

Gdje poslovanje susreće znanost

HrOUG 19. | listopad 2014.



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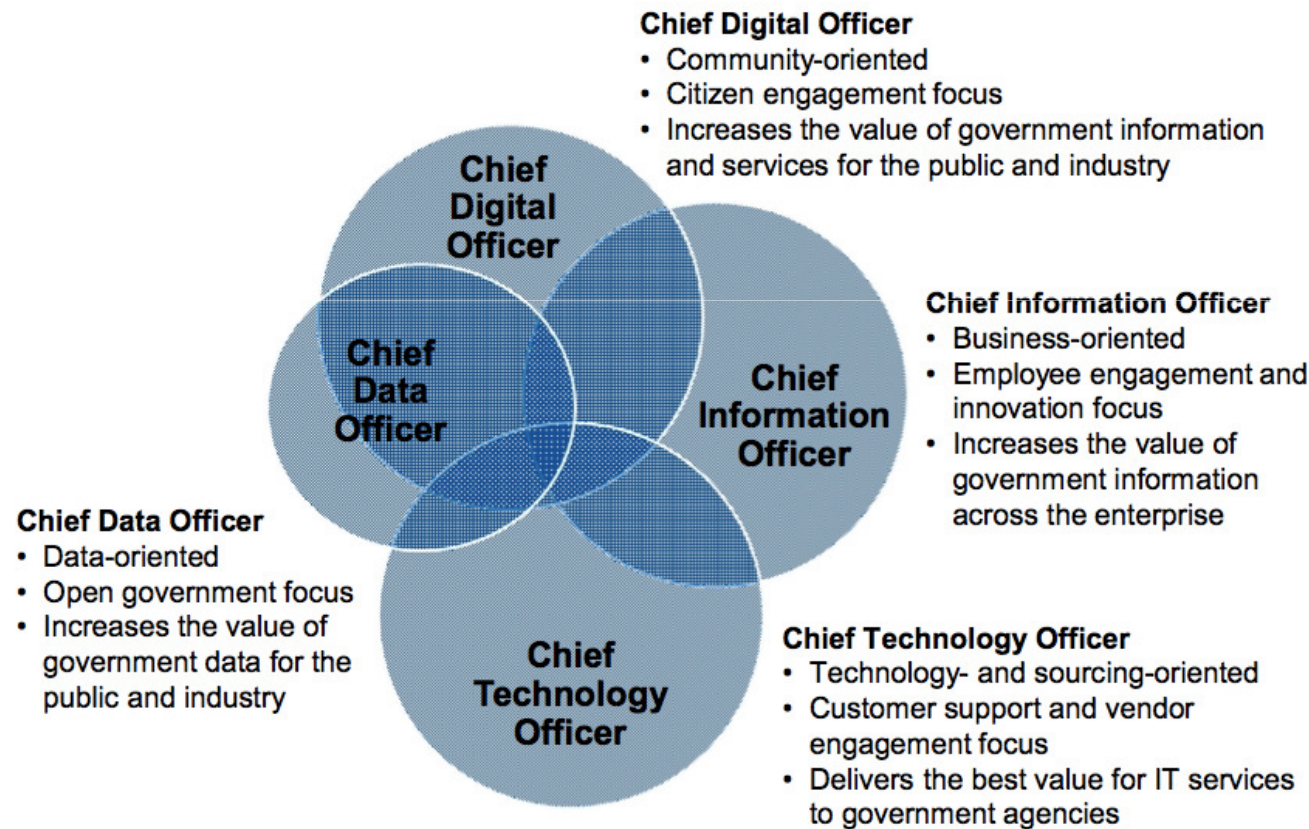
The logo for in2 DATA SCIENCE COMPANY. It features the text "in2" in a large, bold, grey font, with "DATA SCIENCE COMPANY" in a smaller, red, sans-serif font stacked below it.

Next big thing...

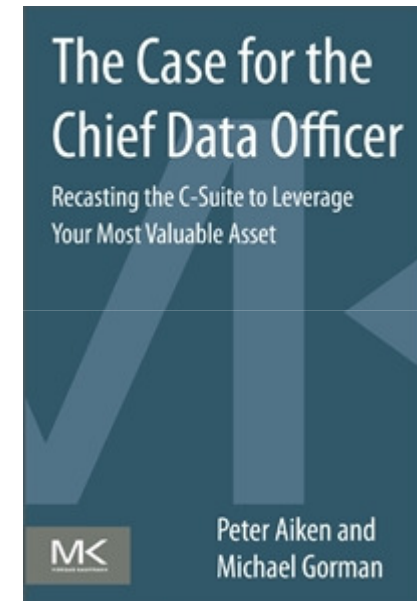


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Too many officers...? Or not...



Source: Gartner (October 2013)



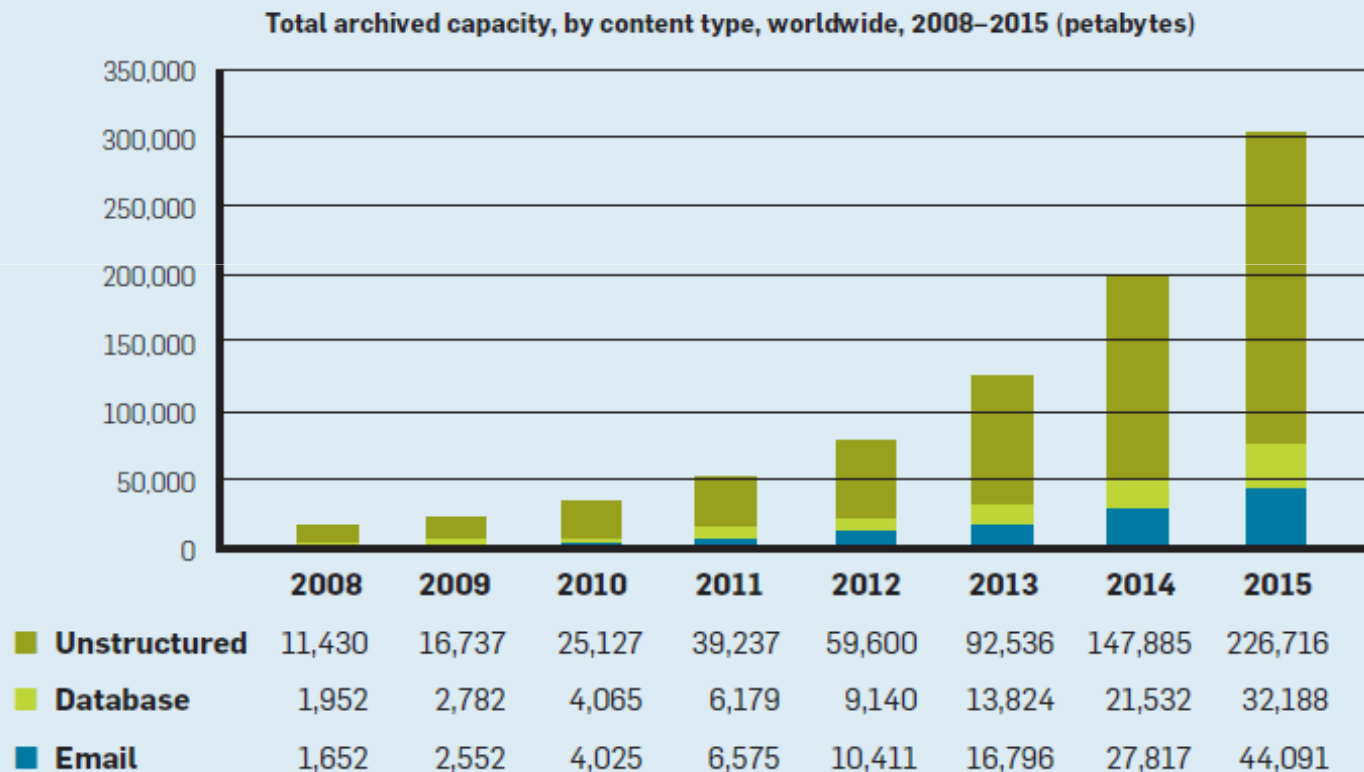
Chief Science/Data Officer

- **5 key priorities:**
 - **Leverage**
 - find ways to use existing data
 - **Enrichment**
 - augmenting data by combining internal and external sources
 - **Monetization**
 - finding new sources of revenue tied to data
 - **Protection**
 - ensuring data privacy and security
 - **Upkeep**
 - managing the health of data under governance

Znamo, ali dobro se podsjetiti



Projected growth of unstructured and structured data.



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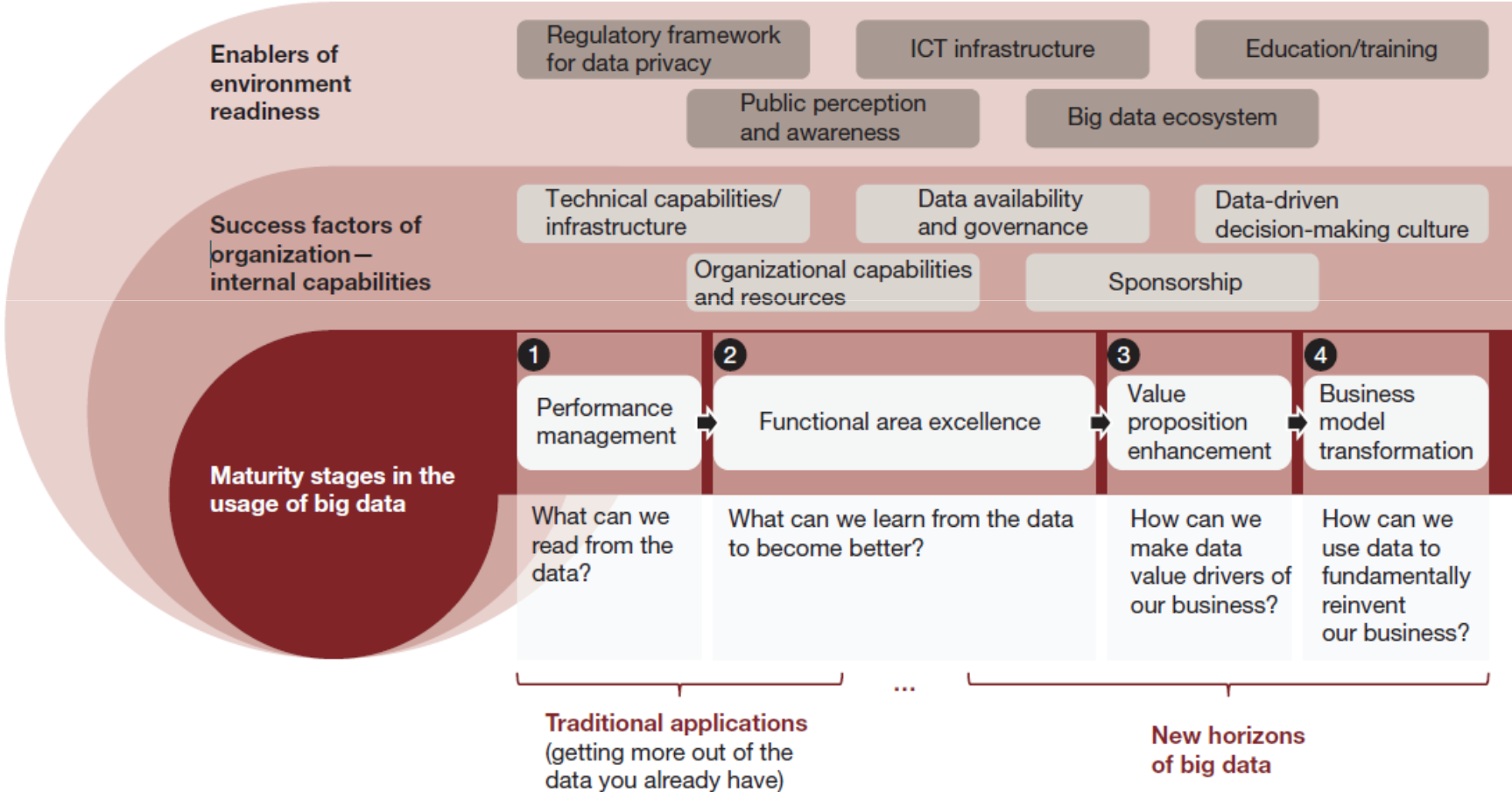
big DATA

- real-time data capture, storage & analysis
- 90% of total data stored today is less than 2 years old
- Facebook report 2.5 bln pieces of content daily in 2012.
- Aberdeen Group (2012): proportion of executives who reported that their companies were unable to use unstructured data, and who complained that the volume of data was growing too rapidly to manage, had increased by up to 25 percent during the previous year

BIG data

- Gartner survey (2013) found that less than 8 percent of companies surveyed have actually deployed big data technology
- IDC forecast:
 - market for big data technology and services will reach US\$16.9 billion by 2015 (up from \$3.2 billion in 2010, represents a 40 percent annual growth rate, seven times the rate for the overall ICT business)
 - investment in this area to grow at a compound annual growth rate of over 20 percent over the coming five years

Big Data Maturity Framework



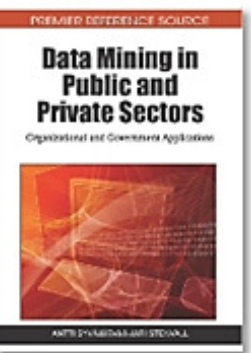
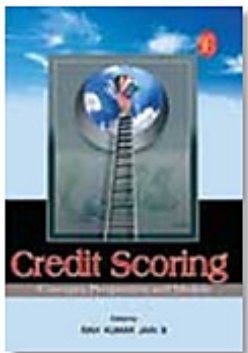
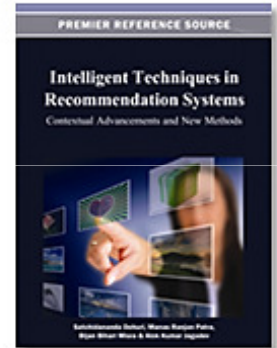
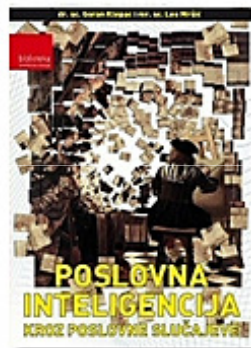
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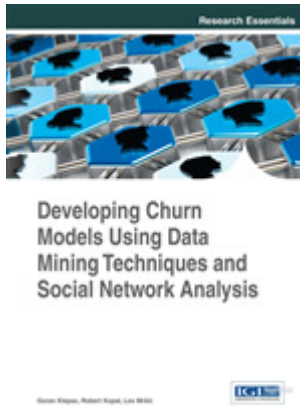
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Developing Churn Models



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Developing Churn Models Using Data Mining Techniques and Social Network Analysis

Part of the *Research Essentials* Collection

Goran Klepac (Raiffeisenbank Austria Zagreb, Croatia), Robert Kopal (University College for Law and Finance Effectus Zagreb, Croatia & University College for Applied Computer Engineering Algebra Zagreb, Croatia) and Leo Mršić (University College for Law and Finance Effectus Zagreb, Croatia & University College for Applied Computer Engineering Algebra Zagreb, Croatia)

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Description | Table of Contents | Topics Covered | Author(s)/Editor(s) Bio

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Description

Churn prediction, recognition, and mitigation have become essential topics in various industries. As a means for forecasting and managing risk, further research in this field can greatly assist companies in making informed decisions based on future possible scenarios.

Developing Churn Models Using Data Mining Techniques and Social Network Analysis provides an in-depth analysis of attrition modeling relevant to business planning and management. Through its insightful and detailed explanation of best practices, tools, and theory surrounding churn prediction and the integration of analytics tools, this publication is especially relevant to managers, data specialists, business analysts, academicians, and upper-level students.

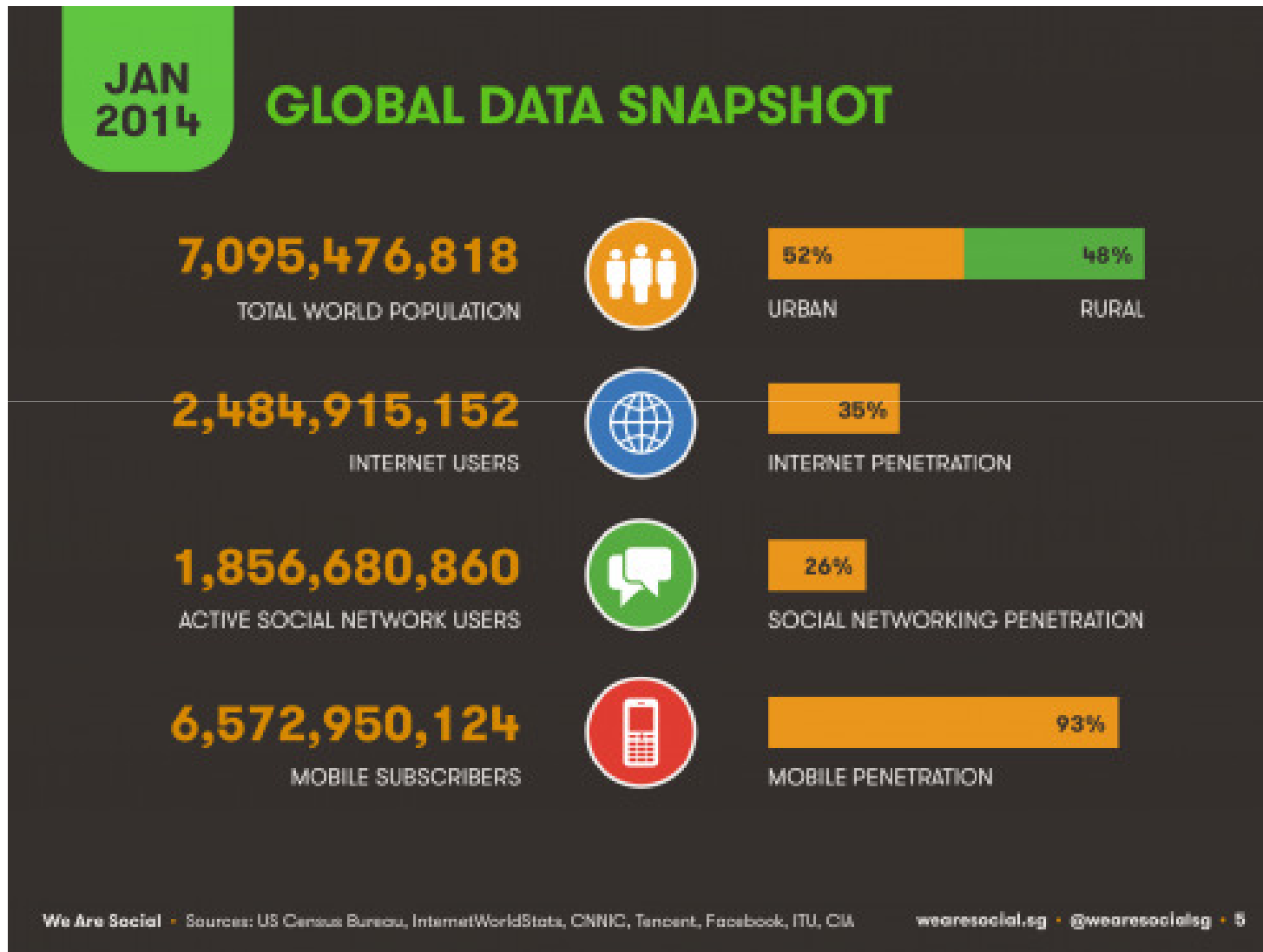
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Pogledajmo nakratko "podatke"

- Global Data Snapshot
- Hrvatska sum(o)arna statistika
- Gdje je i kuda ide Hrvatska
 - age shift, populacija, trend, age pyramid
 - social class by age
 - spendings and savings ratio, gross income by age, total gross income map, growth of consumer expenditure, proportion of total spending
 - odabrana zanimljiva kretanja i projekcije

Globalni podaci



Hrvatska, sum(o)arna statistika

	2008	2009	2010	2011	2012	2013
<u>Inflation (% change)</u>	6.1	2.4	1.0	2.2	3.4	2.2
<u>Exchange rate (per US\$)</u>	4.94	5.28	5.50	5.34	5.85	5.70
<u>Lending rate</u>	10.1	11.6	10.4	9.7	9.5	9.2
<u>GDP (% real growth)</u>	2.1	-6.9	-2.3	-0.2	-2.2	-0.9
<u>GDP (national currency millions)</u>	343,412.2	328,672.5	323,807.0	328,736.9	327,020.7	326,848.8
<u>GDP (US\$ millions)</u>	69,586.5	62,202.1	58,895.3	61,516.7	55,898.2	57,382.5
<u>Population, mid-year ('000)</u>	4,435.7	4,430.4	4,418.9	4,406.6	4,396.3	4,387.2
<u>Birth rate (per '000)</u>	10.1	10.4	10.1	9.6	9.8	9.8
<u>Death rate (per '000)</u>	12.1	12.2	12.1	11.9	12.1	12.2
<u>No. of households ('000)</u>	1,513.2	1,521.3	1,528.8	1,535.6	1,541.4	1,546.4
<u>Total exports (US\$ millions)</u>	14,111.7	10,491.8	11,806.9	13,364.0	12,369.0	12,741.6
<u>Total imports (US\$ millions)</u>	30,728.4	21,204.9	20,053.9	22,716.7	20,834.3	21,932.0
<u>Tourism receipts (US\$ millions)</u>	11,280.0	9,000.0	8,051.0	9,364.0	9,383.5	10,697.1
<u>Tourism spending (US\$ millions)</u>	1,112.0	1,013.0	833.0	882.0	845.7	917.4
<u>Urban population ('000)</u>	2,468.6	2,472.4	2,476.1	2,479.9	2,483.6	2,487.8
<u>Urban population (%)</u>	57.1	57.3	57.5	57.8	58.1	58.4
<u>Population aged 0-14 (%)</u>	15.5	15.4	15.4	15.3	15.1	14.9
<u>Population aged 15-64 (%)</u>	66.7	66.7	66.8	67.0	67.0	66.9
<u>Population aged 65+ (%)</u>	17.8	17.9	17.8	17.7	17.9	18.1
<u>Male population (%)</u>	48.2	48.2	48.2	48.2	48.2	48.3
<u>Female population (%)</u>	51.8	51.8	51.8	51.8	51.8	51.7
<u>Life expectancy male (years)</u>	72.4	73.0	73.5	73.9	74.1	74.3
<u>Life expectancy female (years)</u>	79.7	79.7	79.9	80.4	80.5	80.7
<u>Infant mortality (deaths per '000 live births)</u>	4.5	5.3	4.4	4.4	4.4	4.4
<u>Adult literacy (%)</u>	98.8	98.9	99.0	99.1	99.2	99.3

Hrvatska 2014:2020:2030



- age shift
- snažne promjene u strukturi stanovništva
- produbljivanje socijalnih razlika
- kako se pozicionirati, tko su klijenti
- kako se ponašaju
- što su njihove vrijednosti
- tko na njih ima utjecaj

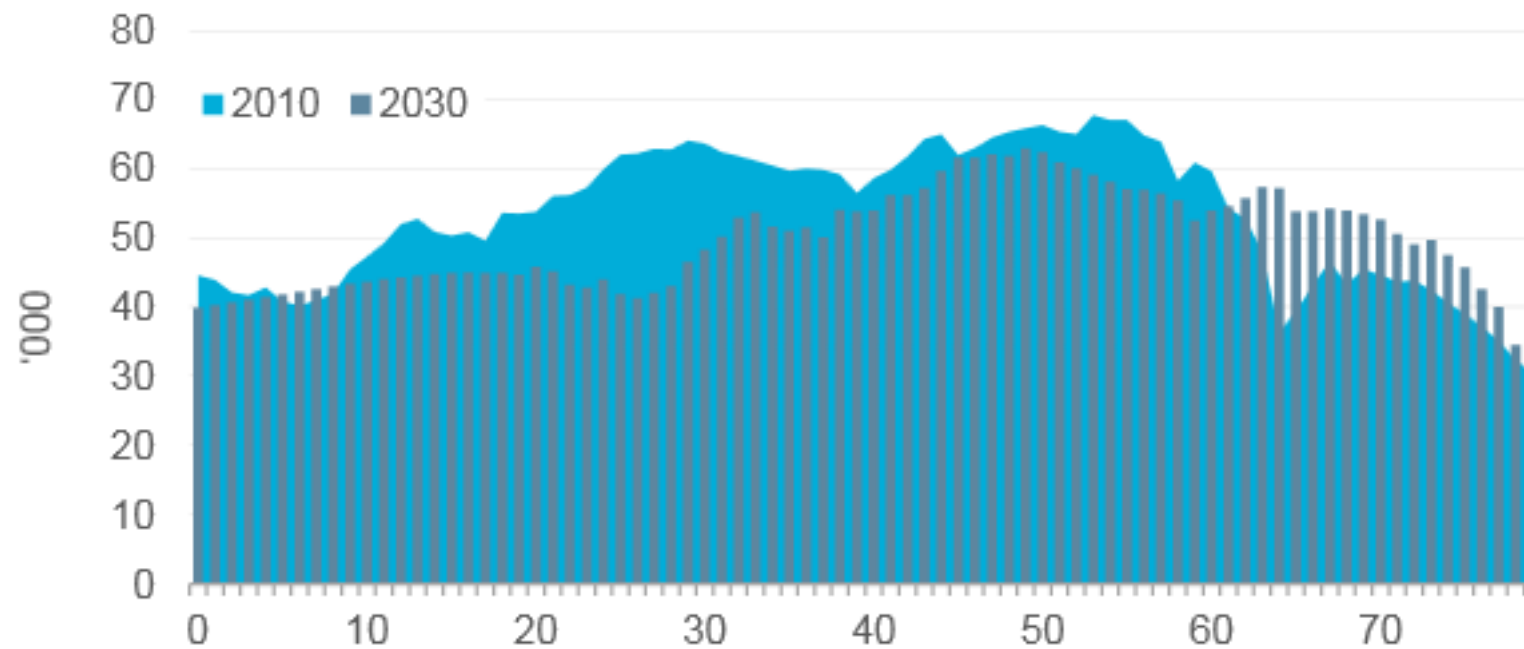
2030: Age Shift

Population: 4.2 million

Median age: 45.1 years

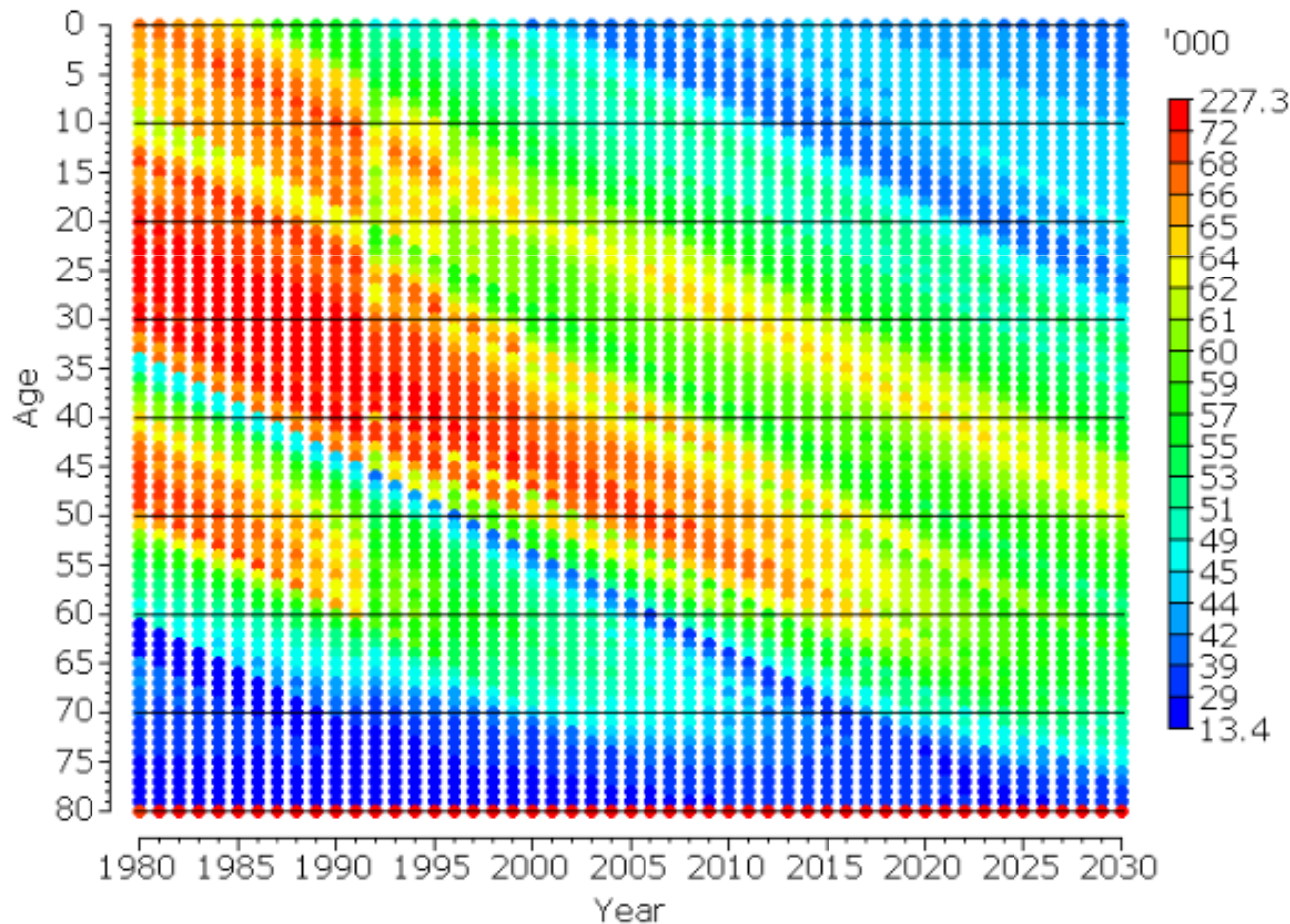
Life expectancy: 79.4 years

Population Age Shift: 2010-2030



Populacija u 2030.

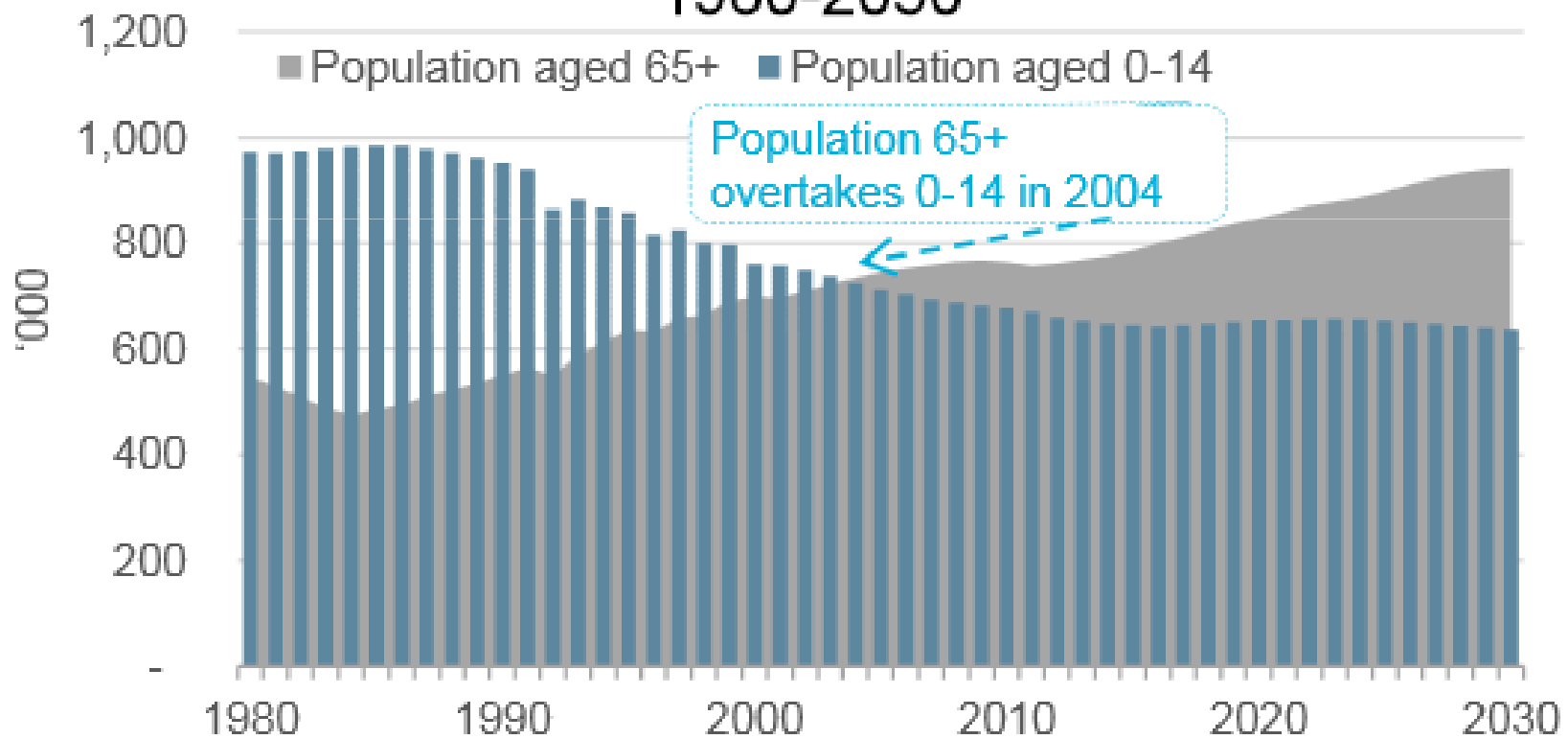
Age Structure of the Population at a Glance: 1980-2030
(Each dot represents a single-year age group)



- 2030: 4.2 mil (-5% na 2010.)
- 20-29 godina -27%
- 60+ trend +22% 2010:2030
- 2030. najbrojniji 45-52
- 2030. trend -8% dob 0-2
- emigracija iz 1990ih nije više najveći uzrok smanjenja populacije (?)

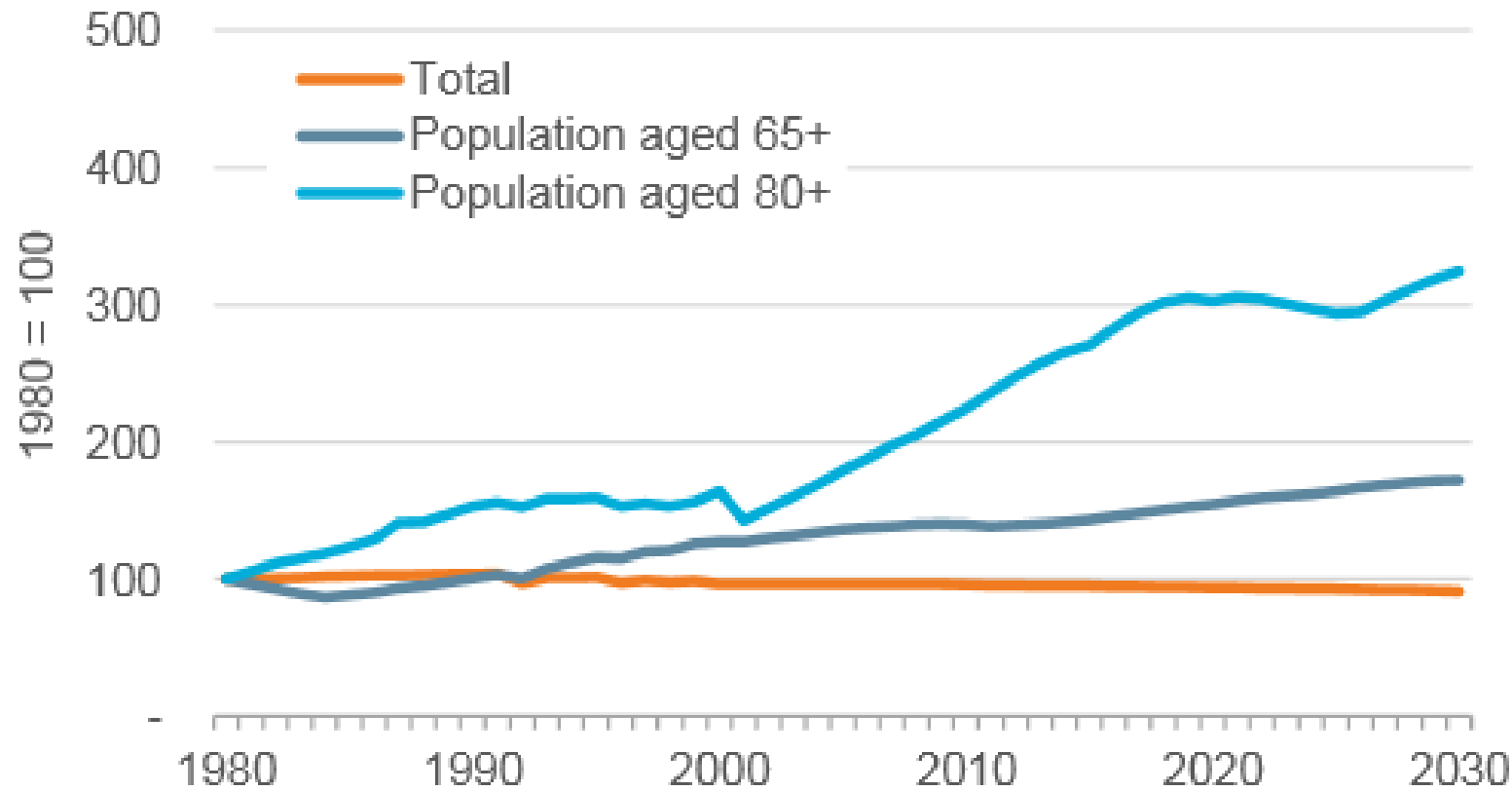
0-14 : 65+ trend

Population Aged 0-14 and 65+ 1980-2030



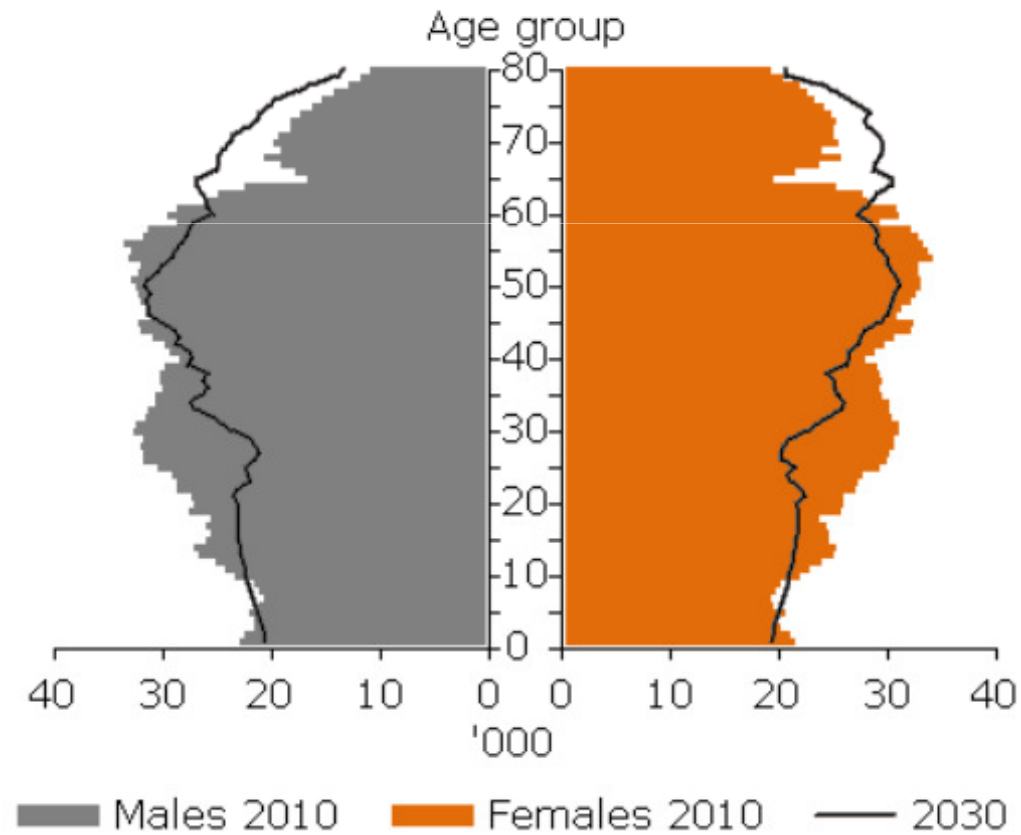
Trend rasta

Growth Indices 1980-2030

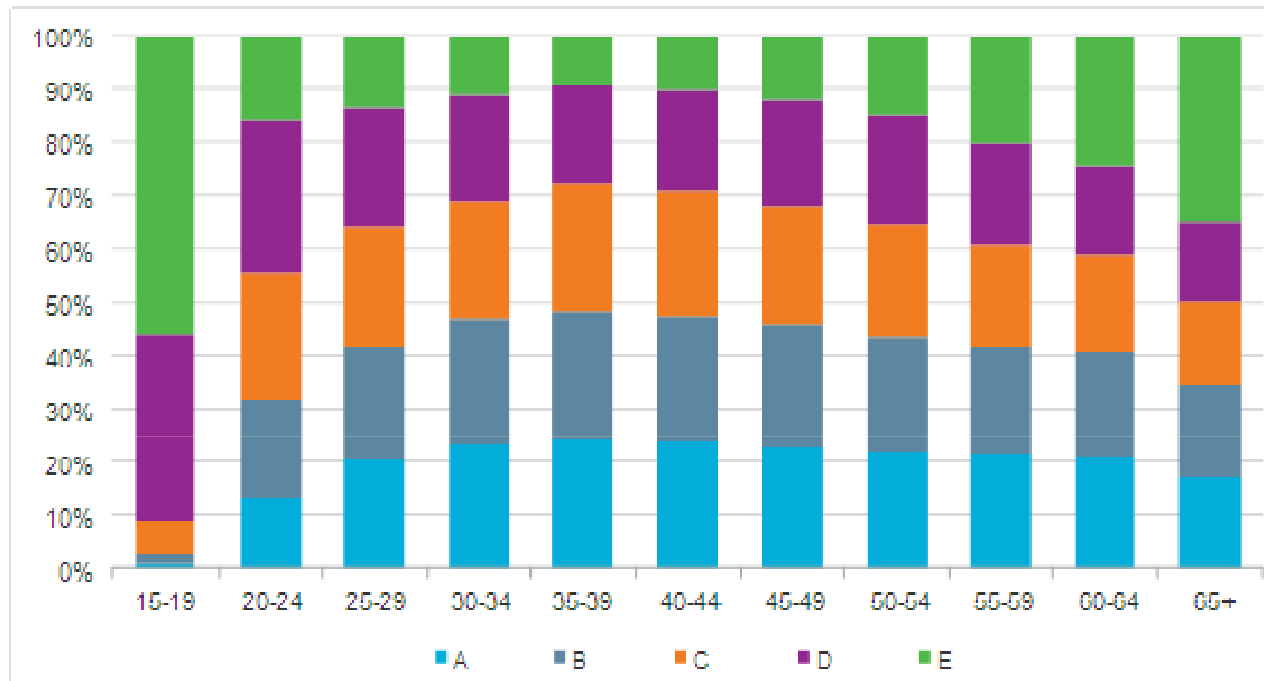


Age Pyramid

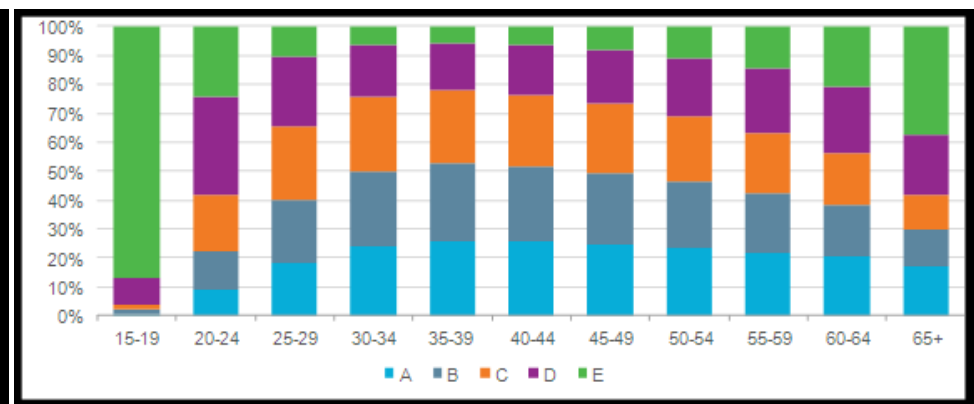
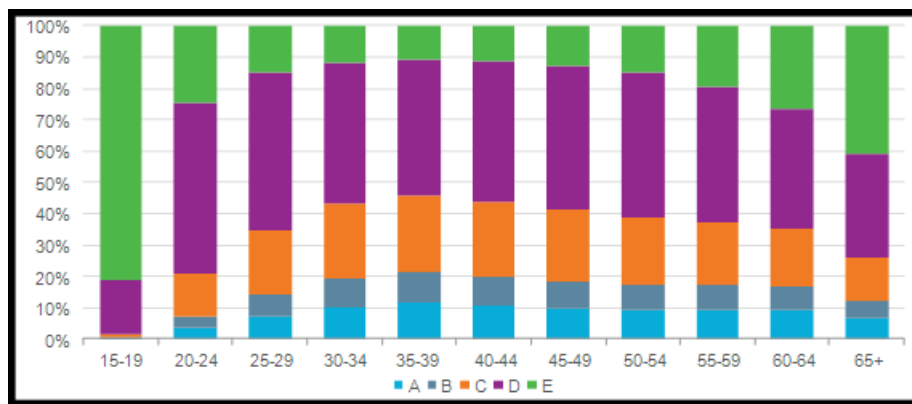
Age Pyramid 2010 and 2030
('000)



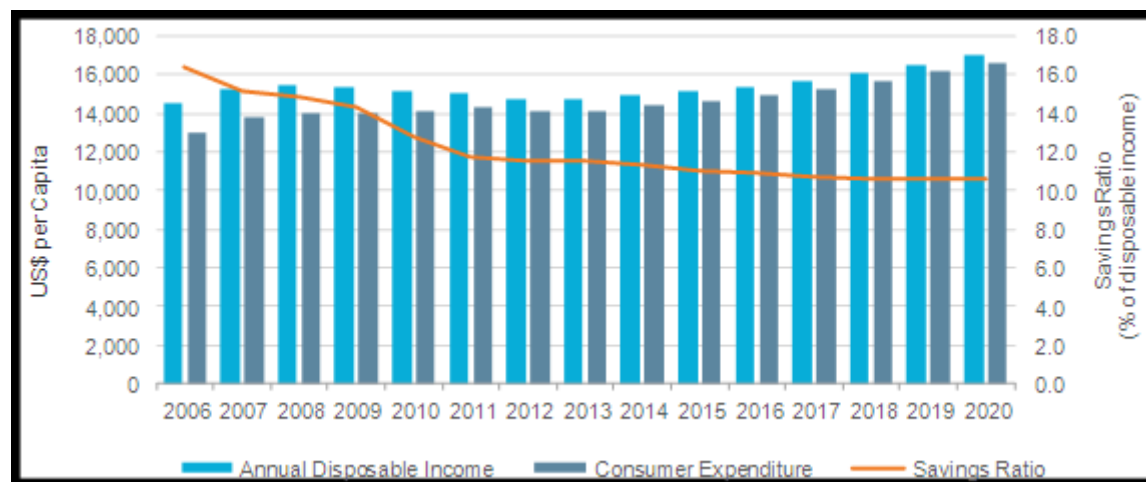
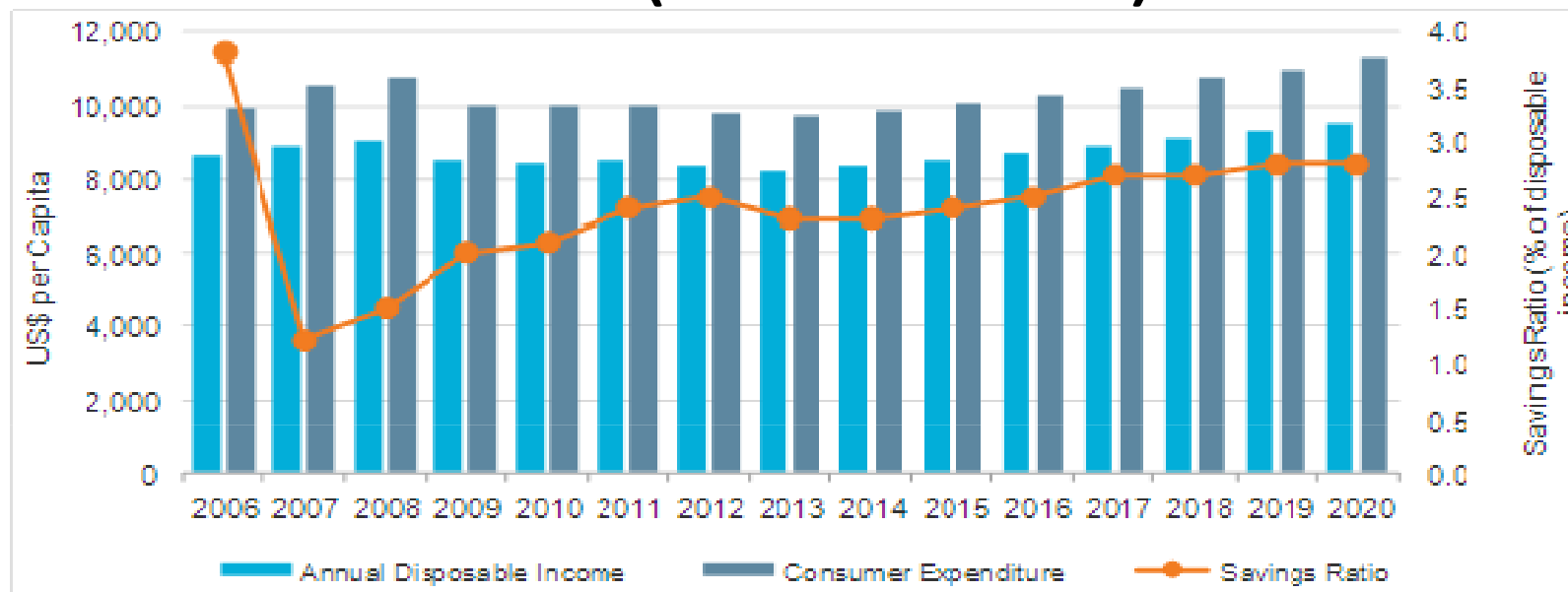
Social class by age



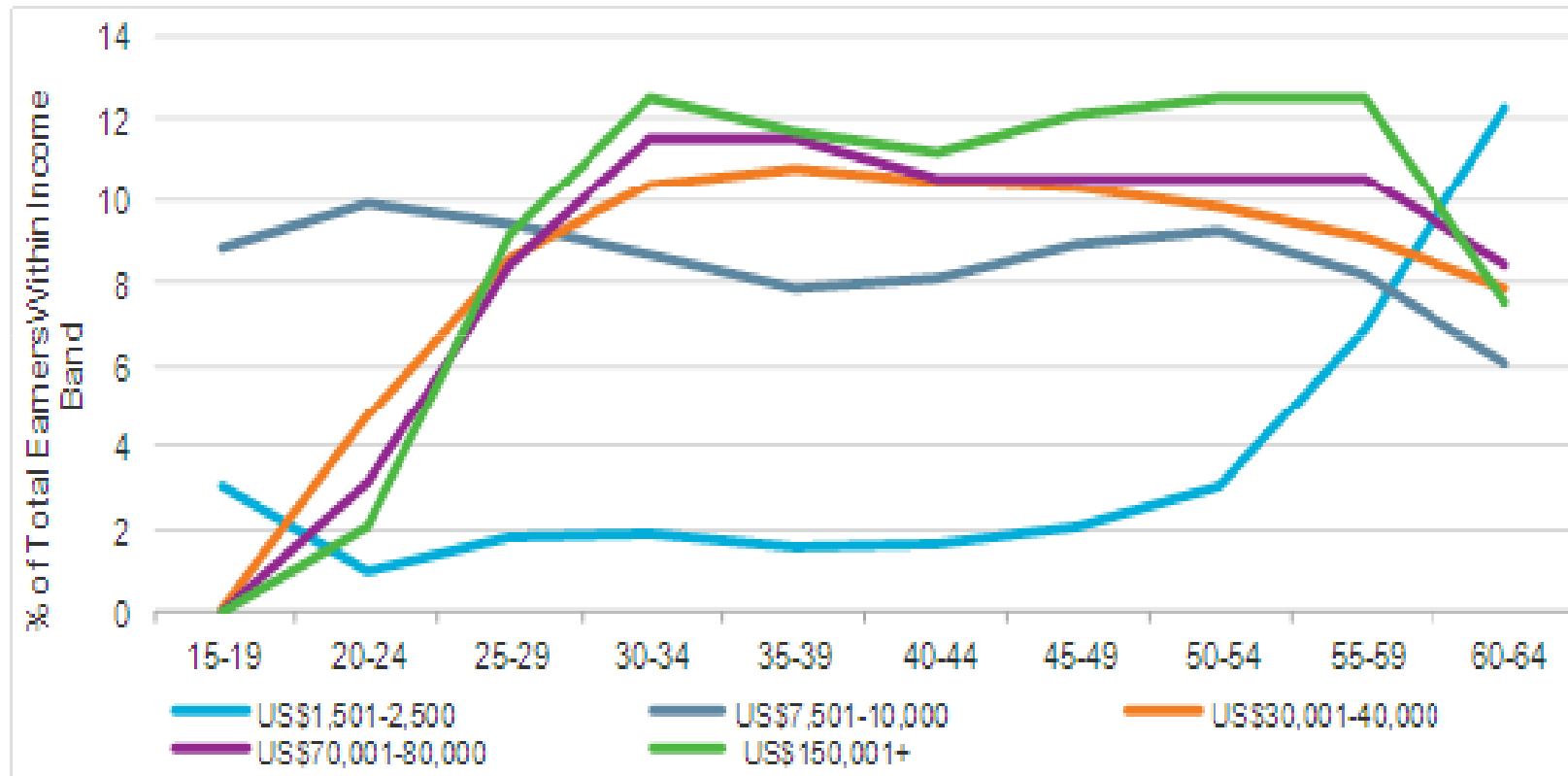
- A - gross income 200%+ Average Gross Income all individuals at age 15+
- B - gross income 150%-200%+ AGI...
- C - gross income 100%-150%+ AGI...
- D - gross income 50%-100%+ AGI...
- E - gross income less than 50% AGI...



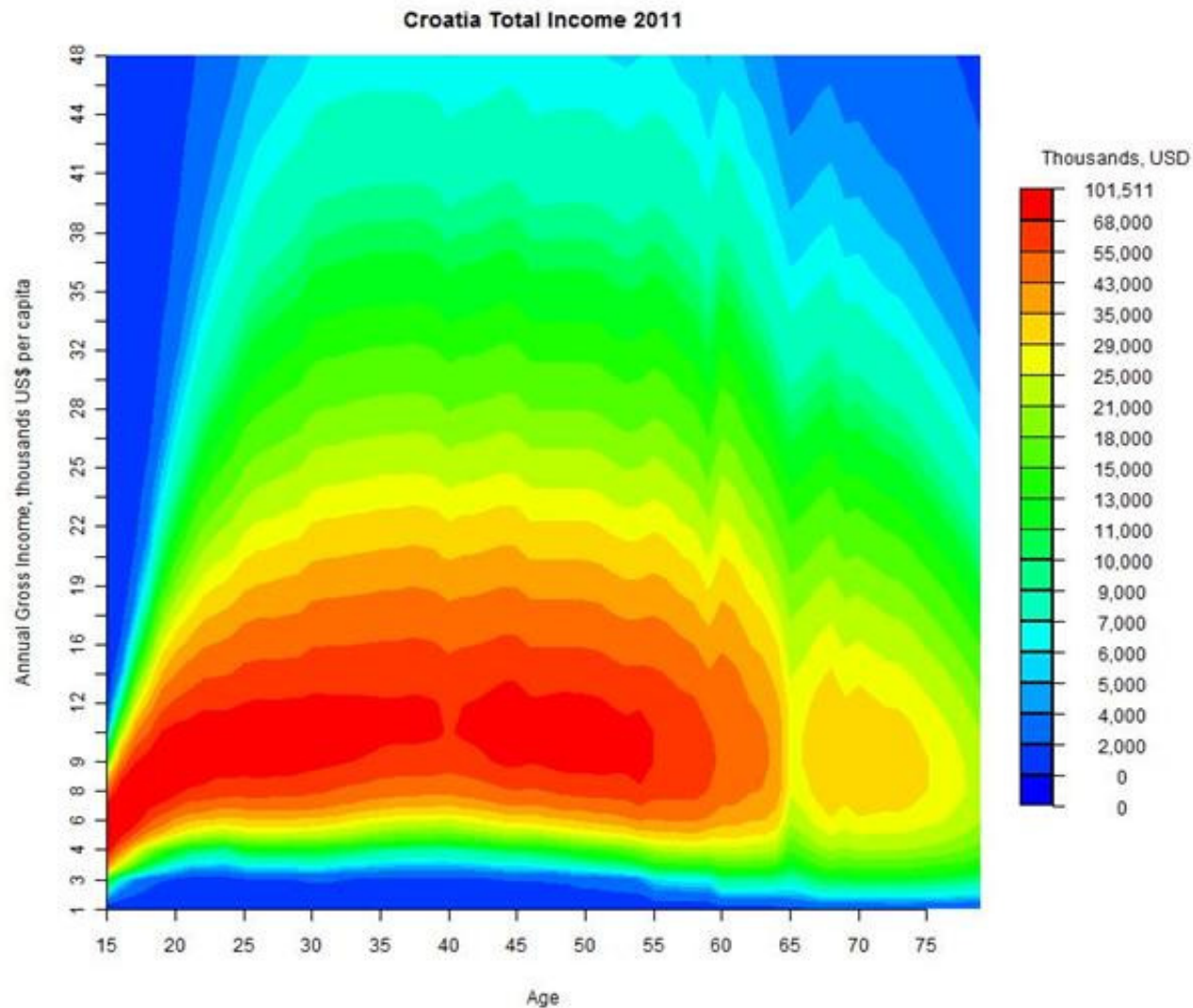
Spending and Savings Ratio (2006-2020)



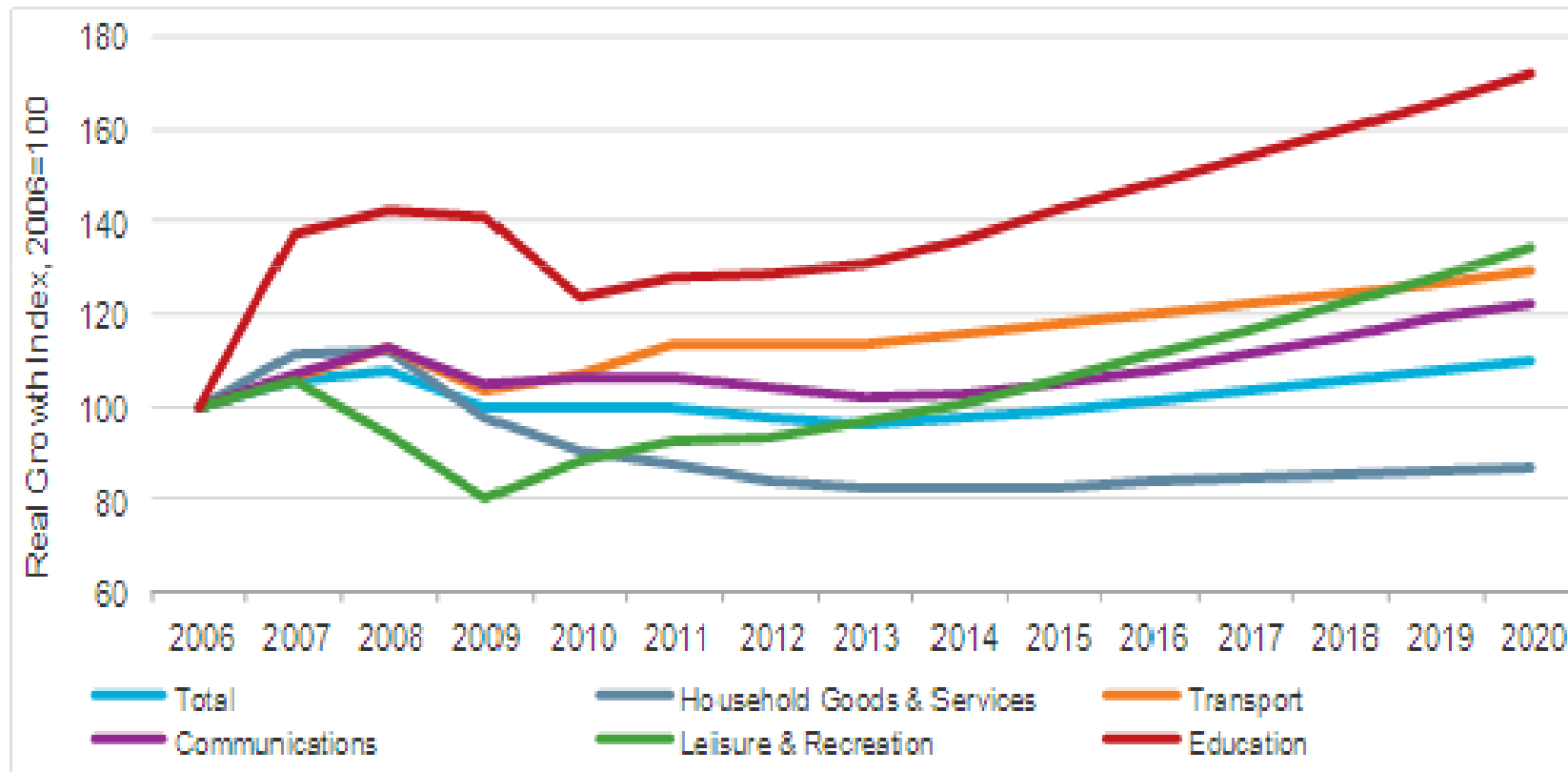
Gross income by age



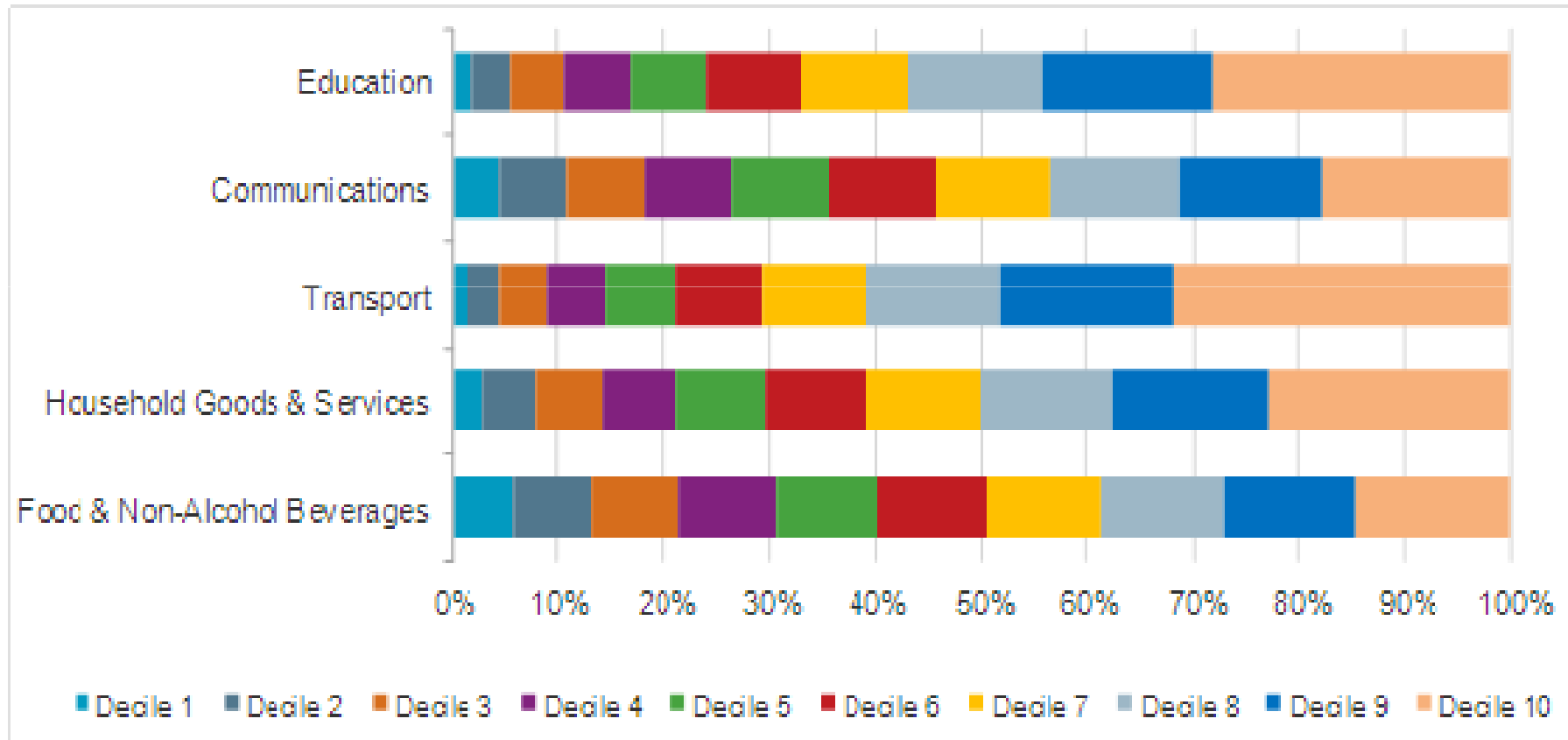
Total Gross Income Map



Real Growth Index of Consumer Expenditure by Category: 2006-2020



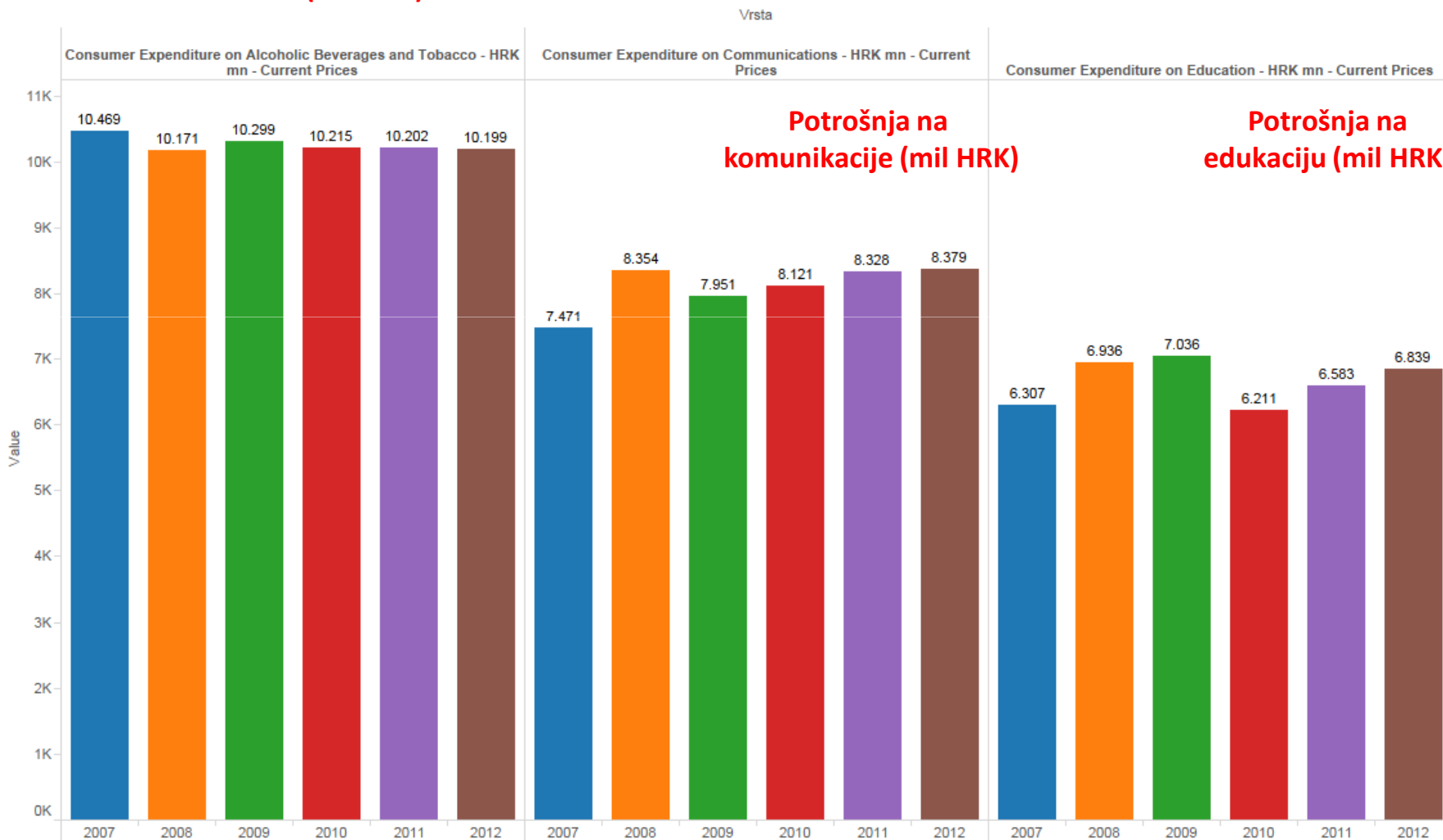
Proportion of Total Spending on Selected Categories by Decile



Hrvatska statistika i projekcije

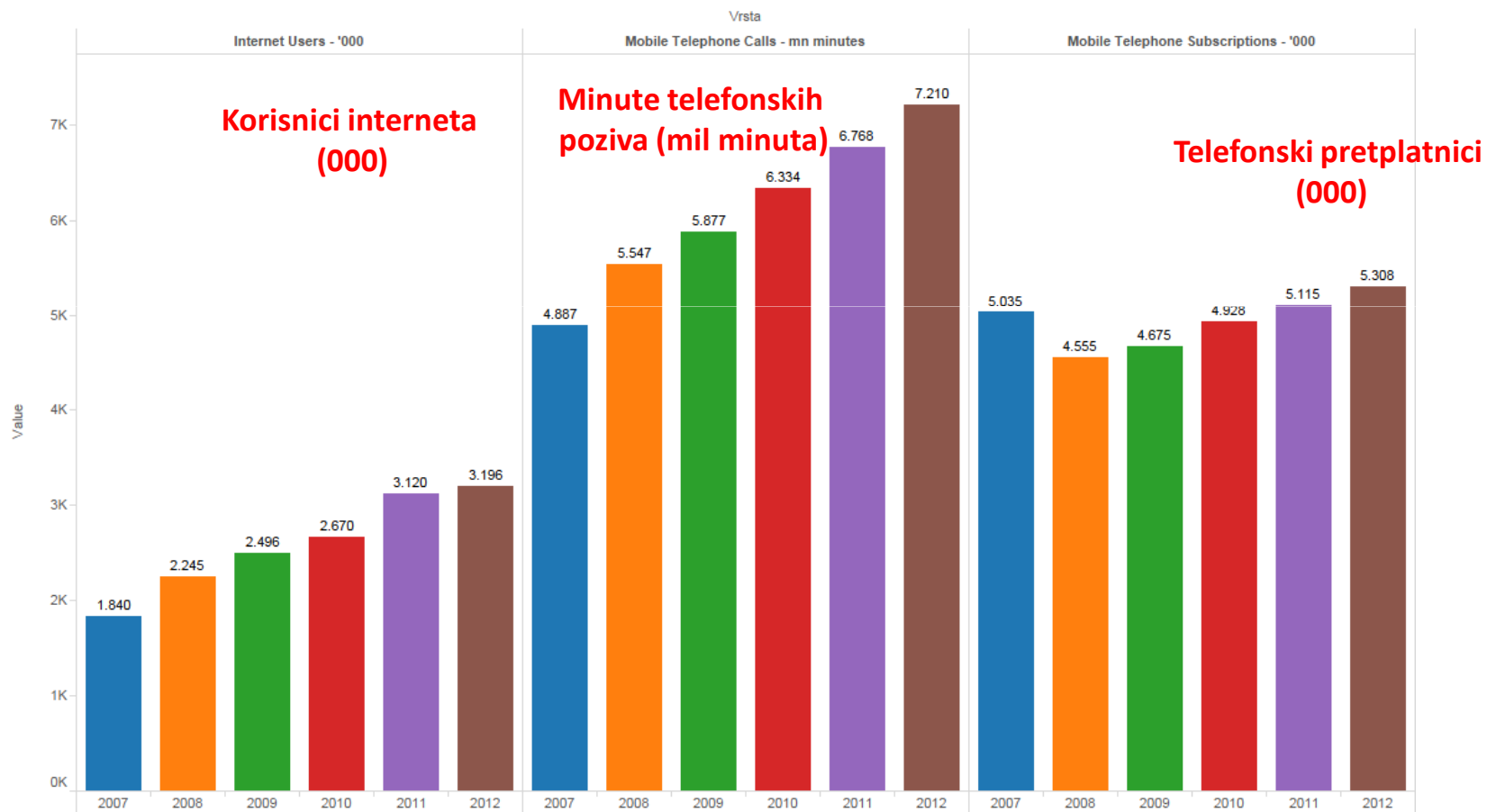
(1/4)

**Potrošnja na
alkohol i duhan (mil HRK)**



Hrvatska statistika i projekcije

(2/4)

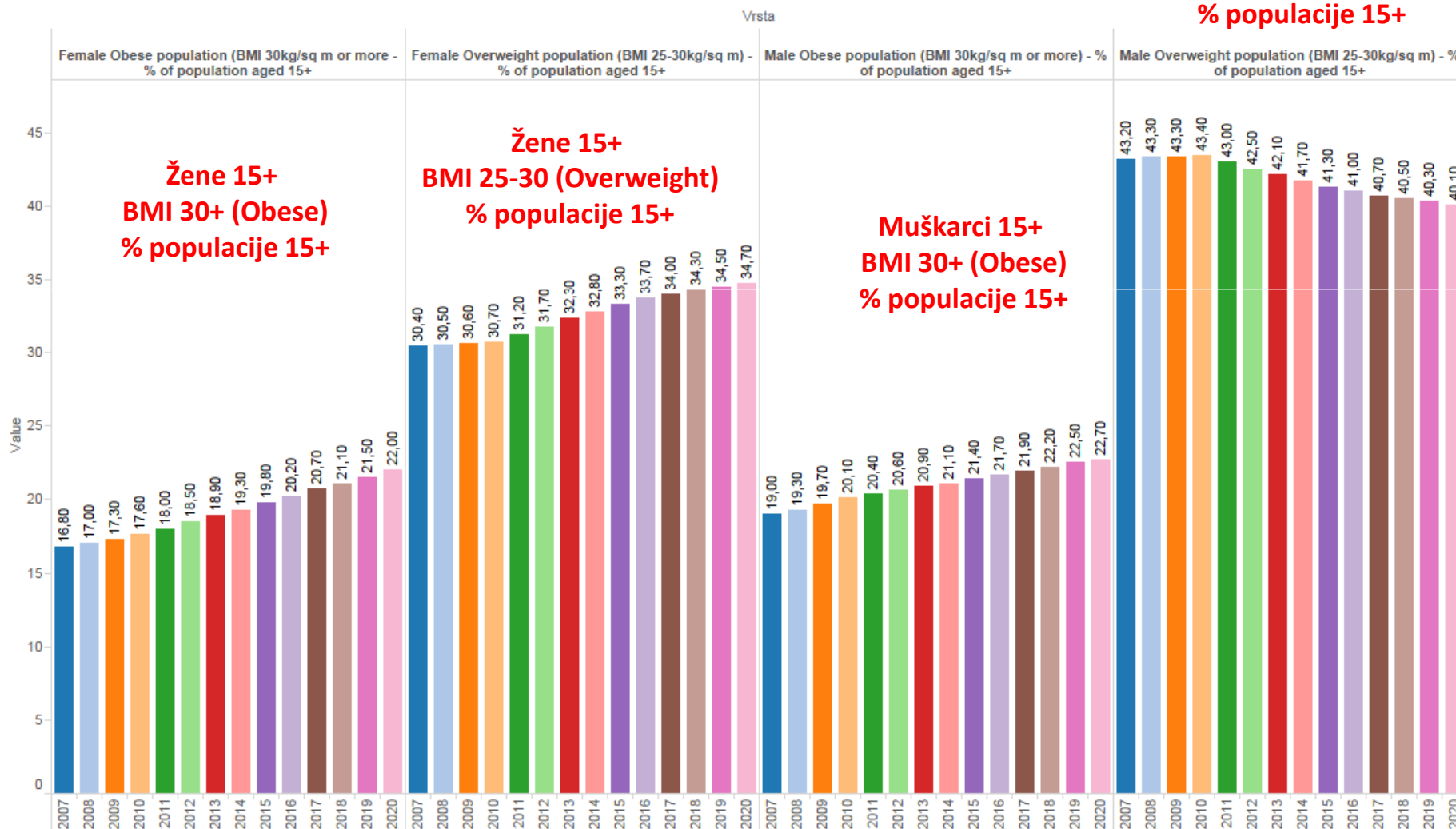


Hrvatska statistika i projekcije

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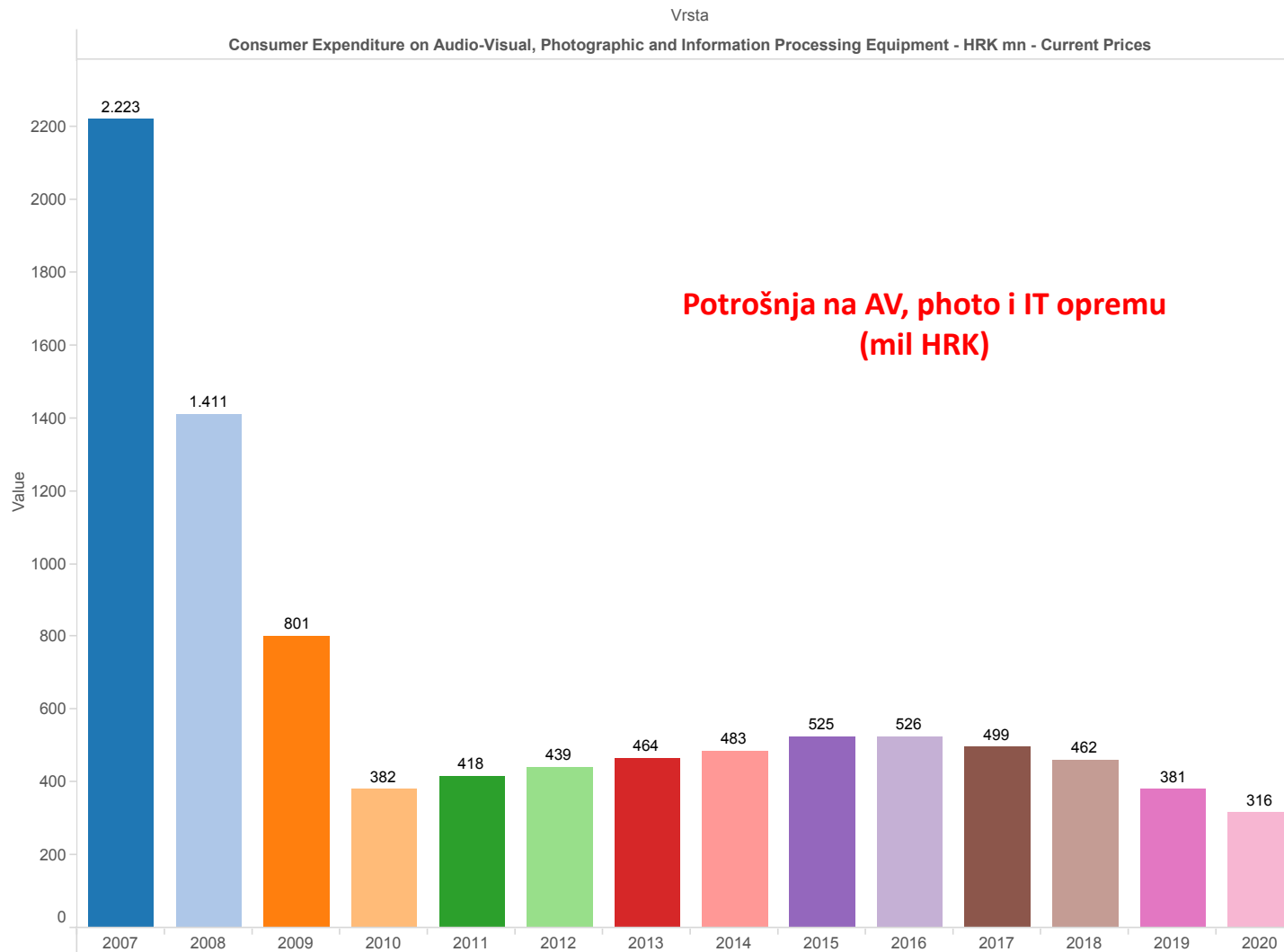


**Muškarci 15+
BMI 25-30 (Overweight)
% populacije 15+**



Hrvatska statistika i projekcije

(4/4)



Expect more...



- Insurance Industry Case
- Key Success Factors
 - ability to manage risk
 - superior financial management
 - focus on high quality asset portfolio
 - having a cost effective distribution system
 - appropriate pricing
 - credible investment strategy

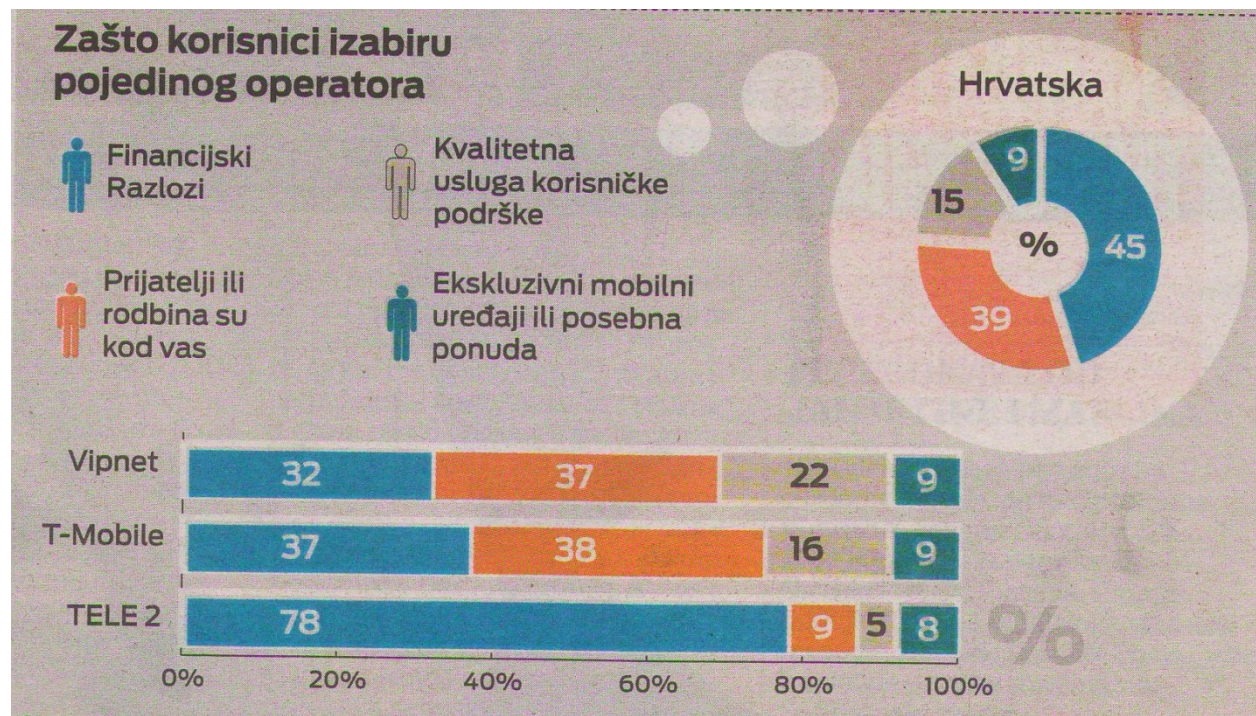
expect
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Insurance Case

- ability to manage risk
 - know about your portfolio and customers ✓
- superior financial&debt management
 - provision and salary management ✓
- focus on high quality asset portfolio
 - understand most risky and most profitable part of portfolio ✓
- having a cost effective distribution system
 - proposed web based solution for future ✓
 - network portfolio analysis ✓
- appropriate pricing
 - know about your customer and portfolio needs ✓
- credible investment strategy
 - investment in new technologies ✓

Expect more...?

- Telco Industry Case



Telco Case

- **Vjerojatnost *churna* pretplatnika pripadnika manje grupe (20 ili manje) je 2,7 puta veća nego kod velikih grupa**
- **Grupa ima lidera: kada je socijalni utjecaj lidera veći za minimalno 0,2 u odnosu na "najslabijeg" pripadnika.**
 - **70 % grupa** ima lidera,
 - **u 99 % grupa**, lider je pretplatnik analiziranog telekoma.
- **Snaga lidera (kada je lider pretplatnik konkurencije) povezana je s *churnom* grupe.**
 - **značajna korelacija snage lidera i porasta vjerojatnosti *churna***
 - što je jači lider, to će prije pripadnici grupe *churnati*
- **Najrizičniji pripadnik grupe je lider.**
 - 3 puta veća vjerojatnost *churna* u odnosu na ostale pripadnike grupe
 - u grupama gdje je 2 pretplatnika *churnalo*, vjerojatnost da je jedan od njih lider 12 puta je veća (u odnosu na slučajnost)
 - u grupama gdje je više od 2 pretplatnika *churnalo*, vjerojatnost da je jedan od njih lider 11,8 puta je veća (u odnosu na slučajnost)

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