

The landscape dimension of green infrastructure for urban areas in Central Europe



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Green infrastructure - increasing the natural capital of Europe



Green infrastructure helps maintain valuable ecosystem services



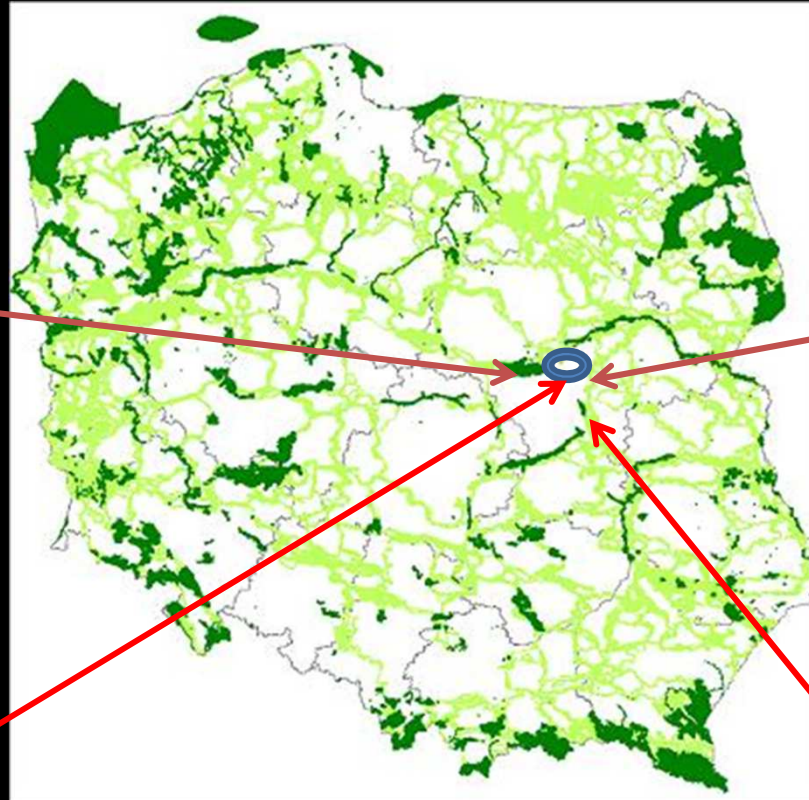
Green infrastructures increases the permeability of landscape



Ecological connection



Kampinoski National Park



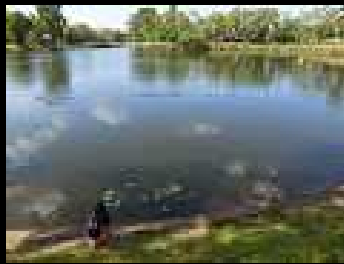
Vistula river



Increasing of biodiversity in the city



Aim of the presentation



The aim of the presentation is to show the multifunctional role of green infrastructure in urban system with particular regards to their landscape dimension.

Green infrastructure at urban area



Solutions for green infrastructure are particularly important in an urban environment in which lives more than **60%** of the EU population as well as in Central European countries too. Green infrastructure in the cities is a source of health-related benefits such as clean air and a better quality of water.

Multifunctionality of green infrastructure



Human society is dependent on the benefits provided by nature, such as: food, mineral resources, clean water, clean air, climate regulation, flood control, pollination, recreation



and important element
of landscape



Green infrastructure – human health



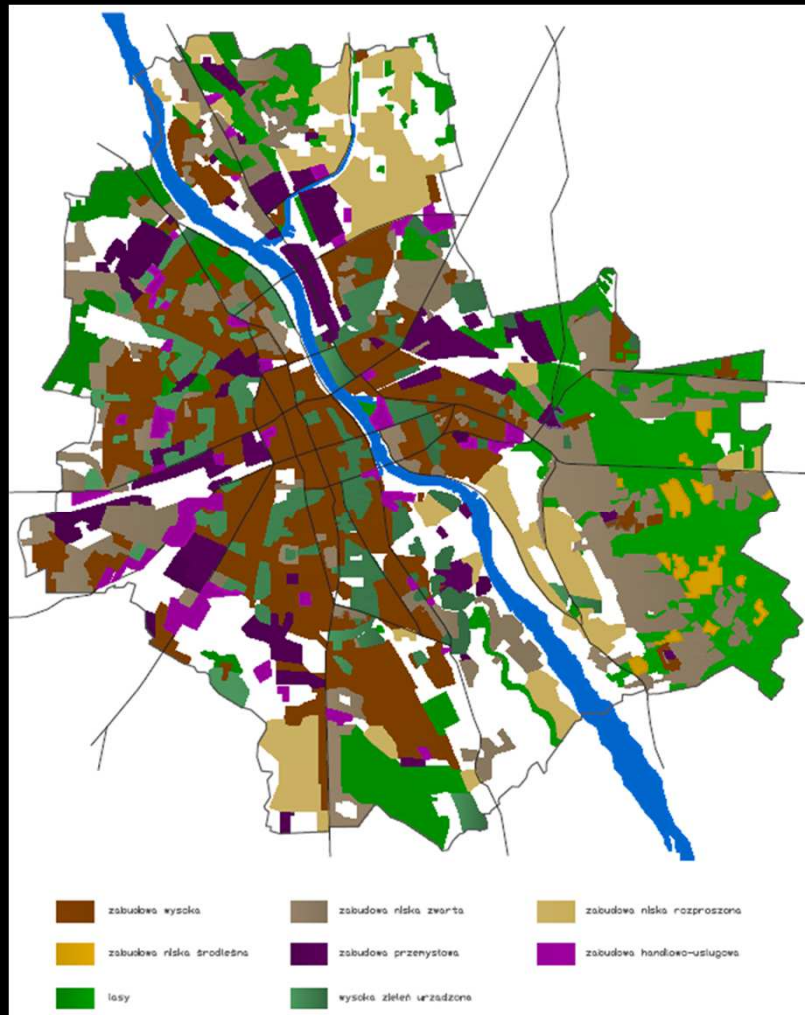
- increases the body's resistance to environmental threats (pollution, urban heat island, content of ozone, etc)
- sanity
- reducing the perceived noise by man
- increases satisfaction with life

Urban heat island

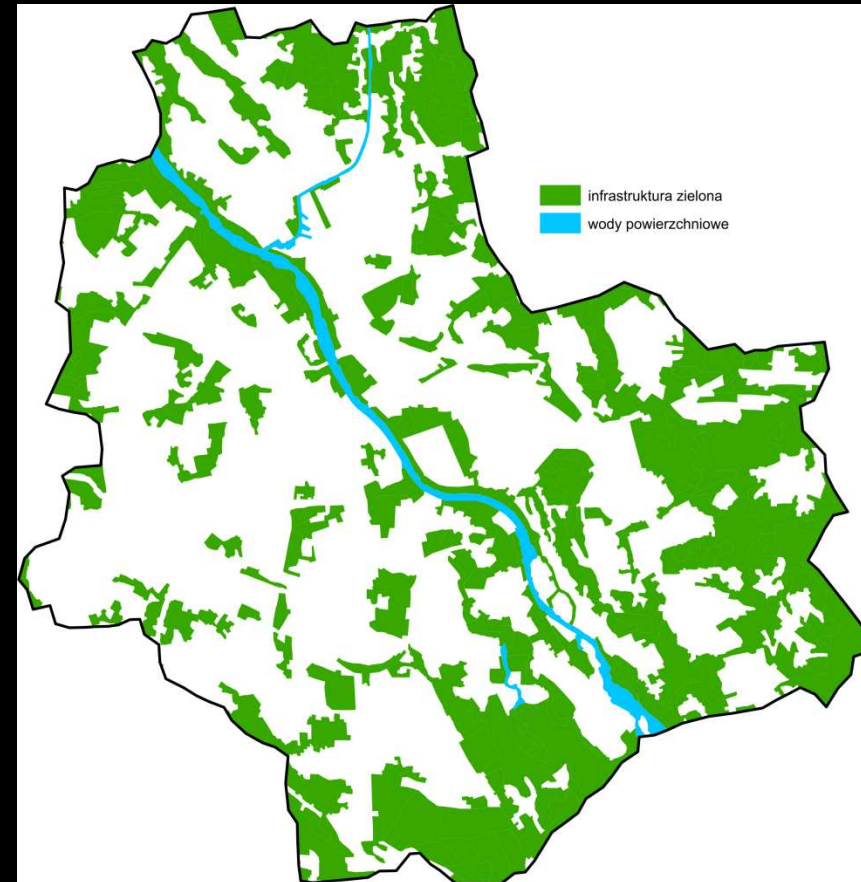


Reduce nuisance of urban heat island (cooling center) can be achieved through integrated activities in many areas, mainly planning, infrastructural, technical, management, economic, raising knowledge and awareness of the inhabitants.

The spatial structure of land uses in Warsaw



(according to: Studium uwarunkowań.....)



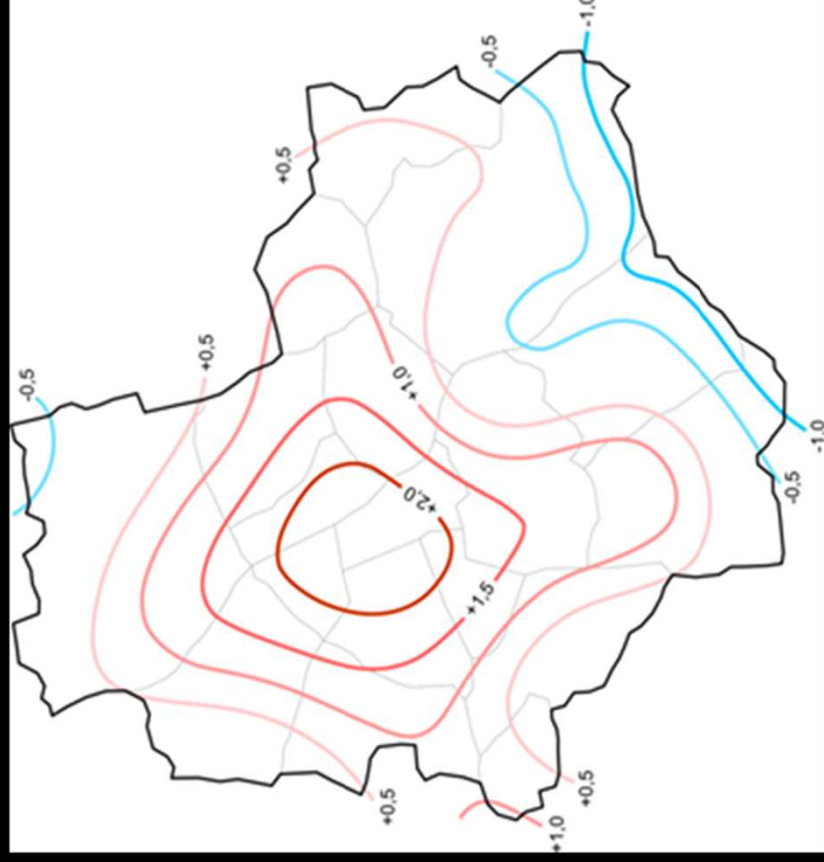
Green infrastructure of Warsaw
(according to: Degórska i inni, 2013)

Urban system resilience



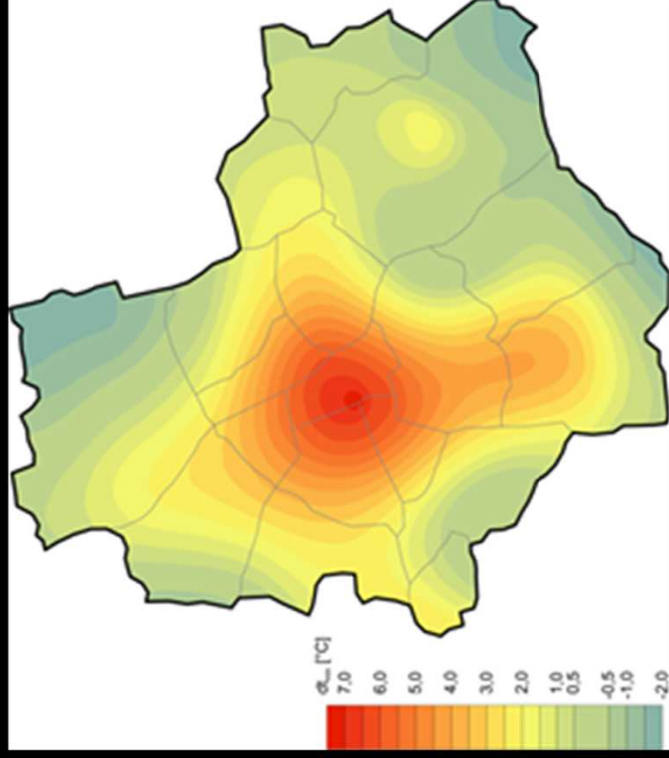
Every city system has own resilience for any impact and green infrastructure is playing a significant role in this process.

Distribution of average minimum air temperature deviations in the Warsaw area in relation to the station Warsaw-Okecie 2011

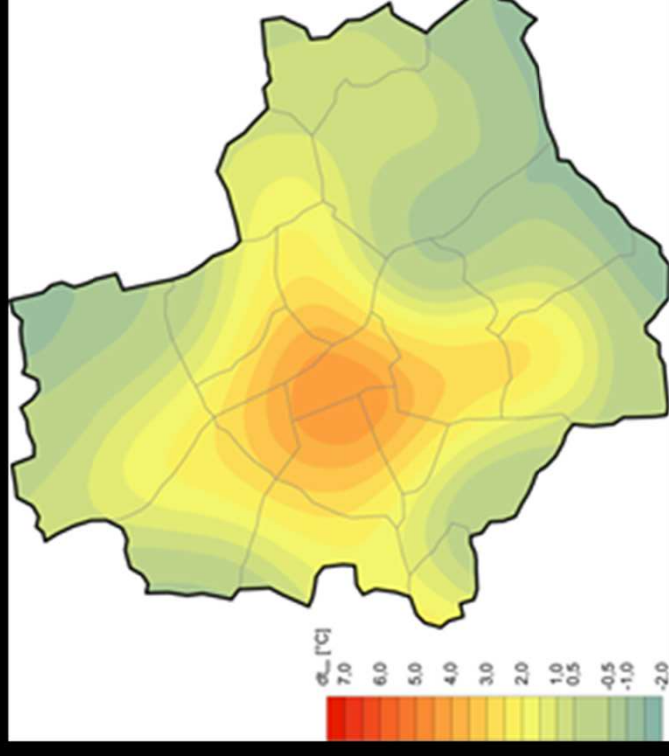


according: B. Degorska and others 2014

Distribution of minimum air temperature deviations in the
Warsaw area in relation to the station Warsaw-Okecie on
23.05.2011 and in the period 20-26.05.2011

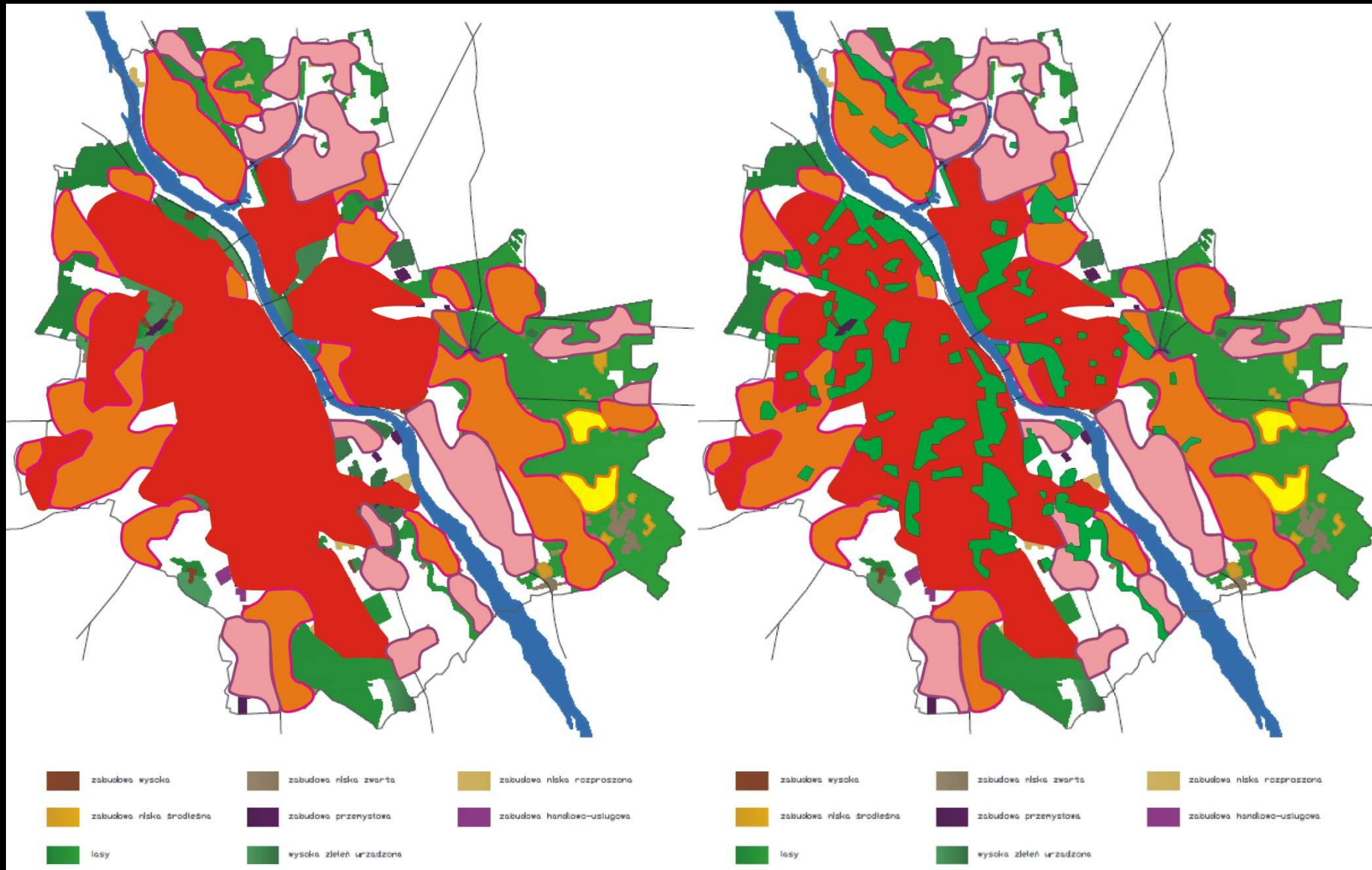


23.05.2011



20-26.05.2011

according: B. Degorska and others 2014



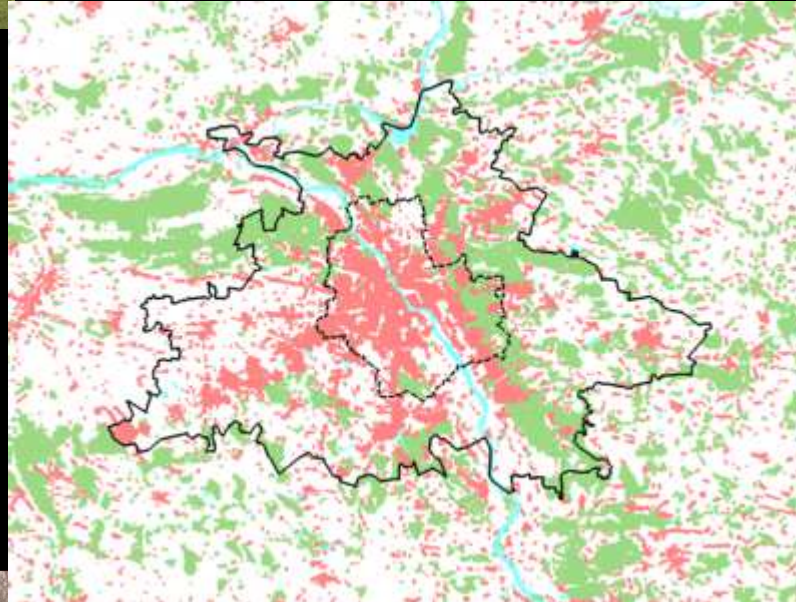
Urban heat island in Warsaw (today)

night

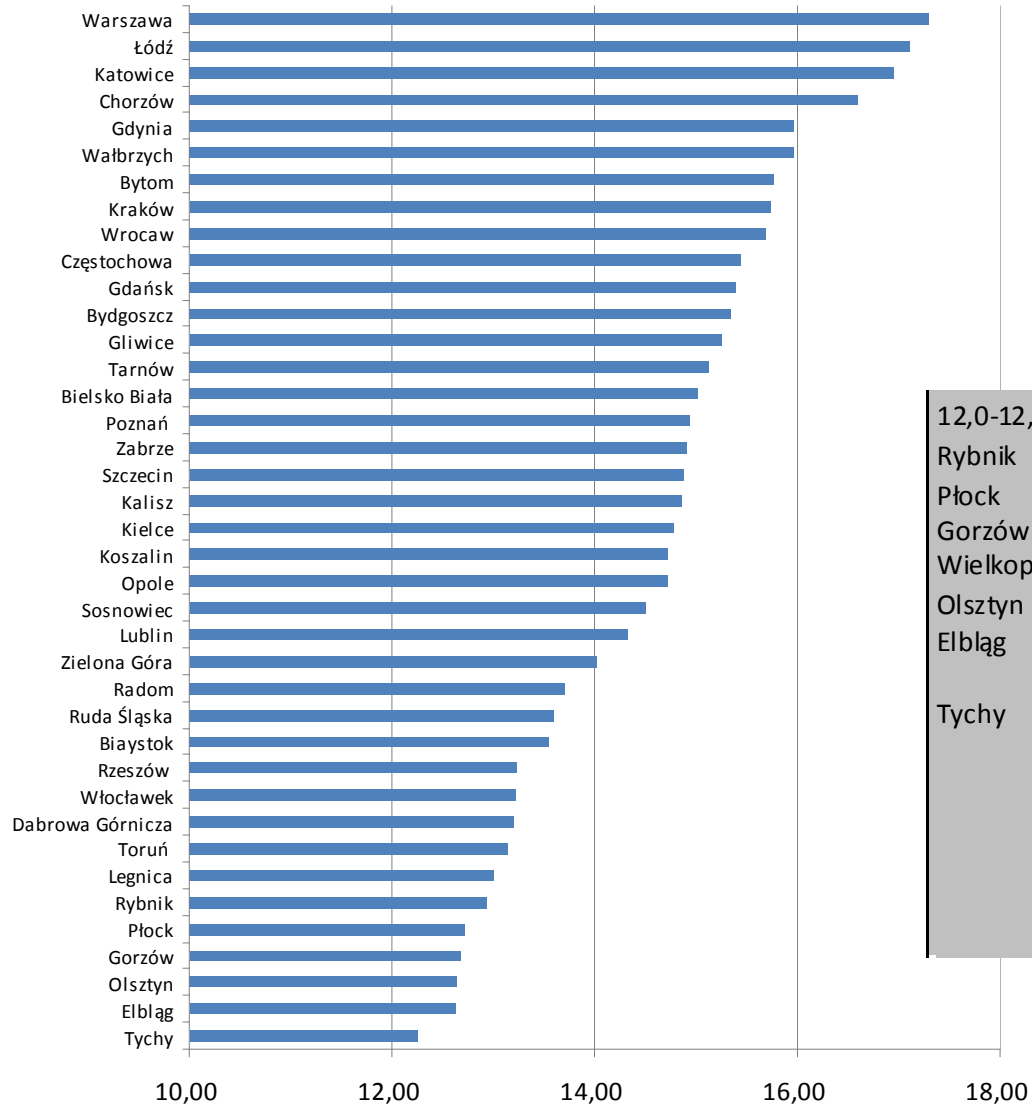
day

wg. K. Błażejczyk i inni, 2013)

Urban sprawl



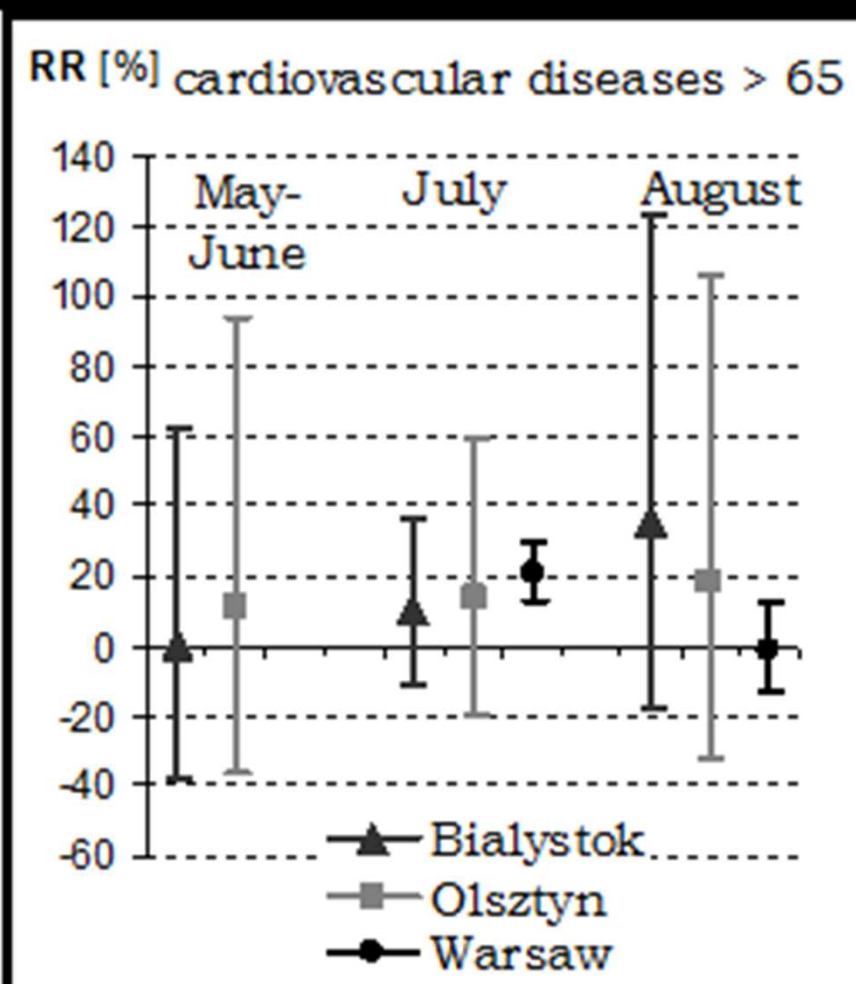
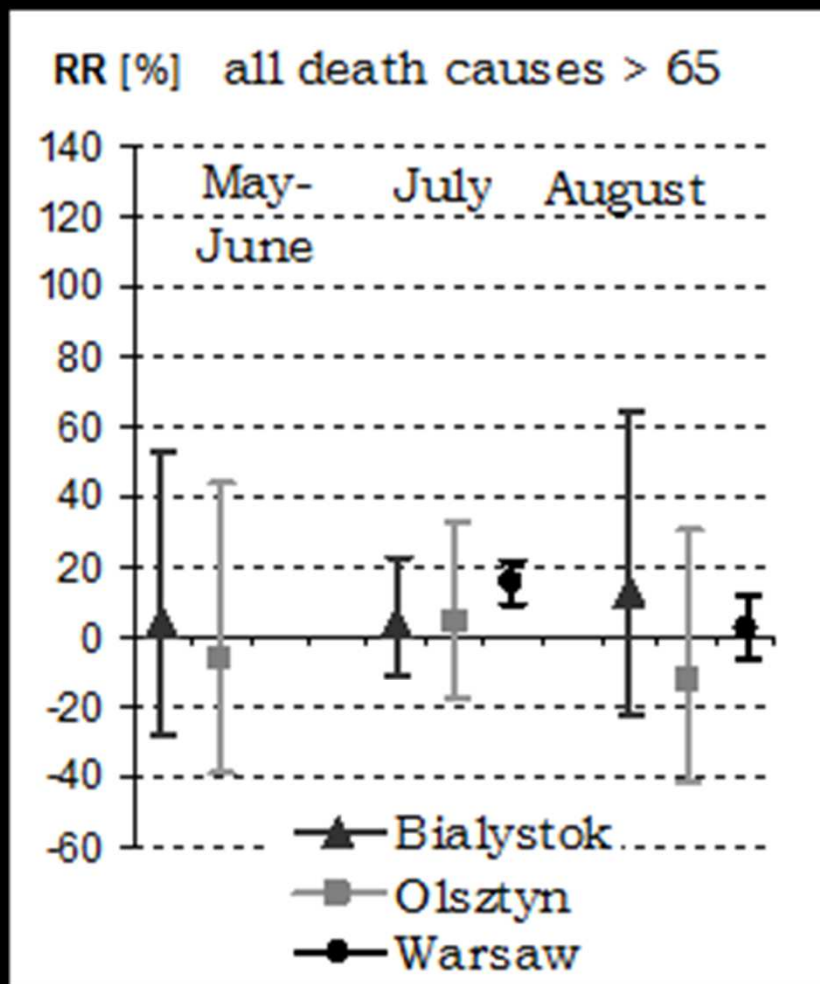
Group of cities according to the percentage of population above 65 years old in relation to the total number of inhabitants



12,0-12,9%	13,0-13,9%	14,0-14,9%	15,0-15,9%	16-17,5%
Rybnik	Radom	Poznań	Gdynia	Warszawa
Płock	Ruda Śląska	Zabrze	Wałbrzych	Łódź
Gorzów	Białystok	Szczecin	Bytom	Katowice
Wielkopolski	Rzeszów	Kalisz	Kraków	Chorzów
Olsztyn	Włocławek	Kielce	Wrocław	
Elbląg	Dąbrowa			
Tychy	Górnica	Koszalin	Częstochowa	
	Toruń	Opole	Gdańsk	
	Legnica	Sosnowiec	Bydgoszcz	
		Lublin	Gliwice	
		Zielona		
		Góra	Tarnów	
			Bielsko Biała	

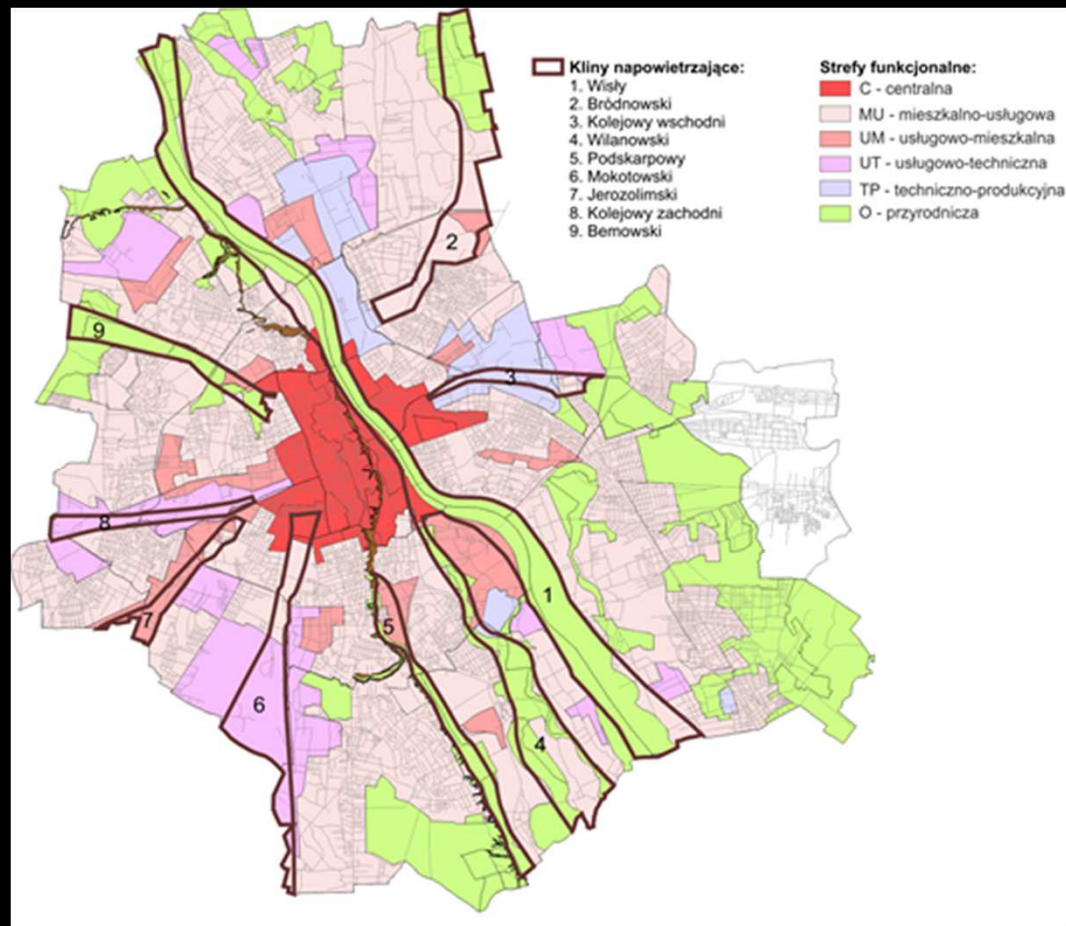
Percentage of people aged over 65 in the total population of cities over 100 thousand.
According to: GUS 2013

Relative risk of death - RR [%] from all causes and from cardiovascular diseases among the elderly (aged 65 and over) during heat waves.

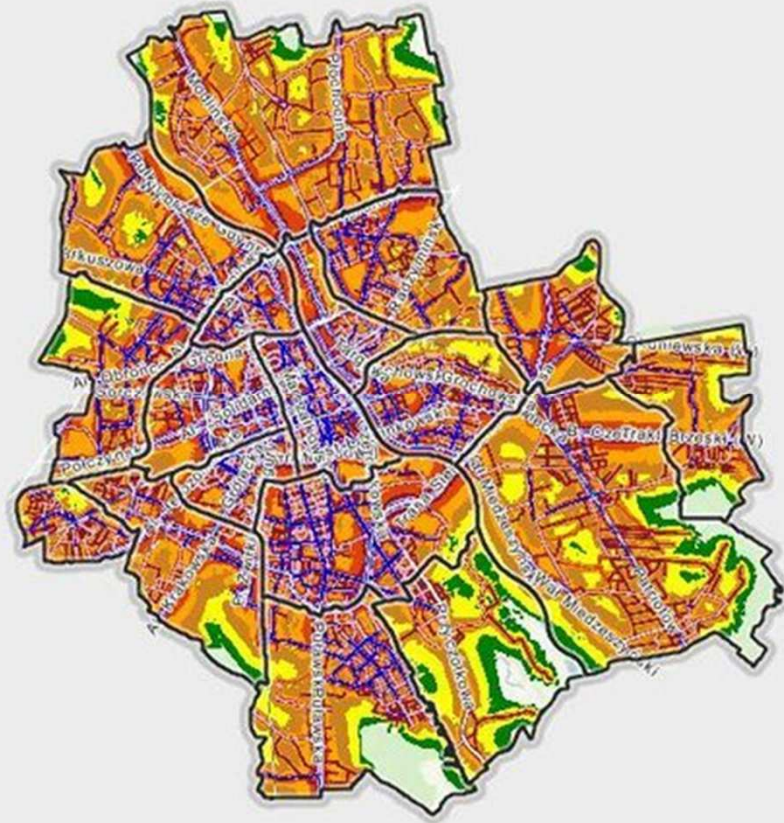


According: Kuchcik and Degorski 2010

Green infrastructure function as an aerating wedges



Noise map of Warsaw



Landscape demention of green infrastructure



Combined natural and cultural landscape



Green infrastructure in Warsaw



Moreover, the overall share of green areas, including mainly parks (**62** in Warsaw), lawns, forests and riverside banks (excluding green areas with residential functions) in Warsaw should amount to **30-35%**. Additionally, green areas with high plants, must have a good accessibility, the best on foot, from the place of residence



Thanks for your attention