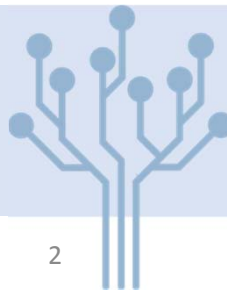


- tourism – main economic activity
- 34 municipalities - 170,017 inhabitants
- over 8,200,000 tourist overnights annually and increasing
- MSW rate follows the tourists number



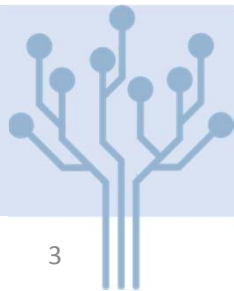
Fig. 1 Zadar County



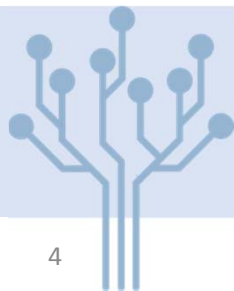
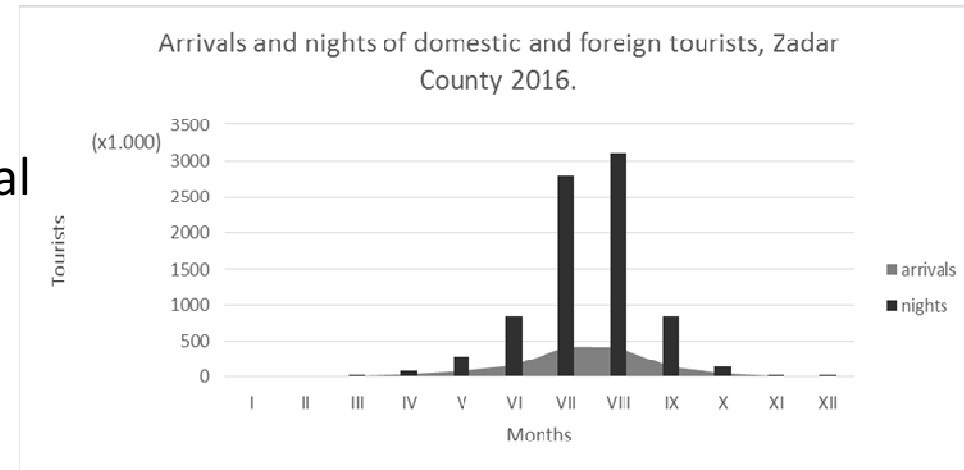
- impact of tourism on MSW generation:
 - different habits and environmental awareness
 - environment devastation due to construction
 - tourist activities during vacation



Fig. 2 City of Zadar



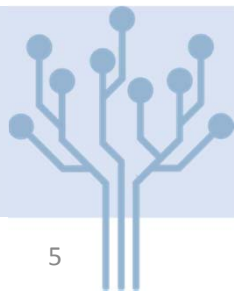
- Data were collected from:
 - Croatian Agency for Environmental Protection
 - Central Bureau of Statistics (CBS) of Croatia
 - Croatian National Tourist Board web sites
- large discrepancies between official and unofficial tourist informations ~20 %
- MSW composition
 - dynamic change of recyclables
 - observed period 2009 – 2014 (summer and winter)



- 60,000 tonnes MSW per year – 70 % coverage with MSW system
- domestic population generates 1.2 kg of waste per day
- one tourist generates 1.6 kg of waste per day
- overburden of existing MSW system
→ prediction of quantities and adjustment

Table 1 Waste composition for Zadar County depending on seasons

Waste	Winter (%)	Summer (%)	Average (%)
Bio-waste	43,4	43,3	43,3
Plastic	18,8	23,5	21,2
Paper and cardboard	15,6	17,0	16,3
C&D	5,1	1,1	3,1
Textile and footwear	3,9	2,3	3,1
Metal	3,4	2,5	3,0
Glass	2,9	4,1	3,5
Diapers	2,1	3,7	2,9
Textile	1,9	1,1	1,5
Wood	1,6	0,4	1,0
Bones	1,1	0,7	0,9



- PET, diapers, kitchen organic waste and glass → indicators of family activities
- first and last quarter → equal quantities (residents)
- second and third quarter → tourist season

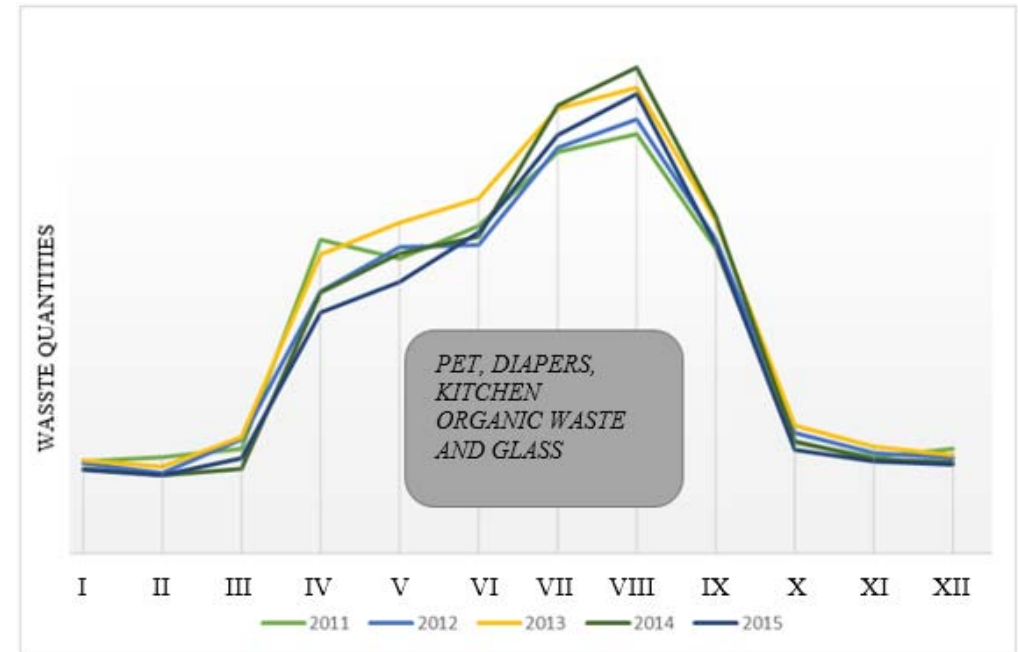
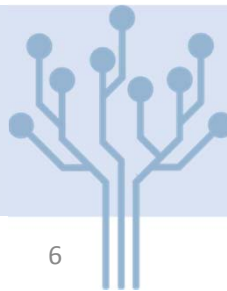


Fig. 3 Pattern of annual trend for PET, diapers, kitchen organic waste and glass quantities



- paper, cardboard, bio waste (except kitchen waste), hard and soft plastic (except PET) and metals → increased in tourist season
- moderate increase with maximum in August
- gradual reduction by the end of the year

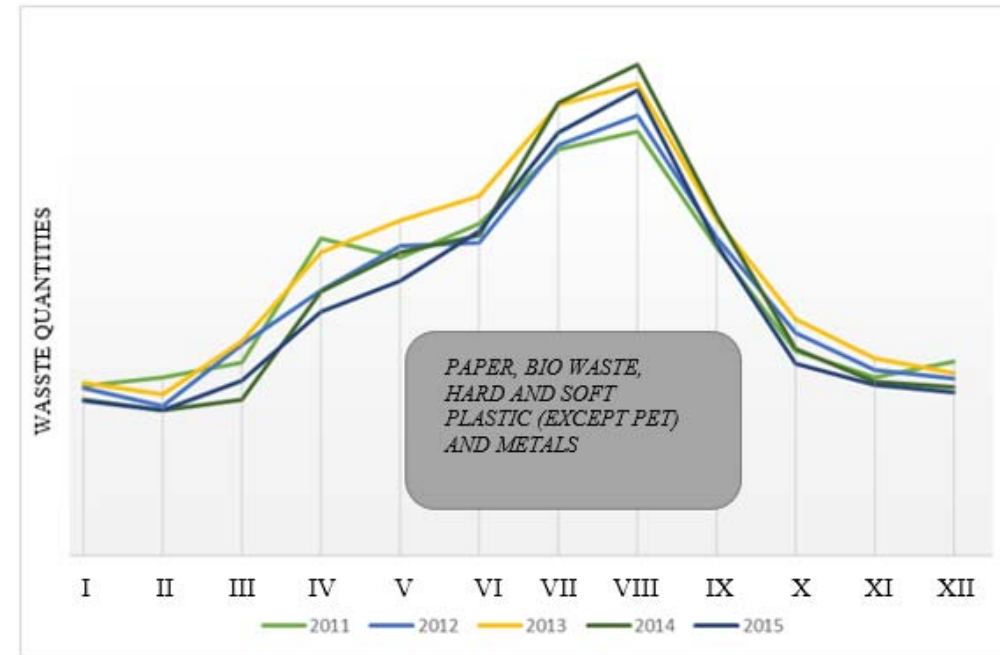
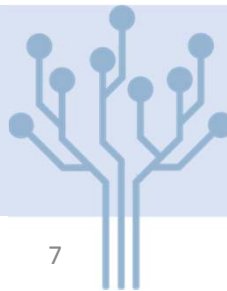


Fig. 4 Pattern of annual trend for paper, cardboard, bio waste (except kitchen waste), hard and soft plastic (except PET) and metals quantities



- wood, C&D, clothes and footwear, textile and bones → activities of residents
- preparation for tourist season → first and last quarter

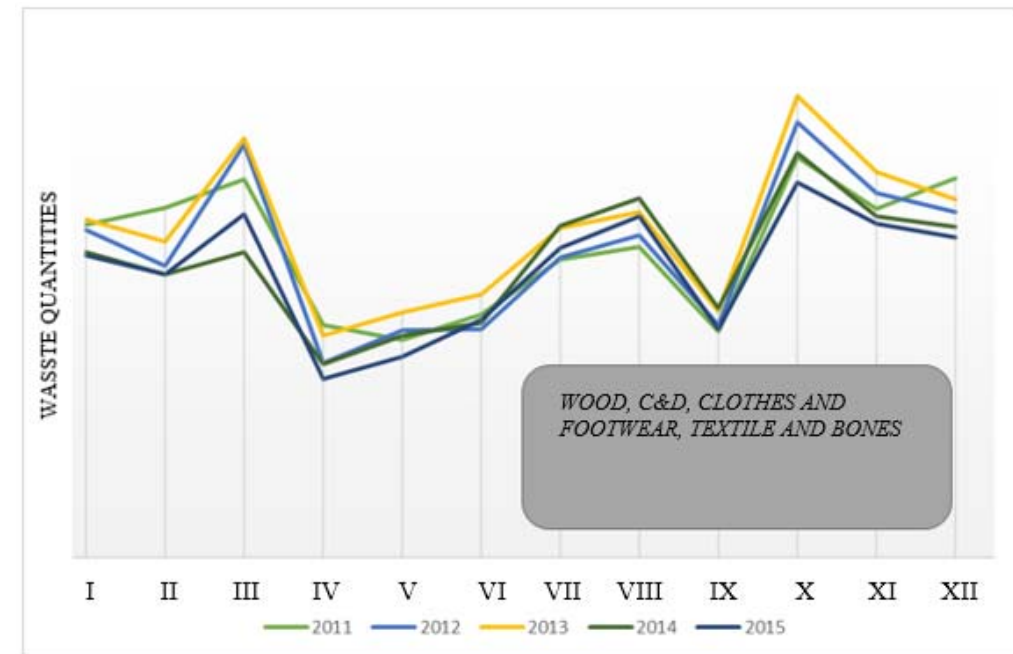
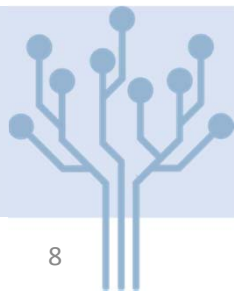
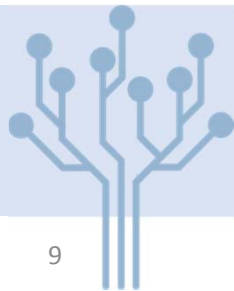


Fig. 5 Pattern of annual trend for wood, C&D, clothes and footwear, textile and bones quantities



- waste generated by tourists is increased but not equally for all types of waste
- three patterns of recyclables quantities develop in Zadar County
 - peak in July and August
 - better organisation of waste management system
- MSW composition depends on summer and winter period

Conclusions



Thank You for Your Attention!

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