AIR POLLUTION AND HEALTH: STUDY OF CITIZENS' ATTITUDES AND BEHAVIOURS USING MULTIPLE SOURCES.

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INTRODUCTION

Air pollution represents the largest single environmental health risk in Europe and causes tens of thousands of premature deaths each year in Italy. The citizens' awareness on this issue and their adoption of pro-environmental actions can play crucial role to reduce air pollution. In recent years, social media has become a major communication channel in our society, and subsequently, the analysis of web search queries, of social network and of online newspapers can help to understand the public perception and the change in awareness on different environmental issues. The aim of this study was to investigate the people's awareness towards air pollution and their positive behaviors, following a high air pollution peak (of PM10 in particular) that occurred in Italy from 2015-12-01 to 2016-01-31. Then, after some weeks from this peak period, that caused alarm in many cities and was widely reported by mass media, we carried out a quantitative and qualitative analysis on several media and a questionnaire survey.

MEDIA COVERAGE ANALYSIS

From March 2014 to March 2016, we collected data on PM10 exceedances (limit value: 50 µg/m³) from routine measurements performed by the Environmental Protection of Tuscany Region, ARPAT. For the same period we performed an analysis on internet search query data from Google AdWords, on tweets from Twitter and on articles from two national daily newspapers ("Corriere della Sera" and "La Repubblica"), and two local daily newspaper ("La Nazione" and "Il Tirreno"). For all analysis we used the following search criteria: i) keyword 'smog', ii) data range 'from March 2014 to March 2016', iii) and geographic location 'Italy'.
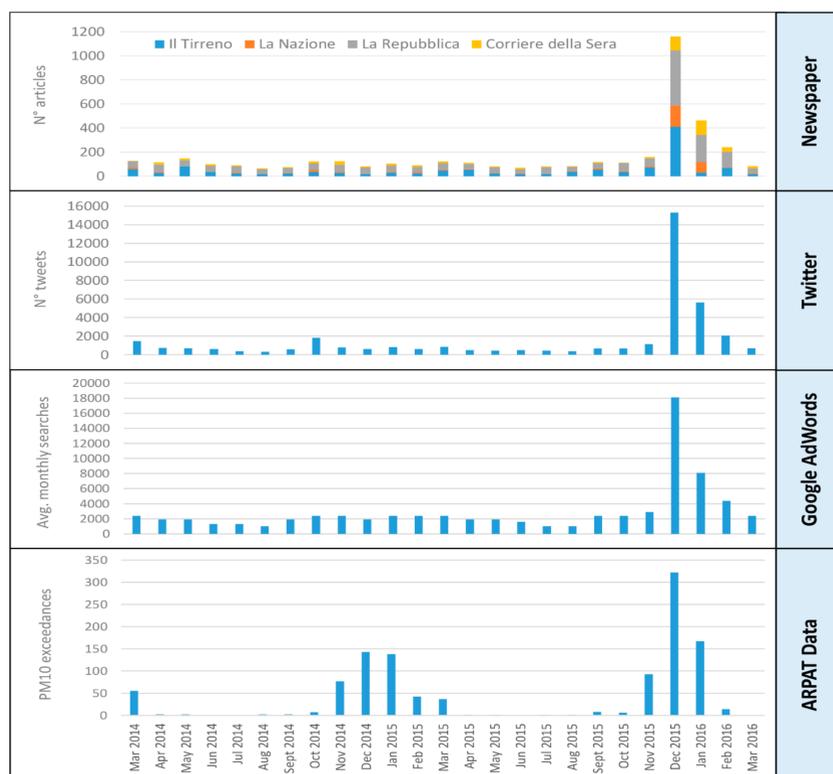
QUALITATIVE CONTENT ANALYSIS

In the peak period, from December 2015 to February 2016, we performed a systematic search using the keyword "smog" into two local daily newspapers ("La Nazione" and "Il Tirreno"). The online articles were gathered using NCapture, in order to perform a qualitative content analysis using an inductive approach. The articles obtained were imported in QSR NVivo 11 Plus qualitative software and they were subjected to a selection process Afterwards, in the process of analysis, the articles were re-read multiple times before being coded in NVivo in order to create the nodes and a categorical framework.
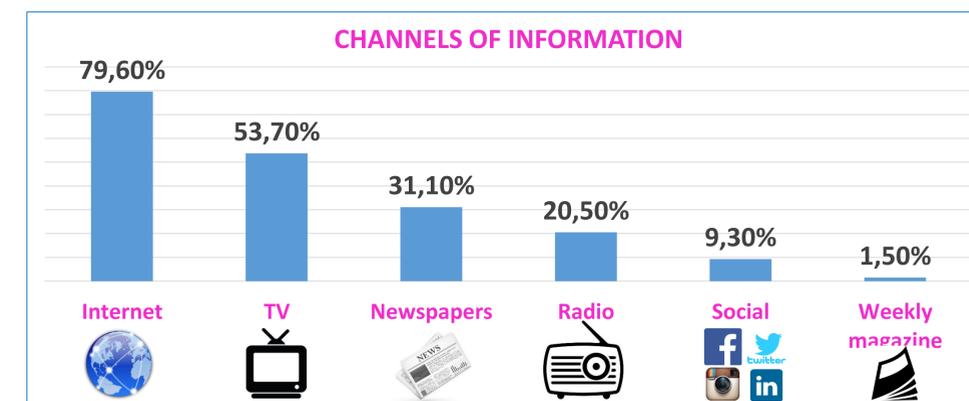

Name of category	N° sources (%)	N° references (%)
PM10 exceedances	105 (53.0)	139 (23.0)
Ordinances on air pollution control	102 (51.5)	158 (26.1)
Negative comments on ordinances	48 (24.2)	68 (11.2)
Air quality planning	36 (18.2)	48 (7.9)
Main causes of air pollution	33 (16.7)	37 (6.1)
Need for structural interventions	32 (16.2)	43 (7.1)
Citizens Associations	27 (13.6)	35 (5.8)
Health effects	25 (12.6)	36 (5.9)
Positive behaviours	17 (8.6)	27 (4.5)
Environmental awareness	9 (4.5)	13 (2.1)

SURVEY ON ENVIRONMENTAL ATTITUDES AND BEHAVIOR

A total of 1274 questionnaires were distributed to a convenience sample of parents between February and March 2016 within the framework of the project MAPEC_LIFE "Monitoring Air Pollution Effects on Children for supporting public health policy" project - LIFE12 ENV/IT/000614 . On the whole, 598 questionnaires (response rate of 46.9 percent) were collected. We received 426 paper questionnaires (response rate of 56.8 percent) and 172 mailed questionnaires (response rate of 32.8 percent).

CHANNELS OF INFORMATION

Internet 79,60% TV 53,70% Newspapers 31,10% Radio 20,50% Social 9,30% Weekly magazine 1,50%

The table below shows the statistically significant positive influences of different characteristics (gender, age, education level and sources of information) on the answers to questions on perceptions and behaviours.

Question (dependent variable)	Gender	Age	Education level	Daily news	Weekly magaz.	TV	Radio	Internet	Social
Perceived quality of information	-	Young to mid-age	College or below	-	-	TV	-	-	-
Perception of their knowledge	Males	-	-	-	-	-	-	-	-
Perceived role of the individual citizen	-	-	-	-	-	-	-	-	-
Pro-environmental behaviours	Females	Adult age	-	-	-	No TV	-	No Internet	No Social

DISCUSSION AND CONCLUSION

The citizens' awareness on air pollution and their adoption of positive behaviours seems to need improvements, despite the high media coverage and the big interest shown towards this topic. The use of different information sources seems to influence the adoption of the pro-environmental behaviours: TV, internet and social network seem to impact negatively on them. The study can be useful for future program of citizen education, but further research are needed on the perceived obstacles against positive behaviours.