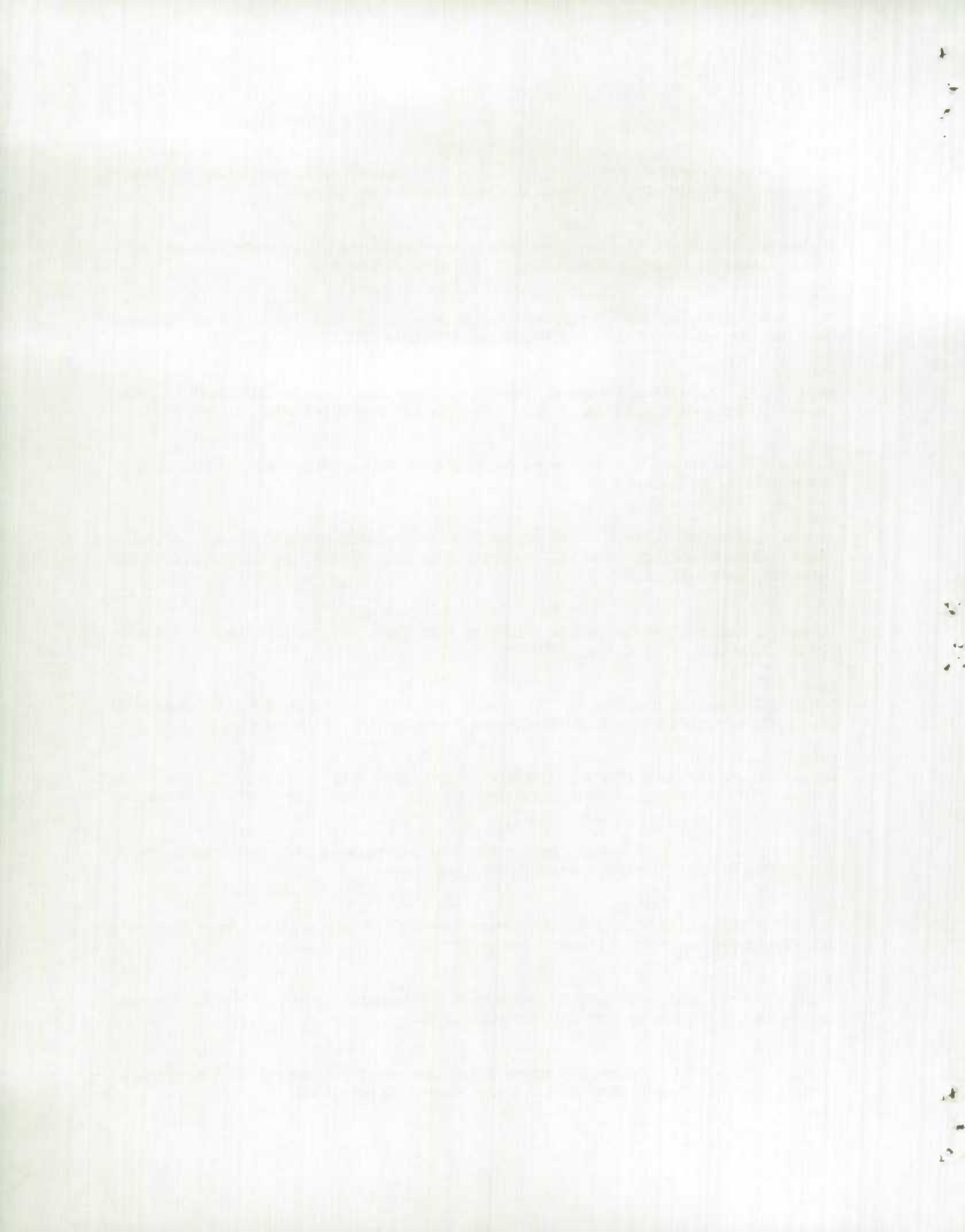
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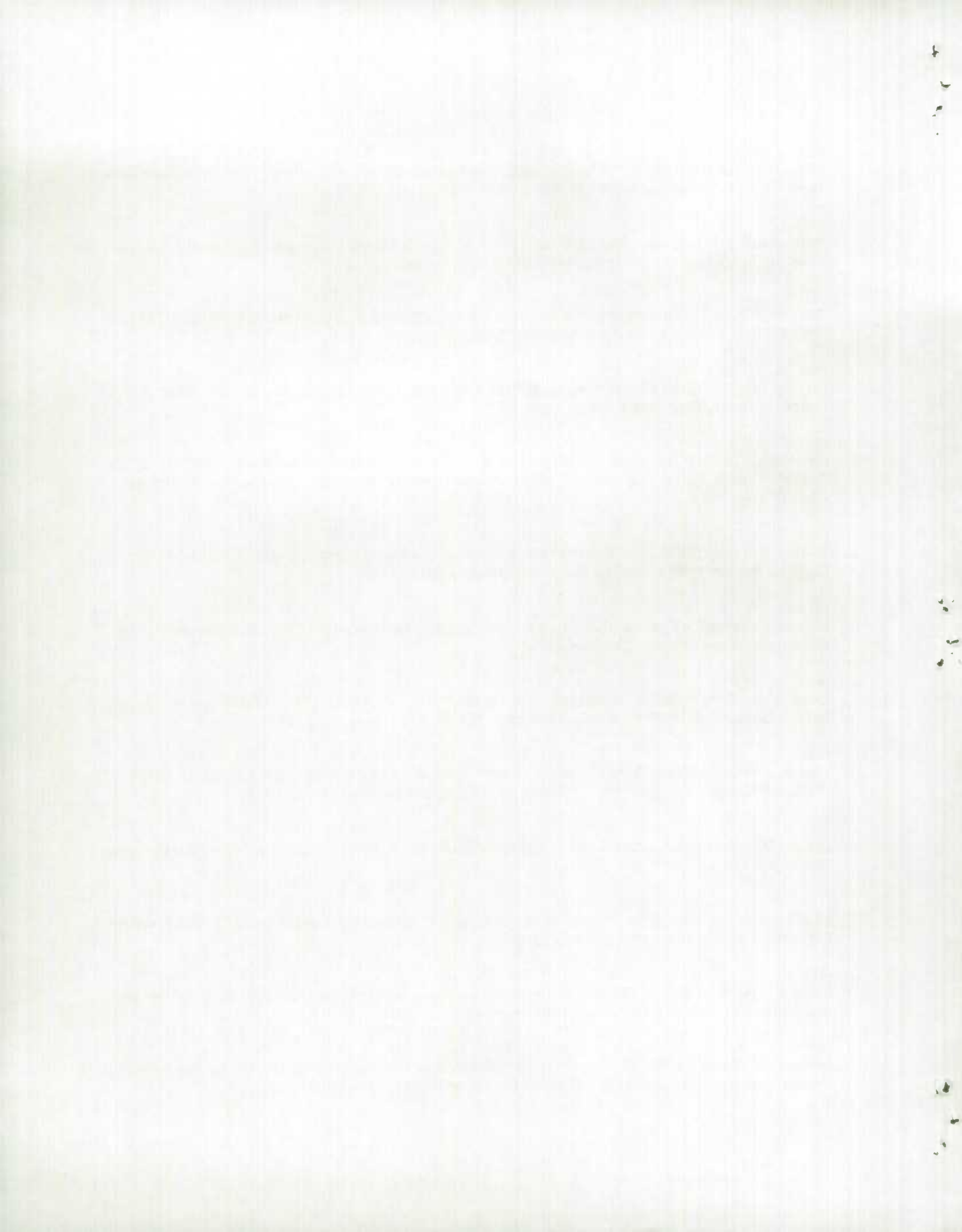
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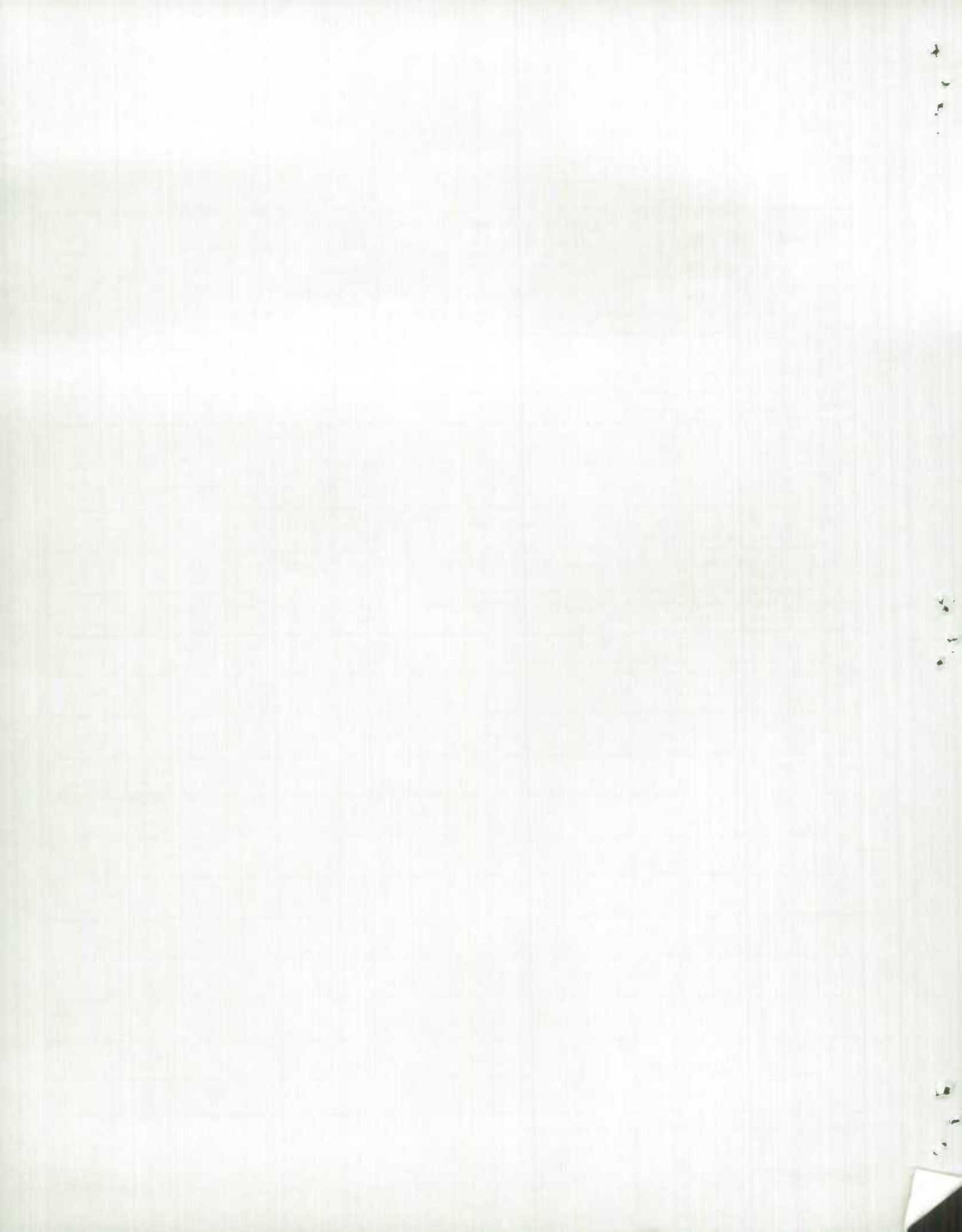
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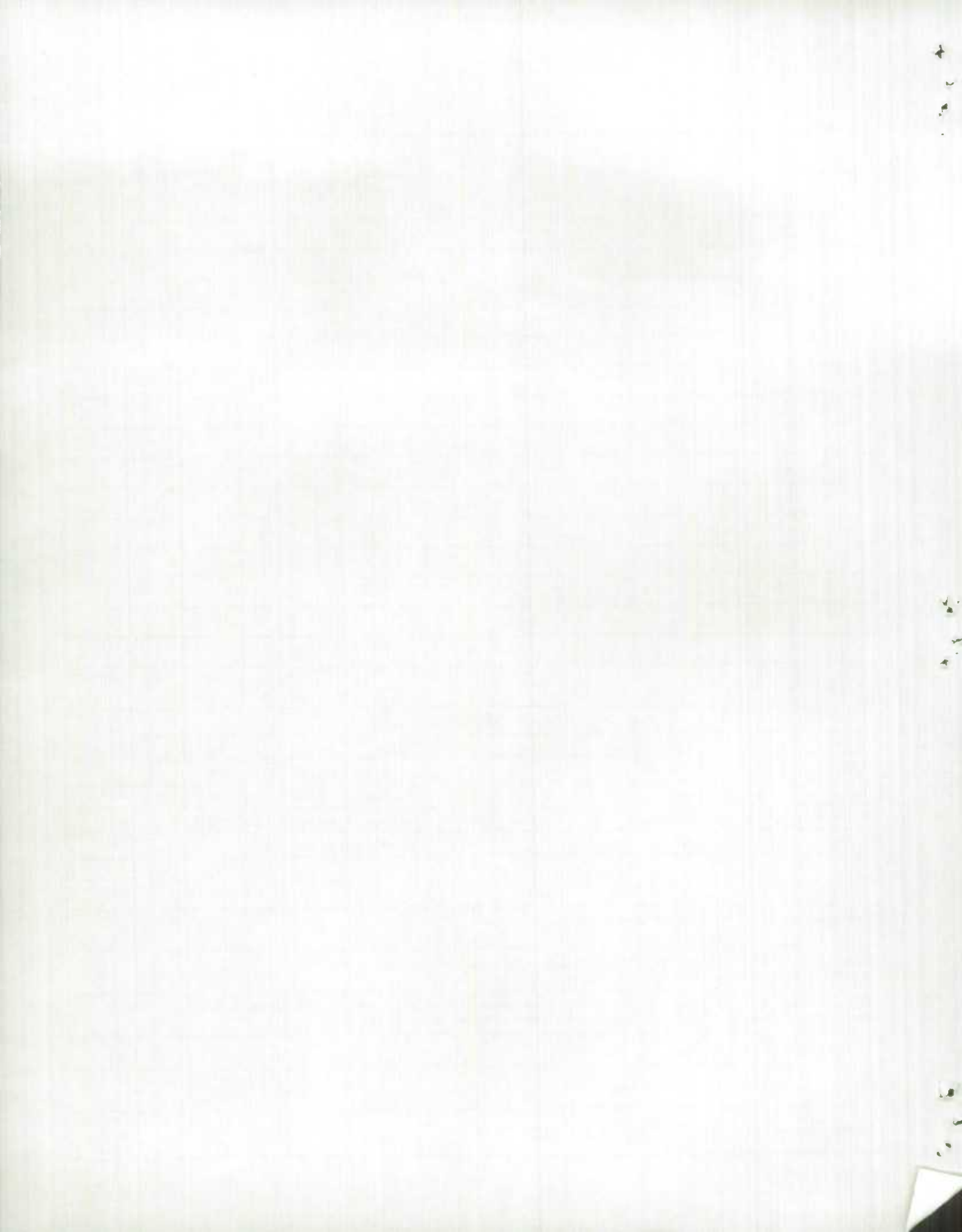
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