

DESCRIPTIVE ASSESSMENT OF LEAD EXPOSURE RISK IN ITALY: STRUCTURE OF PRODUCTION AND COMPENSATED PATHOLOGIES

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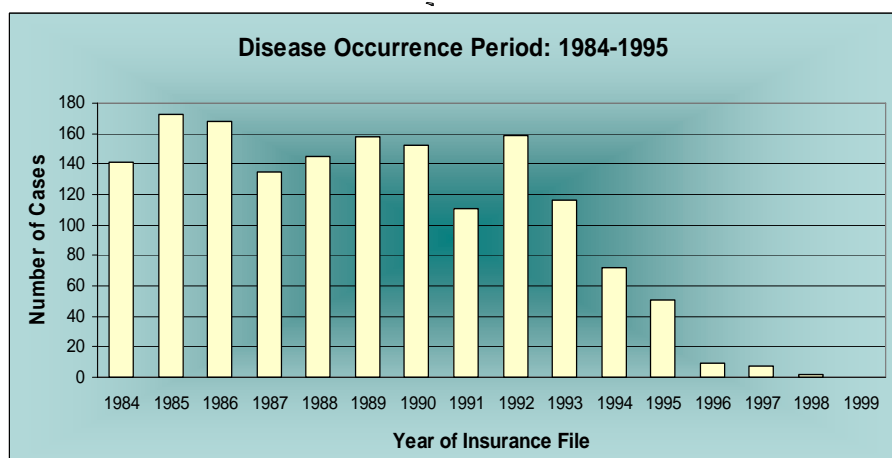
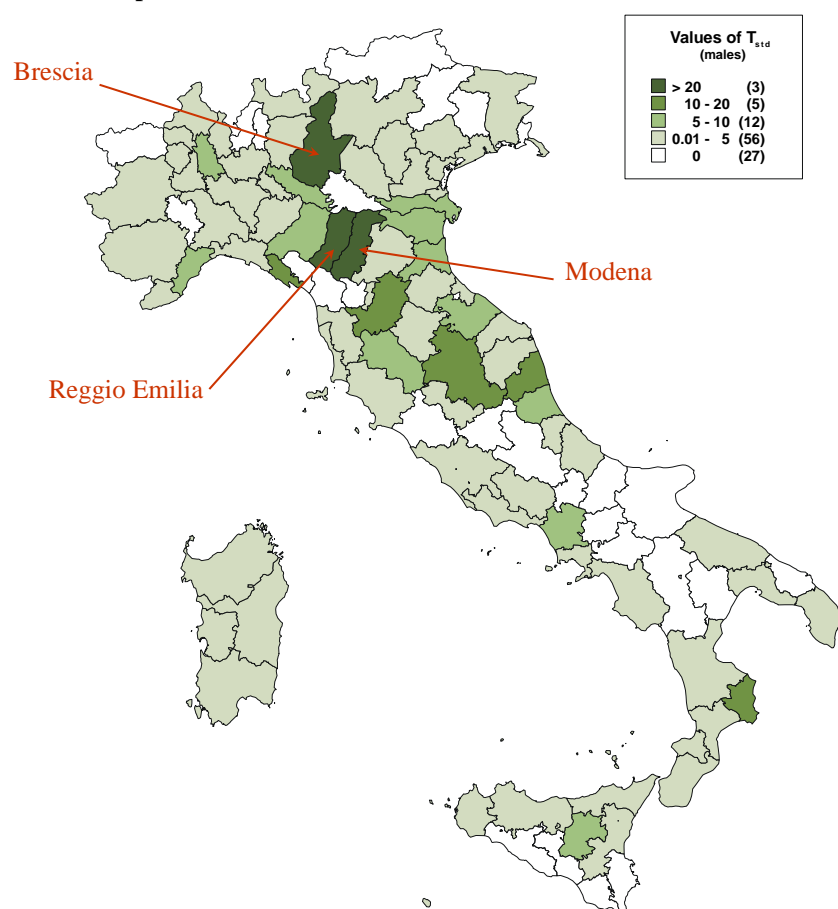
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Aim: This study intends to describe the lead exposure risk in Italy. For this purpose, a database of industries whose activity involves the use of lead during the industrial process has been set up. The structure of production and the number of workers, resulting from the files, have been estimated. In addition, to provide a measure of incidence of occupational pathologies caused by lead, insurance data have been processed.

Methods: The database of industries using lead has been set up through a record linkage procedure among insurance and administrative archives (e.g. INFOCAMERE, INPS, ISTAT) and on the basis of the Italian Legislative Decree 277/1991. The different classifications of economic activities included in the database have been standardized and encoded according to the ISTAT ATECO91. As a consequence the number of firms and workers employed (divided in white and blue collars) have been retrieved and mapped by Italian regions referring to the year 1995 (see figure 1).

The incidence of professional disease has been estimated on the basis of compensated cases for pathology caused by lead, acquired by the Italian National Institute for Insurance of Occupational Accidents (INAIL). They refer to all compensations from 1984 to 1999 and are classified by gender and age. This set of data provides an exhaustive picture of the occurrence of pathology related to lead exposure for the period between 1984 and 1995 (see graph 1). The annual incidence rates have been standardized by age with the direct method, comparing the number of compensated cases with the resident population (reference: ISTAT census 1991) by province (see figure 2).

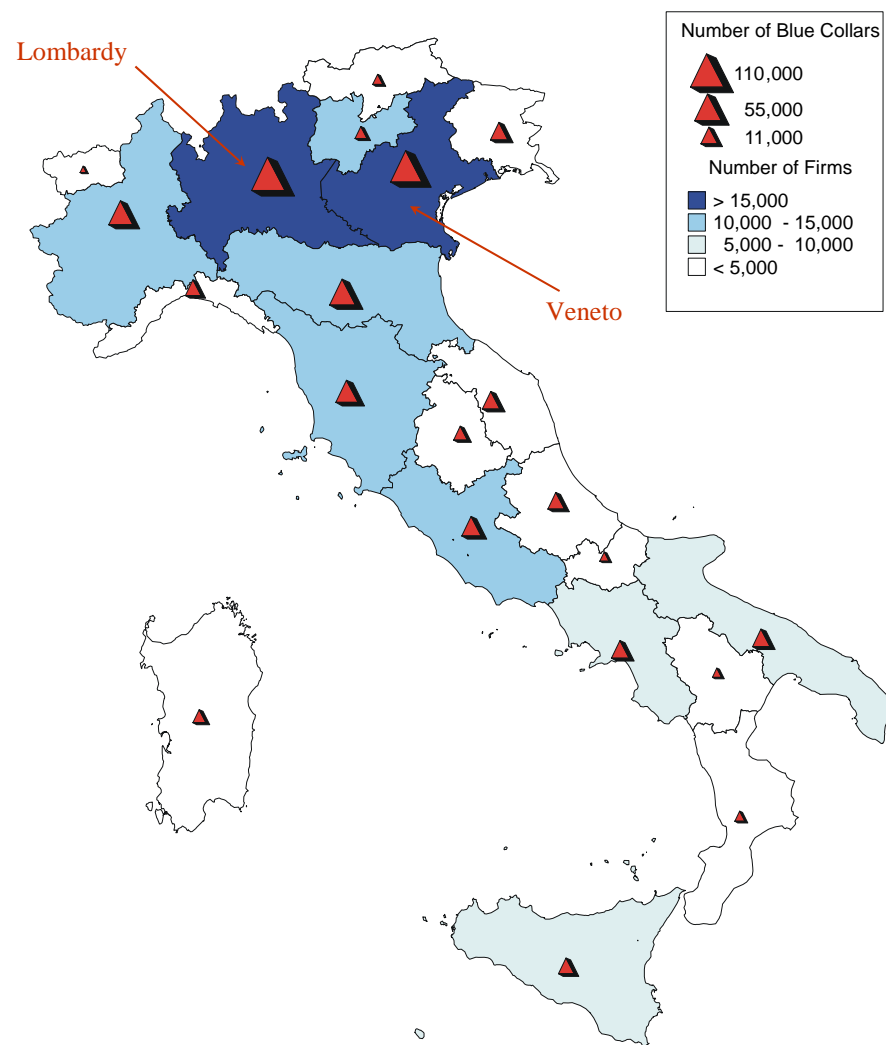
Figure 2: Standardized Incidence Rate (T_{std}) by provinces for diseases related to lead exposure occurred between 1984 and 1995. Males.



Graph 1

Conclusions: Identifying areas with high concentration of pathologies enables to evaluate the occupational risk distribution of diseases related to lead exposure in Italy. Building up a database of industries helps to determine the location of firms using lead in their production cycle. The combination of the two datasets may be utilized to identify priorities of intervention on the territory and to plan appropriate strategies of prevention.

Figure 1: Database of Industries using Lead, Year 1995. Regional Distribution of Firms and Blue Collars.



Results: Areas with values significantly higher than the average have been well identified with a graphical representation of the results.

The number of **Italian industries** that probably use lead amounts, in 1995, to 162,411 firms with 794,937 workers (358,188 white collars and 436,749 blue collars). The Italian regions with the highest concentration are: **Lombardy** (36,666 firms - 107,360 blue collars) and **Veneto** (17,460 firms - 88,143 blue collars). In table 1 are listed only those economic activities that include a number of industries greater than 500. The economic activities are classified according to the NACE rev. 1 of 1993.

Concerning **diseases** caused by lead exposure, **Modena** is the province with the greatest number of compensations. In particular, from 1984 to 1995, the detected pathologies are 386 for males (106.7 per 1,000,000 residents) and 195 for females (56.5 per 1,000,000 residents). Globally in Italy these rates are respectively 3.9 for males (1,280 cases) and 0.9 for females (319 cases). A high number of cases result also for the provinces of **Reggio Emilia** and Perugia (males and females), **Brescia** (only males).

Table 1: Number of Industries by Economic Activities.

NACE93	Economic Activities	N°
45.33.0	Plumbing	51,279
45.44.0	Painting and glazing	32,968
28.75.6	Manufact. and repairing of fabricated iron, copper and other metal artifacts	25,271
22.22.0	Printing n.e.c.	14,112
25.24.0	Manufacture of other plastic products	7,344
26.21.0	Manufacture of ceramic household and ornamental articles	4,000
28.75.3	Manufacture of other fabricated metal articles	3,341
26.12.0	Shaping and processing of flat glass	3,137
25.13.0	Manufacture of other rubber products	1,515
24.16.0	Manufacture of plastics in primary forms	1,512
24.30.0	Manufact. of paints, varnishes and similar coatings, printing ink and mastics	1,409
24.52.0	Manufacture of perfumes and toilet preparations	1,397
25.22.0	Manufacture of plastic packing goods	1,320
35.12.0	Building and repairing of pleasure and sporting boats	1,307
35.11.3	Dockyards for repairing of ships	977
26.30.0	Manufacture of ceramic tiles and flags	924
25.23.0	Manufacture of builders' ware of plastic	829
26.15.2	Shaping and processing of handmade and blown glass	719
27.10.0	Manufacture of basic iron and steel and of ferro-alloys (ECSC)	697
25.21.0	Manufacture of plastic plates, sheets, tubes and profiles	676
37.10.0	Recycling of metal waste and scrap	615