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## The Relationship between Respiratory Systems' Cases and Environmental Urban Factors

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### Abstract

Air pollution in urban areas which have dense population, industrial facilities and dependence on the private automobiles, adversely affects the number of respiratory system diseases. The aim of the study is to test the relation between the number of respiratory systems cases' and environmental urban factors affecting these cases such as the level of urban air pollution, current land use, total population and the number of vehicles. The data are collected for six districts in Izmir, Turkey for the years between 2007 and 2011. The results show that there's a statistically significant relationship between the number of respiratory systems' cases and environmental urban factors.

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### 1. Introduction

Urban planning and public health share common missions and perspectives; because of this, environment is quite important for human health. Both of them aim to improve human well-being, emphasize needs assessment and service delivery, manage complex social systems, focus at the population level and rely on community-based participatory methods; also focus on the needs of vulnerable populations in urban area. Throughout their development, both fields have broadened their perspectives.

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Urban planning professionals deal with the public health arena, participating in campaigns promoting physical activity and pedestrian injury prevention and serving on boards of health, and incorporating design into public health decision-making. Coordinated policies and actions are needed to address the underlying conditions of major health issues in cities today. Environmental health studies are related to the effects of environmental factors, such as air pollution and the effective health policies. It is well-known as a fact that air pollution is one of the causes of respiratory diseases (lung cancer, asthma, chronic obstructive pulmonary etc.).

Public health explicitly recognizing the importance of place-based approaches and the leverage these provide for addressing public health opportunities and threats. Public health and urban planning professionals increasingly drawing on tools and processes developed by the other fields such as geographic information systems (GIS); health impact assessment; and community assessment tools. Public health professionals deal with the urban planning arena and incorporating health into urban planning decision-making.

The “health” concept in urban planning arena is more appropriate for planning activities within the frame of sustainable development; hence the target of a healthy city is related with a healthy economy, environment and society. In the process of developing a healthy city, all related actors (such as central and local governments, private sector, non-governmental organizations, and citizens) are expected to be in continuous collaboration. Actually, sustainable development and healthy city concept take into consideration social, environmental, economic and cultural issues and how these affects individuals, communities and populations’ lives (Basaran, 2007; Santos et al., 2012).

World Health Organization (WHO) defines the features that a “healthy city” concept should have as a sustainable ecosystem, quality and safe physical environments, a society with provided basic needs and participated in decisions about the future of the city, innovative economy, optimum access to the goods and services, an environment that cultural and historical assets are protected in, high level statute of health, low level incidence of a disease (Santos et al., 2012). The World Health Organization Regional Office for Europe (WHO / EURO) has been working to achieve the implementation of "Health for All" within the "Healthy Cities Project" at the local level (Basaran, 2007; Santos et al., 2012).

From this point of view, the aim of the study is to test the relation between the number of respiratory systems cases’ and environmental urban factors affecting these cases such as the level of urban air pollution (the particulate matter (PM<sub>10</sub>) and sulfur dioxide (SO<sub>2</sub>)), current land use, total population and the number of vehicles. The data are collected for six districts in Izmir, Turkey including Konak, Bornova, Buca, Karsiyaka, Cigli and Balcova for the years between 2007 and 2011. The results show that there is a statistically significant relationship between the number of respiratory systems’ cases and environmental urban factors.

## 2. Literature

Air pollution in urban areas which have dense population, industrial facilities and dependence on the private automobiles, adversely affects the incidence rate of respiratory system related diseases (lung cancer, chronic obstructive pulmonary disease (COPD), upper respiratory tract infections, asthma, bronchitis, etc.).

In literature, there exist a lot of studies about air quality and respiratory system related diseases relationship either positive or negative influence. These studies are differentiated in terms of the type of disease. Generally, respiratory system related diseases studies are performed by (Schikowski et al., 2005; Tagil and Mentese, 2012; Cengiz et al., 2013; Unsal et al., 1999; Zhang et al., 2013; Darcin, 2013; Jerrett et al., 2009; Dockery & Schwartz, 1993 and Wong et al., 2011).

Recent researches by (Gehring et al., 2010; Mallant et al., 2010) provide further evidence that traffic-related air pollution exposure may contribute to the development of asthma in children, and not only aggravates existing symptoms. Some cross-sectional studies in Europe have shown that deficits in lung function growth in children – associated with morbidity and mortality in adulthood (Brauer et al., 2008; Knudman et al., 1996) are related to residential exposure to high traffic (Brunekreef et al., 1997; Gauderman et al., 2007).

The air pollutants causing decrease in air quality and increase public health problems in urban area vary depending on the contaminant source, meteorological and topographical conditions and land use. Especially, the particulate matter in the atmosphere (TAP, PM<sub>2.5</sub>, PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) and carbon monoxide (CO) lead to increase in the level of air pollutants; because of the less activity in urban study

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