

# A Comparative Analysis of Consumer Attitudes on the Use of Wood Products in Slovenia and Croatia

## Analiza uporabe drvnih proizvoda u Sloveniji i Hrvatskoj

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**ABSTRACT** • *In this paper, we compare consumer perceptions and attitudes in the wood products sectors in Slovenia and Croatia presenting them on the basis of a random sample of Slovenian and Croatian citizens between the age of 25 and 65. Data were collected using the computer assisted telephone interviewing method (CATI). The results suggest that, generally, there is a positive perception regarding the use of wood in both countries. The study results can potentially be a good basis for creating awareness-raising campaigns on the advantages of using wood in both countries.*

**Key words:** consumers, public opinion, timber construction, furniture industry, market potential, Croatia, Slovenia

**SAŽETAK** • *U ovom su radu uspoređene percepcije i stajališta potrošača u sektoru drvnih proizvoda Slovenije i Hrvatske, a prikazane su na temelju slučajnog uzorka slovenskih i hrvatskih državljana u dobi između 25 i 65 godina. Prikupljanje podataka provedeno je uz pomoć računala primjenom metode telefonskog intervjuiranja (CATI). Rezultati pokazuju da, općenito, postoji pozitivna percepcija o uporabi drva u obje zemlje. Rezultati istraživanja potencijalno mogu biti dobro polazište za kampanju podizanja svijesti o prednostima uporabe drva u Sloveniji i Hrvatskoj.*

**Cljučne riječi:** potrošači, javno mnijenje, drvo u graditeljstvu, industrija namještaja, tržišni potencijal, Hrvatska, Slovenija

### 1 INTRODUCTION

#### 1. UVOD

Slovenia and Croatia have similar forest sectors and both countries have experienced similar problems in the manufacturing, sale and use of wood products in recent years due to the global recession. This study com-

pares consumer attitudes and preferences in both countries with regard to wood furniture demand, consumer habits and attitudes towards wooden buildings. Although Croatia and Slovenia are both considered developed countries, and are similar in many ways, there are socio-economic differences between the two countries (Table 1). For example, Croatia, with a population over twice

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**Table 1** Demographic indicators for Croatia and Slovenia  
**Tablica 1.** Demografski pokazatelji za Hrvatsku i Sloveniju

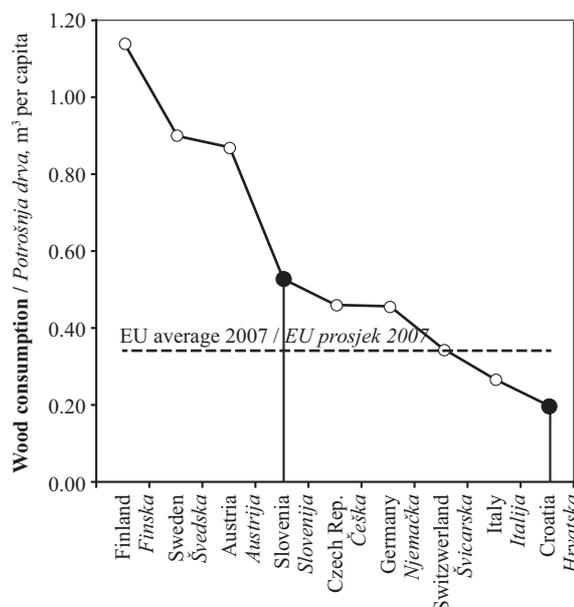
Indicator / Pokazatelj	Croatia Hrvatska	Slovenia Slovenija
Population (million) 2010	4.5	2.0
GDP (US\$ billion) 2010	60	50
Debt/GDP (2009/2010)	55.0%	31.4%
GDP Change (2010/2009)	-1.4%	-6.2%
Unemployment Rate 2010/2010)	17.6%	9.4%
Poverty Rate (2008/2010)	17%	13%

Source / izvor: CIA Factbook

that of Slovenia, has higher national debt, unemployment and poverty. However, Slovenia was impacted more severely by the current recession with a contraction in GDP of over four times that of Croatia.

Table 2 compares forest-related information for Slovenia and Croatia. While Croatia has twice the forest area available for supplying wood, the per capita forest land is almost identical with 63 and 62 hectares, respectively for Croatia and Slovenia. Forest land ownership patterns differ between the two countries with publicly owned forests accounting for 78 percent of the total in Croatia and only 23 percent in Slovenia. Beech is the primary species found in both countries while oak is ranked second in Croatia and spruce is second in Slovenia. In addition, in 2007 wood consumption per capita in Slovenia was above the EU average, while in Croatia wood consumption per capita was the lowest (Figure 1).

A review of the literature identified many critical issues related to the increased use of wood as an environmentally friendly and sustainable material (Jelačić *et al*, 2010; Motik *et al*, 2004; Petersen and Solberg, 2005; Tykkä, 2009; Zbašnik Senegačnik *et al*, 2011). These authors discuss wood processing ranging from traditional artisan carpentry to the use of wood as a construction material, as well as strategies for using wood, and environmental and economic impacts of use of wood products and alternative materials.



**Figure 1** Consumption of sawn wood and wood based panels in selected countries per capita 2006, 2007, 2008 (Forest Products Statistics 2004–2008, 2009 – analyzed by M. Piškur, Surveying and Mapping Institute of Slovenia, 2011)

**Slika 1.** Potrošnja piljenog drva i drvenih ploča u odabranim državama po stanovniku 2006, 2007, 2008.

The primary objectives of this research were to: 1) describe domestic wood usage in the furniture manufacturing and in construction sectors of Croatia and Slovenia; 2) examine consumer perceptions of wood in each country and; 3) identify possibilities for increased consumer use of wood. We researched a number of topics including the determination of preferred construction methods, correlations between potential furniture use and perceptions of the timber industry. One of the main hypotheses was that there was no significant difference between the perception of a healthy living environment related to the use of wood; life-styles are

**Table 2** A comparison of forests and other wooded land, growing stock and tree species in Croatia and Slovenia  
**Tablica 2.** Usporedba šuma i drugih šumskih zemljišta, drvnih zaliha i vrsta drveća u Hrvatskoj i u Sloveniji

	Croatia / Hrvatska	Slovenia / Slovenija
Surface / Površina (1000 ha)	5,594	2,014
Forest and other wooded land Šume i druga šumska zemljišta (1000 ha)	2,689	1,274
Forest available for wood supply Šume za opskrbu drvom (1000 ha)	2,416	1,175
Forest and other wooded land Šume i druga šumska zemljišta (ha/capita)	0,63	0,62
Forest and other wooded land Šume i druga šumska zemljišta (percentage)	47%	63%
Publicly owned / Javno vlasništvo (1000 ha)	2,107	291
Private and other / Privatno i drugo (1000 ha)	582	962
Growing stock / Drvna zaliha (m³/ha)	213	332
Increment / Godišnji prirast (m³/ha)	3,9	7,8
Tree species / Vrsta drveća (percentage)	beech / bukva 36 %, oak / hrast 22 %, horbeam / grab 9 %, fir / jela 8 %, ash / jasen 3 %, spruce / smreka 2 %, other tree species / druge vrste drveća 20 %	beech / bukva 32 %, spruce / smreka 32 %, fir / jela 7.5 %, oak / hrast 7.4 %, pine / bor 5.9 %, valuable broadleaves / vrijedne listače 4.9 %, other tree species / druge vrste drveća 10 %

Source / Izvor: Eurostat Statistical Books, 2011, Hrvatske Šume d.o.o.

similar and the share of artisan furniture is fairly large both in Slovenia and Croatia.

## 2 MATERIALS AND METHODS

### 2. MATERIJALI I METODE

The sample frame for the study was structured according to population frequencies of the regional sectors in each country. Due to wide discrepancies of populations in study regions, the data were weighted by these population frequencies. 743 respondents were included in the study, 406 from Slovenian and 337 from Croatia. Data were collected conducted with the CATI method – computer assisted telephone interviewing (Kreuter *et al.*, 2008). In Slovenia, the interview process took place from 15<sup>th</sup> December 2010 to 22<sup>nd</sup> December 2010; in Croatia, from 16<sup>th</sup> May to 27<sup>th</sup> May 2011. The survey questionnaire was developed by two research groups at the Department of Wood Science and Technology, Biotechnical Faculty, University of Ljubljana, and the Faculty of Forestry, University of Zagreb, in cooperation with the Chamber of Crafts and Small Business of Slovenia. Research group members had a broad expertise in the wood products sector including architecture, wood technology and construction.

The reliability of data depends on two factors: the size of the sample and the portion assessed. The smaller the share assessed, the larger the sample required; in the case samples of the same-size, assessments of smaller shares are less reliable. In this study, the degree of reliability for the population sample frame was tested at the 5 percent risk level with a resulting 95 per-

cent probability that the sample population values are within the +/-5 percent confidence interval.

With regard to the questionnaire structure, respondents were presented with questions for 10 topical areas: 1) general perceptions of wood; 2) material selection when replacing windows in the respondent's home; 3) sources of information when selecting furniture; 5) preferences for domestic or foreign furniture manufacturers; 6) furniture replacement time frames; 7) the share of custom-made furniture in respondent homes; 8) desire to have more solid wood furniture in the home and reasons; 9) attitude towards a healthy living environment in connection with wood and; 10) home construction material preferences with regard to energy efficiency.

## 3 RESULTS AND DISCUSSION

### 3. REZULTATI I RASPRAVA

#### 3.1 Respondent demographics

##### 3.1. Demografska struktura uzorka

Table 3 summarizes demographic characteristics of respondents in each country. Generally, Slovenian respondents have a lower percentage of females, they are younger in age, less educated, and have higher personal incomes. Respondents from both countries have the same unemployment rate of 24 percent.

#### 3.2 Perceptions of using wood

##### 3.2. Percepcija uporabe drva

A bank of six statements were posed to respondents, which they rated on a Likert-type scale of 1–5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree (Figure 2). On average, re-

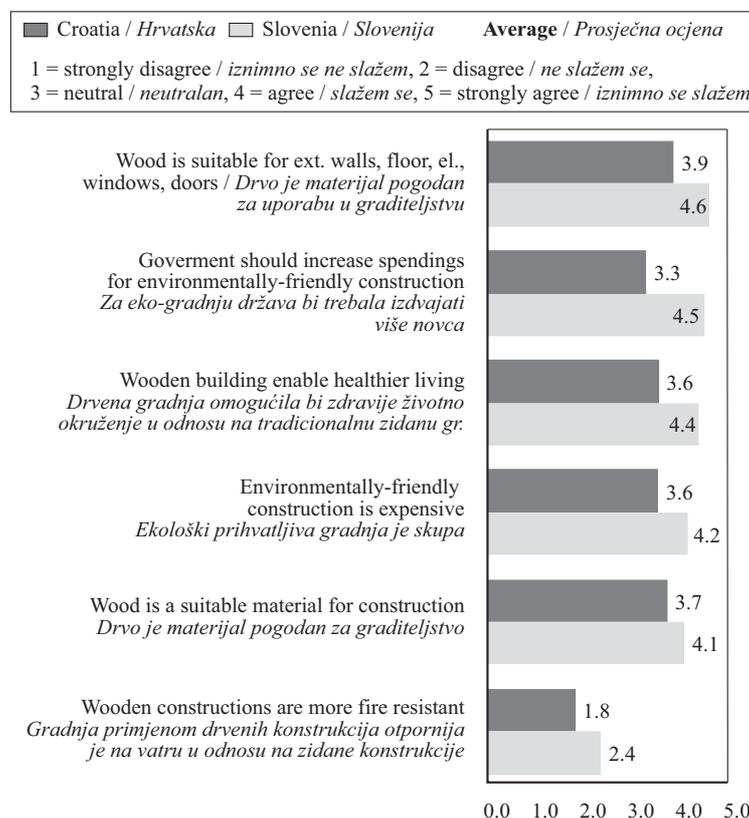


Figure 2 General perceptions about wood (Croatia, n=337; Slovenia, n=406)

Slika 2. Tvrdnje o gradnji drvom, ekološki i zdravome životnom okruženju (Hrvatska, n=337; Slovenija, n=406)

**Table 3** Respondent demographic structure**Tablica 3.** Osnovne informacije o istraživanju i demografskoj strukturi uzorka

		<b>Slovenia</b> <i>Slovenija, %</i> n=406	<b>Croatia</b> <i>Hrvatska, %</i> n=337
Gender / <i>Spol</i>	Male / <i>muški</i>	47	55
	Female / <i>ženski</i>	53	45
Age / <i>Starost</i>	Years / <i>godina 25–30</i>	14	31
	Years / <i>godina 31–40</i>	27	24
	Years / <i>godina 41–50</i>	33	27
	Years / <i>godina 51–65</i>	26	18
Education <i>Obrazovanje</i>	Elementary school or less / <i>osnovna i niža škola</i>	9	2
	Vocational school / <i>strukovno obrazovanje</i>	21	20
	Secondary school / <i>četverogodišnja srednja škola</i>	32	39
	Graduate and postgraduate / <i>viša, visoka škola i više</i>	38	39
Personal income <i>Osobni dohodak</i>	Up to EUR 365 / <i>do 365 EUR</i>	12	27
	EUR 365–EUR 730	29	39
	EUR 730–EUR 1100	34	24
	EUR 1100–EUR 1460	16	8
	Above EUR 1460 / <i>iznad 1460 EUR</i>	9	2
Employment status <i>Zaposlenost</i>	Employed / <i>zaposlen</i>	76	76
	Unemployed / <i>nezaposlen</i>	24	24
Slovenian Regions <i>Slovenska regija</i>	Central Slovenia / <i>središnja Slovenija</i>	29	
	East Štajerska / <i>Istočna Štajerska (Maribor)</i>	18	
	Savinjska Region / <i>Savinjska regija (Celje)</i>	14	
	Gorenjska Region / <i>Gorenjska regija</i>	11	
	Dolenjska Region / <i>Dolenjska regija</i>	10	
	Prekmurje Region / <i>Prekomurska regija</i>	7	
	Goriška Region / <i>Goriška regija</i>	6	
	Littoral and Inner Slovenia / <i>Obalna i unutrašnja Slovenija</i>	5	
Croatian Regions <i>Hrvatska regija</i>	Zagreb County / <i>Zagrebačka županija</i>		7
	Krapina-Zagorje County / <i>Krapinsko-zagorska županija</i>		3
	Sisak-Moslavina County / <i>Sisačko-moslavačka županija</i>		5
	Karlovac County / <i>Karlovačka županija</i>		3
	Varaždin County / <i>Varaždinska županija</i>		5
	Koprivnica-Križevci County / <i>Koprivničko-križevačka županija</i>		2
	Bjelovar-Bilogora County / <i>Bjelovarsko-bilogorska županija</i>		3
	Primorje-Gorski Kotar County / <i>Primorsko-goranska županija</i>		7
	Lika-Senj County / <i>Ličko-senjska županija</i>		1
	Virovitica-Podravina County / <i>Virovitičko-podravska županija</i>		2
	Požega-Slavonija County / <i>Požeško-slavonska županija</i>		2
	Brod-Posavina County / <i>Brodsko-posavska županija</i>		4
	Zadar County / <i>Zadarska županija</i>		4
	Osijek-Baranja County / <i>Osječko-baranjska županija</i>		7
	Šibenik-Knin County / <i>Šibensko-kninska županija</i>		3
	Vukovar-Srijem County / <i>Vukovarsko-srijemska županija</i>		5
	Split-Dalmatia County / <i>Splitsko-dalmatinska županija</i>		11
	Istra County / <i>Istarska županija</i>		5
	Dubrovnik-Neretva County / <i>Dubrovačko-neretvanska županija</i>		3
	Međimurje County / <i>Međimurska županija</i>		3
	City of Zagreb / <i>Grad Zagreb</i>		15

spondents from Slovenia had significantly higher levels of agreement for all statements in this section. In addition, all responses were, on average, above the midpoint of 3.0 except for the statement “Wooden construction is more fire resistant than alternative construction methods”, which had average respondent values of 1.8 and 2.4 for Croatia and Slovenia, respectively. Generally, wood is viewed as a viable construction and value-added product material that promotes a

healthy living environment. Respondents believe that environmentally friendly construction is expensive but that their respective governments should (co-finance) environmentally-friendly construction.

### 3.3 Material selection in replacing windows

#### 3.3. Odabir materijala pri zamjeni prozora

Respondents were asked which materials they would use when replacing old or purchasing new windows. Multiple responses were possible. In addition,

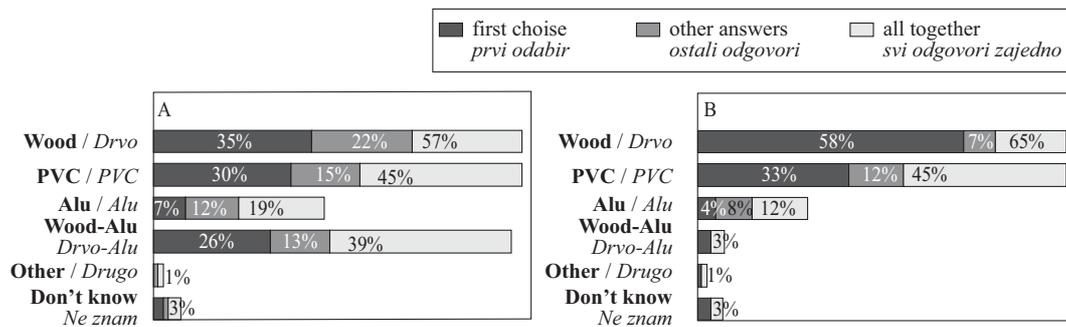


Figure 3 Answers to “If you decided to replace or purchase windows, which material would you choose?” Percentage of respondents. Multiple responses possible (A – Croatia, n=336, B – Slovenia, n=406)

Slika 3. Odgovori na pitanje “Kad biste se odlučili za zamjenu ili kupnju prozora, koji biste materijal izabrali?” (A – Hrvatska, n=336, B – Slovenija, n=406)

respondents indicated their “first choice” of material. We also show the total of “other answers” for each category, as well as grand total for “first choice plus” “other answers”. Figure 3 shows that the largest share of respondents would choose wood (Slovenia: 58 percent; Croatia: 35 percent), followed by polyvinyl chloride (PVC), a thermoplastic polymer. Wood-aluminum is ranked third in Croatia, and aluminium in Slovenia. Other materials were selected by significantly fewer respondents. It should be noted that the grand total for “first choice plus” “other answers” for wood is 65 percent in Slovenia and 57 percent in Croatia.

### 3.4 Furniture selection criteria

#### 3.4. Kriterij pri odabiru namještaja

Respondents were asked where they acquire information when selecting furniture (Figure 4). Multiple responses were possible. In addition, as is the case for product selection previously discussed, respondents indicated their “first choice” of material. The total of

“other answers” for each category as well as grand total for “first choice plus” “other answers” are also shown. In Slovenia, shopping centers were ranked first by 25 percent of respondents and an additional 23 percent of respondents selected shopping centers as ranked lower than first choice; the combined share of respondents totaled 49 percent. Internet offers were ranked second and magazine information third. Online offers were ranked first in Croatia, followed by information found in shopping centers.

### 3.5 Domestic vs. foreign manufacturers

#### 3.5. Domaći proizvođači nasuprot stranima

We were interested in whether respondents prefer domestic or foreign furniture manufacturers (Figure 5). Slovenian respondents were more opinionated with 72 percent preferring domestic manufacturers compared to 40 percent of Croatian respondents. Thirty-nine percent of Croatian respondents were undecided relative to 23 percent of Slovenian respondents.

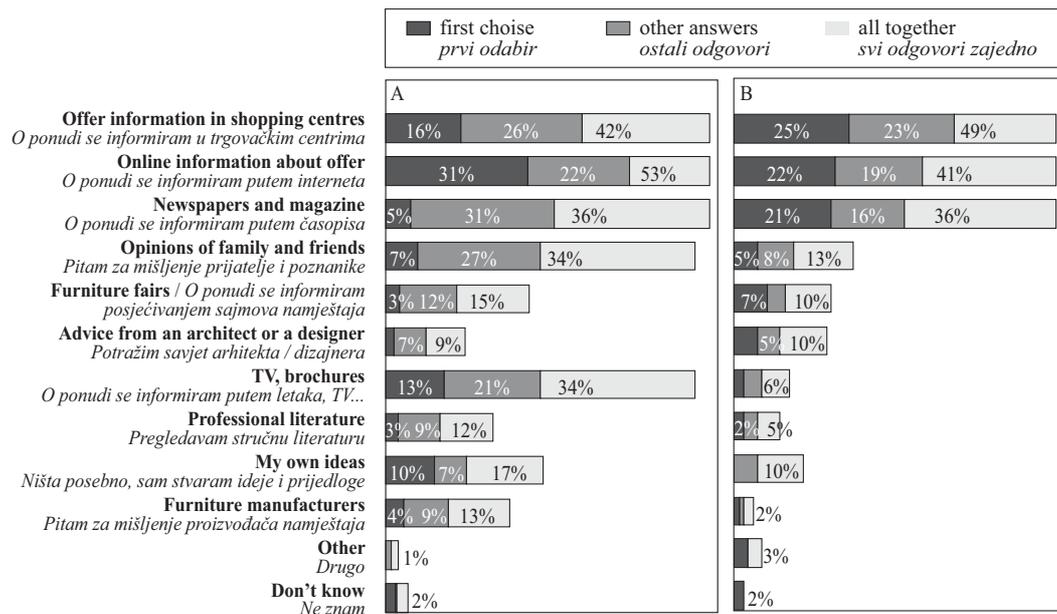
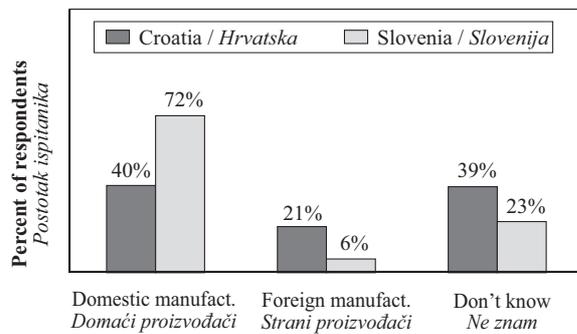


Figure 4 Answers to “Before purchasing furniture, where do you look for ideas / advice / information on furniture?” Percentage of Respondents (A – Croatia, n=336, B – Slovenia, n=406)

Slika 4. Odgovori na pitanje “Gdje prije kupnje tražite ideje / savjete / informacije o namještaju?” (A – Hrvatska, n=336, B – Slovenija, n=406)



**Figure 5** Answers to the question “When purchasing furniture, do you prefer domestic or foreign manufacturers?” (Croatia, n=337, Slovenia, n=406)

**Slika 5.** Odgovori na pitanje “Izabirete li pri kupnji namještaja radije domaće ili strane proizvođače?” (Hrvatska, n=337, Slovenija, n=406)

### 3.6 Furniture replacement

#### 3.6. Zamjena namještaja

In the question that followed, we asked respondents when they planned to replace their living-room furniture (Figure 6). Twelve percent of Slovenian respondents plan to replace their living-room furniture by the end of 2011 relative to four percent of Croatians. For those respondents that plan to replace furniture, the highest percentage of respondents in Slovenia plan to do so in the 5-10 year period (20 percent) while 24 percent of Croatian respondents plan to do so in the 3-5 year period. Twenty-eight percent of Slovenian respondents and 12 percent of Croatian respondents have no plans to purchase new living-room furniture.

### 3.7 Custom-made vs. mass-produced furniture

#### 3.7. Namještaj po mjeri nasuprot namještaju za masovnu uporabu

Respondents were then asked about the number of custom-made furniture and mass-produced pieces of furniture they currently have in their homes. The percentage of custom-made furniture was then calculated (Figure 7). On average, for both Slovenian and Croa-

tian respondents, about 30 percent of furniture was custom-made. Two and six percent of Croatian and Slovenian respondents, respectively, own 100 percent custom-made furniture.

### 3.8 Desire to own more wooden furniture

#### 3.8. Želja za posjedovanjem više drvenog namještaja

We were also interested in whether respondents would like to own more pieces of solid wood furniture and the reasons why (Figure 8). Respondents indicated their “first choice” of reason. The the total of “other answers” for each category as well as grand total for “first choice plus” “other answers” are also shown. In Slovenia, the percentage of respondents who would like to own more pieces of solid wood furniture and those who would not is 54 percent and 46 percent, respectively. However, in Croatia, the ratio is 64 percent and 36 percent. The primary reasons for desiring solid wood furniture are similar in Slovenia and Croatia: aesthetics, quality and durability, environmental-friendliness, health, warmth and homey appearance.

### 3.9 Wood and a healthy living environment

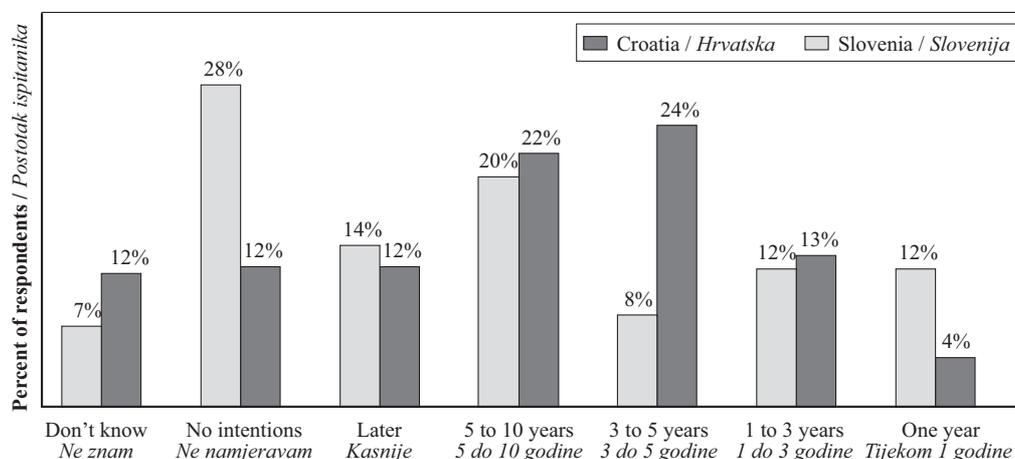
#### 3.9. Drvo i zdrava životna okolina

After we stated to respondents that a healthy living environment is tied to the use of wood, purposely biasing responses, we asked the respondents if they were willing to spend more for a healthier living environment. Respondents indicated their “first choice” of room. The total of “other answers” for each category as well as grand total for “first choice plus” “other answers” are also shown. Only 10 percent of the respondents were not willing to spend more. Others (86 percent in Slovenia and 99 percent in Croatia) would invest primarily in living rooms, bedrooms and kitchens (Figure 9).

### 3.10 Home construction and energy efficiency

#### 3.10. Izgradnja kuće i energetska učinkovitost

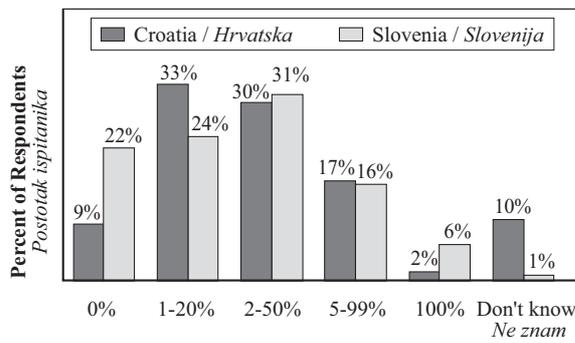
In Slovenia and Croatia, timber panel construction (prefabricated construction) has existed for over



**Figure 6** Answers to the question “When do you plan to replace your living-room furniture?”

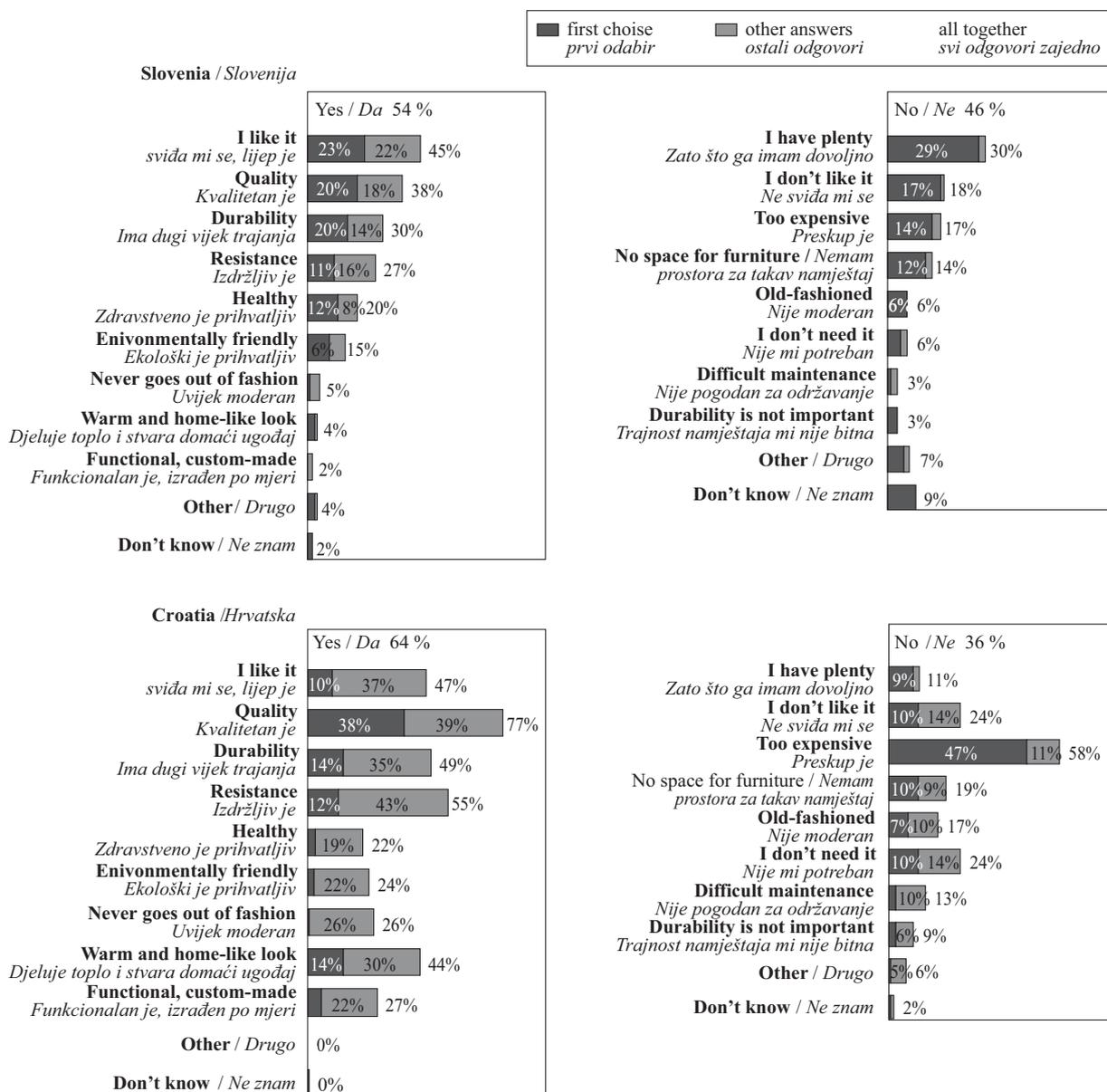
(Croatia, n=327, Slovenia, n=406)

**Slika 6.** Odgovori na pitanje “Kad namjeravate promijeniti namještaj u dnevnoj sobi?” (Hrvatska, n=327, Slovenija, n=406)



**Figure 7** Answers to the question “What is the share of custom-made furniture in your home?” (Croatia, n =327, Slovenia, n =406)

**Slika 7.** Odgovori na pitanje “Koliki je u vašem stanu udio namještaja napravljenoga po narudžbi?” (Hrvatska, n=327, Slovenija, n =406)



**Figure 8** Answers to the question “Would you like to have more pieces of solid wood furniture in your home?” “If so, why?” Percentage of respondents. Multiple responses possible. (A – Croatia, n =329, B – Slovenia, n =406)

**Slika 8.** Odgovori na pitanje “Želite li u svom domu imati više masivnog namještaja?” (A – Hrvatska, n =329, B – Slovenija, n =406)

35 years. We were therefore interested whether respondents would prefer low-energy construction or pre-fabricated timber construction if they hypothetically were to build a new house today. The results show that 51 percent of Slovenian respondents would choose traditional construction, 32 percent would choose prefabricated timber construction implemented by a recognized manufacturer of low-energy timber houses, and 10 percent would undertake the project themselves. In Croatia, traditional low-energy construction is ranked first with 51 percent of respondents, 18 percent would choose timber construction by recognized manufacturers, whereas 18 percent would undertake the project themselves. It is worthless that 30 percent of Croatian respondents were undecided (Figure 10).

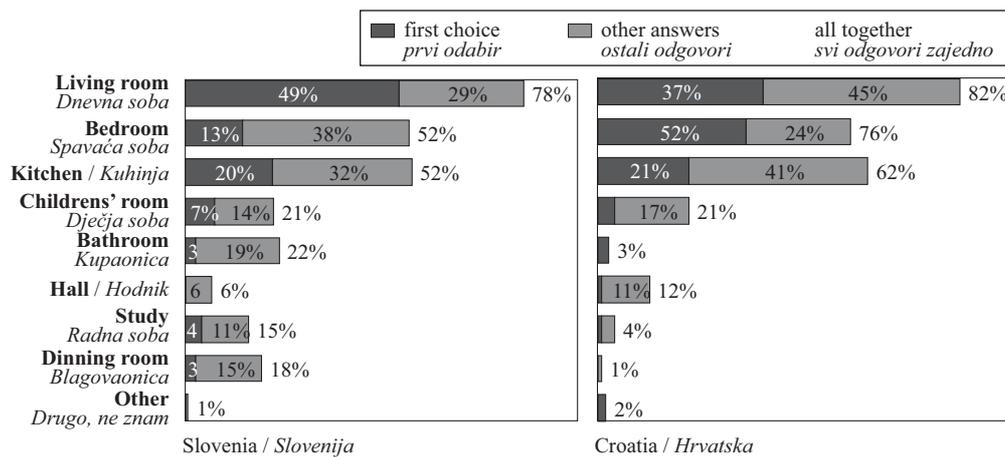


Figure 9 Answers to the question “Which living spaces would you invest in to ensure a healthy living environment?” Percentage of respondents. Multiple responses possible. (Croatia, n =330, Slovenia, n =350)

Slika 9. Odgovori na pitanje “Jeste li spremni platiti više da biste se pobrinuli za zdravu životnu okolinu? Za koje biste prostorije bili spremni platiti više?” (Hrvatska, n =330, Slovenija, n =350)

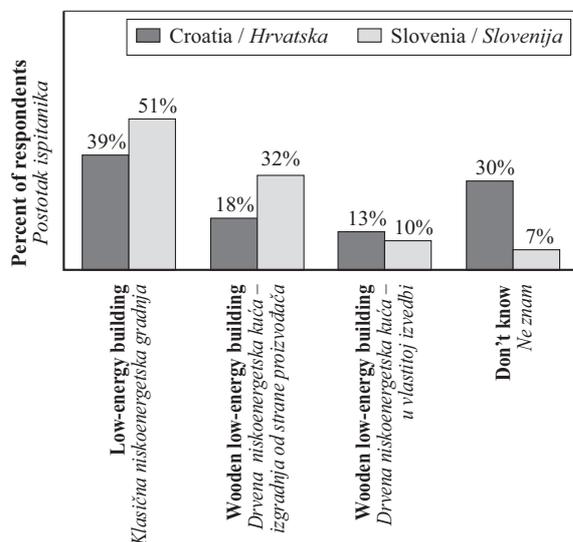


Figure 10 Answers to the question “If you decided to build a low-energy house, would you opt for traditional construction or a prefabricated timber house?” (Croatia, n =334, Slovenia, n =406)

Slika 10. Odgovori na pitanje: “Kad biste gradili novu niskoenergetsku kuću, kakvu biste gradnju izabrali?” (Hrvatska, n =334, Slovenija, n =406)

#### 4 CONCLUSION 4. ZAKLJUČAK

On the basis of the study and results obtained, the following can be concluded: both Slovenia and Croatia have a rich carpentry tradition, which is reflected in the answers of a relatively large share of respondents who own custom-made furniture. The results show that respondents in Slovenia and Croatia are willing to invest in a healthy living environment (made of wood), particularly in their living rooms.

The study results indicate that Croatian respondents believe that solid wood furniture is too expensive. The results show that more than a half of all respondents agreed that wood was an appropriate

material for joinery and construction; they agreed to a much lesser extent that timber construction was fire resistant. They were also of the opinion that the government should allocate more funds (co-finance) environmentally-friendly construction. The results also show that more than 40 percent of Slovenian respondents would choose prefabricated timber construction, whereas in Croatia, a large share of respondents was undecided on which type of construction method they prefer, implying that they are not acquainted with the advantages of low-energy timber frame construction (Premrov, 2008), including: transition from on-site construction to prefabrication in a factory; transition from elementary measures to modular building; development from a single-panel to a macro-panel wall prefabricated panel system; and the speed of building. *The Slovenian Public Opinion Survey on Wooden Building* (Kitek Kuzman, 2009), conducted 5 years ago in Slovenia yielded results similar to those given by the Croatian respondents. It can therefore be suggested that Croatia will follow Slovenia’s lead in using low-energy timber frame construction.

The results of this study can be useful to potential furniture retailers and distributors as well as importers of wood products as it is possible to establish the likely preferences of potential furniture buyers, as well as those who opt for timber construction. Generally, we provide an important overview of consumer preferences and use of wood in two Eastern European countries. Further research should replicate this study in other countries in order to gain a meaningful perspective on consumers in the region.

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