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Calculating Incidence Indexes with information obtained from Working Population Survey (E.P.A.)

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Abstract

In this paper we study the evolution of accidents at the workplace in the last few years in Spain. We pay special attention to methodological problems constructing Incidence Indexes that shows the relationship between "industrial accident" and "population exposed at danger". The main problem is to get, using statistical sources, a quantity that measures the number of workers who can have an accident at the workplace. The main interest of this study is the "industrial accident" that causes "to be off sick", calculating general incidence indexes and incidence indexes for the main business sectors: agriculture, industry, building and services.

Keywords: Incidence indexes, industrial accident, working population survey

AMS Classification:62P25

1 Work hazards

Data on work hazards in Spain refer to work accidents proper, occupational diseases and route accidents, and are released in detail by the Ministry of Work and Social Matters in their Statistics. Accidents differ on whether they happen during work hours, either in the working place or during transfer, or whether they happen on the route to or from work, in which case they are referred to as route accidents. In this paper, we shall centre our study on the accidents which have occurred within the working place in the past years, precisely on those which the worker's sick leave.

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2 Methodological problems in the building of incidence indexes

One should keep in mind that data on accidents are given in absolute terms, which leads to a situation where the real evolution of work hazards is masked whenever the number of employees varies. Therefore one has to link both variables by building an incidence index that measures the ratio of hazards per worker.

Incidence Index = (Number of accidents/ Number of workers) * 1000

First and intuitively, the number of workers considered will be the number of busy workers given out by the Working Population Survey (E.P.A.). Nevertheless, the busy population is not a valid denominator since information on work accidents does not take exactly into consideration the number of accidents suffered by the entire population, as we shall see later on, only part of it is concerned by work hazards. Unfortunately, some studies ignore this consideration and elaborate indexes that not reflect the real evolution of work hazards. As a consequence, all the conclusions and decisions based on such information lack of sufficient value.

The definition of work hazards which, according to current legislation is "all form corporal accident which the worker may undergo while working for someone, as a consequence of such work"[1] conditions the choice of a valid denominator for the building of corresponding incidence indexes.

The only workers who are compelled to produce official documents and from whom it is possible to obtain data on work accidents and work illnesses are those who benefit from an insurance for work accidents and occupational diseases, in other words the workers on General Social Security, Special Security for Workers in the Mining and Coal branches, for Farmers and for Sea-Workers. This is how data on work hazards given out by the Ministry of Work and Social Matters refer to accidents happened to workers on other security schemes except those belonging to the Special system of Domestic Employees, and the self-employed within the Special scheme of Farmers and Sea-Workers.

The following propositions refer to the building of incidence indexes:

1. The Ministry of Work and Social Matters defines the incidence index as the number of accidents whit leave that have occurred during work hours, for every 1000 workers at risk, and they choose the year average of workers affiliated to the schemes of Social Security that cover work accidents as the number of workers at risk. Nonetheless, a certain number of affiliated workers that are out of work may find themselves in a situation of transitory working inability (I.L.T.) or affected by a dispute over job-control.

[1] General law of Social Security, art. 115.

The workers in situation of (I.L.T) as well as the workers in conflict because of job-control who are made redundant are not exposed to the mentioned risk and yet are counted in when building the index since the aforementioned index offers a lesser value than the real one. In order to reach more precision, one should eliminate this group of workers[2] but this would not account for the affiliated workers who have not been at work under other circumstances such as holidays or permission.

In Chart 1 we present the incidence indexes given out by the Ministry.

CHART 1. INCIDENCE INDEXES (for every thousand workers) [3] .

Years	Incidence Indexes
1988	62,5
1989	66,2
1990	68,6
1991	66,9
1992	61,6
1993	54,6
1994	56,1
1995	60,6
1996	61,9
1997	64,9
1998	68,3
1999	74,4

2. In most studies of work hazards[4] [5] [6] [7] authors choose as denominator in the building of de incidence indexes the total number of salaried employees given out by the Working Population Survey (E.P.A.).

   As seems from the methodology of E.P.A., wage-earners are the "people, from the age of 16, actually busy and who had salaried job during the referred week", and who rank at the same time within the following classification:

[2]General Office of Treasurer of Social Security. Work Statistics of Ministry of Work and Social Matters (M.T.A.S.).

[3]Work Statistics of Ministry of Work and Social Matters (M.T.A.S.). Web: www.mtas.es

[4]Boix, P., Orts E., López M.J. y Rodrigo, F., "Trabajo temporal y siniestralidad laboral en España en el período 1988-1995", Cuadernos de Relaciones Laborales, 1997, núm. 11, pp. 275-319.

[5]Moncada Lluís, S. y Artazcoz Lazcano, L., "Los accidentes de trabajo en España: un gran problema, mayor olvido", Quadern CAPS, 1992, núm. 17, pp. 63-79.

[6]Carcoba, A.,"En seis años se han duplicado los accidentes de trabajo". Salud Laboral, pp. 44-46.

[7]Castejón Vilella, E., "Accidentalidad Laboral en España. Algunos resultados de la explotación del nuevo parte de accidente de trabajo". Salud y Trabajo, 1992, núm. 90, pp. 4-11.

- "wage-earners who, during the referred week have worked at least for one hour, for either a salary or some other form of retribution, in cash or kind".

- "wage-earners who had a job which they had worked but from which they were missing during the referred week for a reason that, once disappeared, allowed them to return to work, i.e. a strong link is maintained between job and worker". Among most common causes for not working during the referred week, one can count holidays, working inability, work conflicts or job regulation.

So, when global data on the number of wage-earners are used as the denominator in the making of index, it is mistaken as, that way, the second type of salaried employees are also counted in: we are referring to the people who are not exposed to risk as they are not actually on the working post, and so are not likely to risk any work hazard. Therefore and in order to calculate the incidence index we are only interested in the first group of mentioned salaried employees[8] .

Furthermore, when considering only the number of salaried employees, one excludes the self-employed who benefit fron a cover of work-hazard.

3. Therefore, if one wants to use the information provided by E.P.A., the denominator should count in the wage-earners of the first group and count out the ones who belong to the Special Security System of Domestic Employees[9] , since these do not benefit from a cover of work hazards. To this figure one should add the self-employed of the Farming branch and take good care to select the yearly average of those who were actually at work during the referred week[10]. Keeping in mind the mentioned considerations, the figures of workers at risk (yearly average in thousands) that must be used in the making of a general incidence indexes are, according to the present proposition the ones in Chart 2.

   With the use of the total number of work accidents that have led to leave of absence in every year considered, one gets the following incidence indexes for every thousand workers (Chart 2):

[8]Data appear in the chart on "Ocupados que han trabajado en la semana de referencia por situación profesional y rama de actividad"; they are released for three months and so corresponding yearly average should be calculated. Working Population Survey (E.P.A.). Detailed results. INE. Madrid. Web: www.ine.es.

[9]See note 8.

[10]See note 8.

CHART 2. INCIDENCE INDEXES (personal development)

Years	Workers at Risks	Number of Accidents	Incidence Indexes
1988	8531,7	583443	68,39
1989	9016,4	651576	72,27
1990	9312,2	696703	74,82
1991	9312,4	688535	73,94
1992	8956,9	628640	70,18
1993	8548,1	534606	62,54
1994	8528,1	542818	63,65
1995	8789,4	599069	68,16
1996	9072	622095	68,57
1997	9440,4	677138	71,73
1998	9876,6	753396	76,28
1999	10260,2	869161	84,71

CHART 3. INCIDENCE INDEXES ACCORDING TO THE CHOSEN METHODOLOGY.

Years	Workers at Risks	Number of Accidents	Incidence Indexes
1988	68,39	62,5	59,48
1989	72,27	66,2	67,15
1990	74,82	68,6	69,9
1991	73,94	66,9	69,12
1992	70,18	61,6	65,32
1993	62,54	54,6	58,08
1994	63,65	56,1	59,66
1995	68,16	60,06	63,67
1996	68,57	61,9	
1997	71,73	64,9	
1998	76,28	68,3	
1999	84,71	74,4	

Chart 3 collects the various incidence indexes according to the chosen methodology: the indexes released by the Ministry of Work and Social Matters[11] , the indexes,

[11]See note 3.

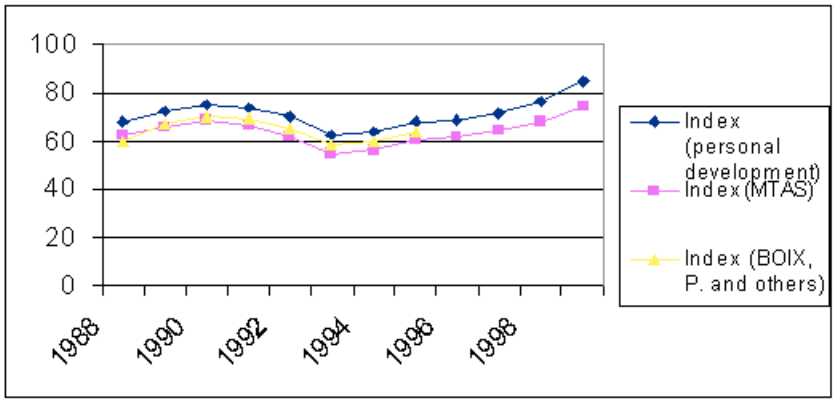

Figure 1: Incidence indexes according to the chosen methodology.

usually slightly superior to the indexes from the Ministry, given out by Boix, P. And others in their paper[12] , and the indexes here offered, which are noticeably higher than previous ones.

To finish, using the proposed methodology, we make out the incidence indexes in the main sectors of production (Chart 4). These indexes may be compared to those released by the Ministry of Work and Social Matters (Chart 5).

CHART 4. INCIDENCE INDEXES FOR THE MAIN BUSINESS SECTORS (personal development).

Years	Agriculture	Industry	Building	Services
1988	28,62	120,48	141,35	40,55
1989	28,16	125,53	148,46	42,53
1990	28,88	125,89	151,62	45,42
1991	28,70	125,29	147,28	45,34
1992	28,70	118,98	135,12	44,74
1993	28,33	97,04	139,06	42,85
1994	32,27	100,04	143	42,99
1995	38,02	106,53	153,43	45,13
1996	38,02	103,32	155,61	46,68
1997	44,99	104,74	159,68	49,09
1998	47,46	104,95	176,77	52,51
1999	49,57	116,10	197,1	57,84

[12]See note 4

CHART 5. INCIDENCE INDEXES FOR THE MAIN BUSINESS SECTORS(M.T.A.S.)[13] .

Years	Agriculture	Industry	Building	Services
1988	27,4	109,7	129,5	35,9
1989	25,8	116,5	131,2	39,2
1990	26,1	119,2	138,5	41,2
1991	24,9	116,7	136,7	40,7
1992	25	108,6	121,2	38,7
1993	24,3	88,7	128,9	36,5
1994	27,7	92,8	135,3	36,9
1995	30,6	100	151,6	39,1
1996	31,1	99,5	158,7	41,2
1997	36,3	103,8	164	43
1998	38,1	106,7	174,9	45,1
1999	37,9	115,6	187,9	48,8

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