UNIWERSYTET JAGIELLOŃSKI W KRAKOWIE

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# Risk of hypertension and chronic low grade inflammation among healthy young subjects living in the cities with different ambient air pollution

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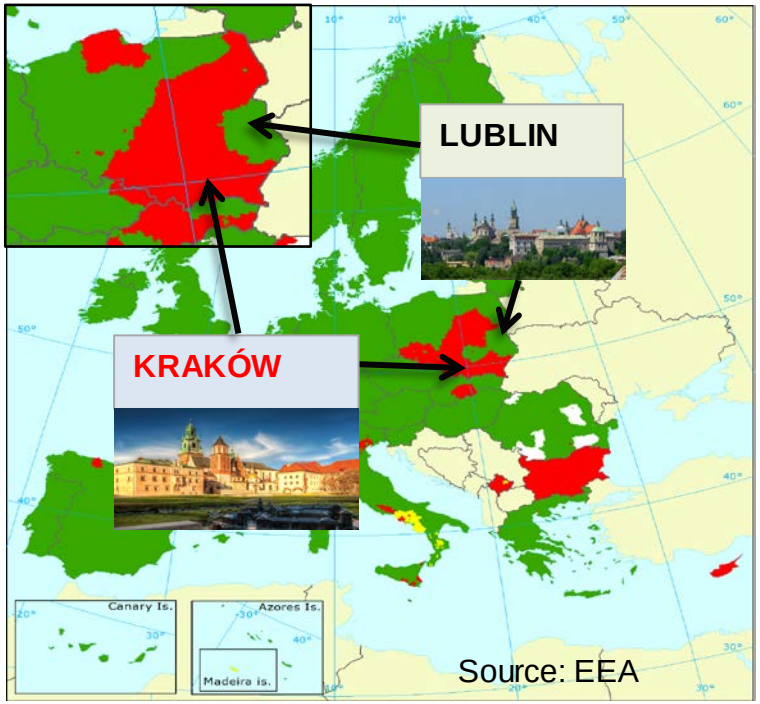
# Objectives

- Compare selected cardiovascular risk biomarkers in young, healthy inhabitants of cities differing in long term air pollution levels
- Assess differences in blood pressure in these populations

*Cities:*




*Study population:*

14 322 parents screened

7 112 teenagers screened

2605 teenagers with consent meeting criteria

900 subjects randomly selected

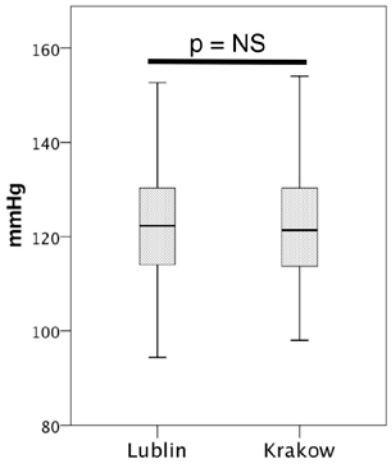
**826 blood pressure measurements**

**600 blood tests carried out**

# Cardiovascular risk biomarkers are increased in subjects living in a city with very high air pollution; Blood pressure levels are increase only in boys.

## Systolic blood pressure

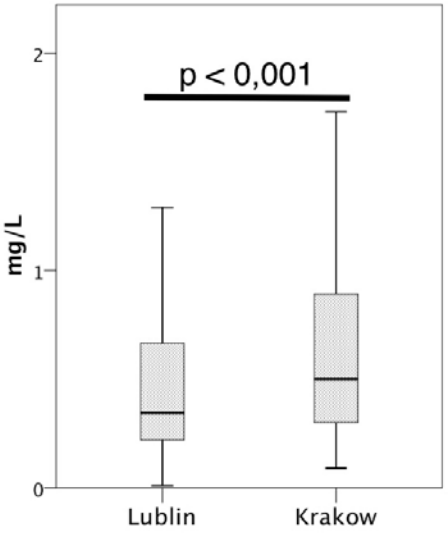
All subjects:



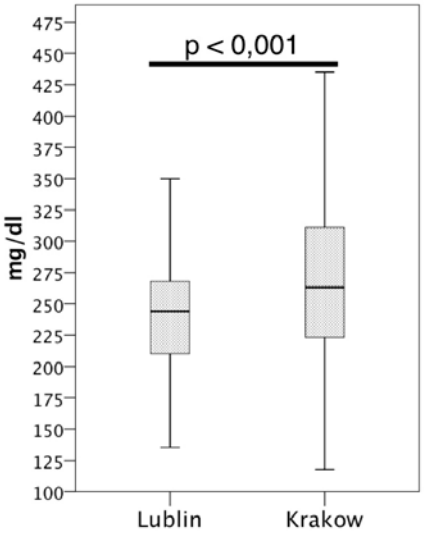

Male/Female:

| SBP [mmHg] | Lublin | | Kraków | | p |
|---|---|---|---|---|---|
| | Median | IQR | Median | IQR | |
| Females | 122,3 | 16,3 | 121,3 | 11,4 | ns |
| **Males** | **122,3** | **16,7** | **128** | **10,3** | **0,001** |

## hsCRP levels

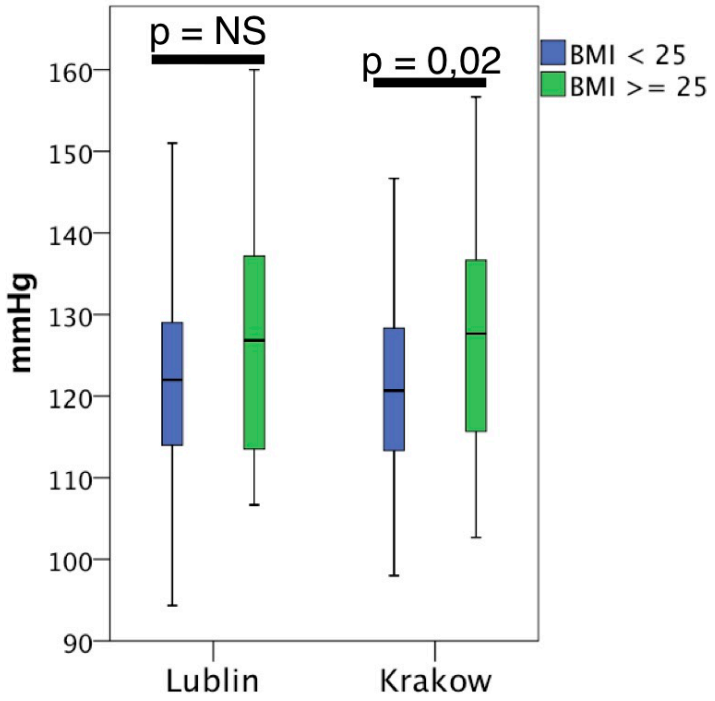



## Fibrynogen

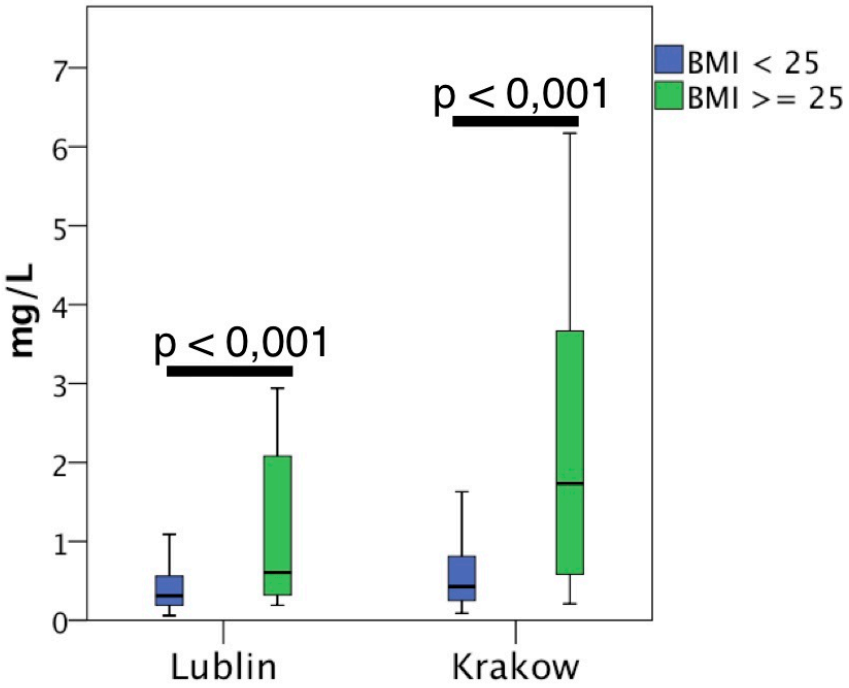


Moderately increased **body mass-index** adversely affects **blood pressure** and **inflammatory markers** in a city with higher air pollution levels while in a city with low pollution effect of BMI was less pronounced.

## Blood pressure:




## hsCRP



# Comparison of selected markers in the two cities differing in ambient air pollution showed:

- Higher systolic blood pressure in males in Krakow and no difference in whole studied group
- Increased inflammatory biomarkers in Krakow
- Association between increase in BMI and blood pressure or selected inflammatory biomarkers were observed particularly in Krakow (in city with higher air pollution).