

**Maximising cadastral data**

# **Accurately calculating market value of property in Lithuania**

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# 1. About the State Enterprise Centre of Registers (1)

- ▶ The Centre of Registers was established on 8 July 1997 under Resolution of the Government of the Republic of Lithuania.
- ▶ A public entity of limited civil liability. The Centre of Registers belongs to the State by the right of ownership.
- ▶ Recognized as centre of excellence of the Lithuania's public sector;
- ▶ Leading and highly-experienced agency for state registers and information systems (consolidating **11** state registers, including **5** out of **6** base state registers, and **11** state information systems) with strategic significance for the national security.



# 1. About the State Enterprise Centre of Registers (2)

Key facts:

- Provision of public services delegated by the State (about **88%**), commercial activities (about **10%**), state budget appropriation (up to **2%**)
- Core services: registration of objects, processing and provision of data, development of state registers and information systems
- About **300** electronic services developed and provided;
- About **6 million** registered public services are provided annually (population in Lithuania~ 2.8 million)
- About **1500** employees (**32** mass valuation specialists)
- Wide customer service network in Lithuania: **3** Customer Service Centres (Eastern, Central, Western) and **50** local customer service points
- The use of e-services at the SECR increased by **20%** during COVID-19.



## 2. Main features of mass valuation system in Lithuania (1)

- Mass valuation is **centralized and performed by the Centre of Registers**.
- Mass valuation system is built on the **integrated digital data of real property cadastre and register**.
- Mass valuation process is **fully automated**.
- Mass valuation of **land and buildings is separate**.
- Three main** valuation methods are used.
- Hybrid** types of models are used for mass valuation.
- Value models are developed for each type of property** (5 types of land and 10 types of buildings)
- Mass valuation **results are public** and published on the Internet.
- Mass valuation results **are easily applicable for decision-making** on different issues.
- The use of valuation results gains more and more importance in **implementing fiscal and social policy** in the country.

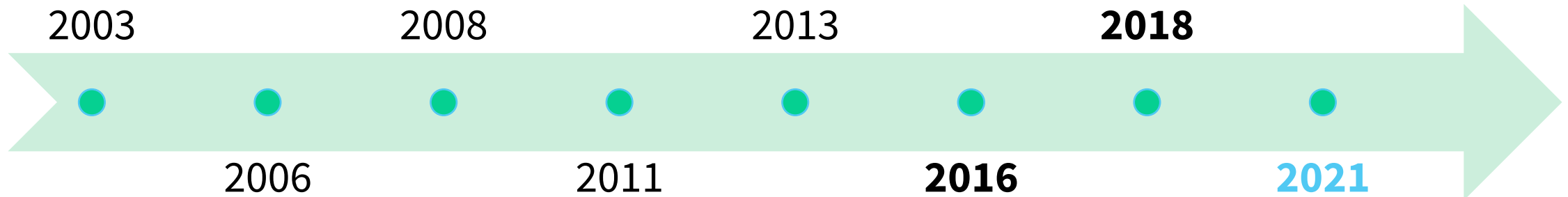




## 2. Main features of mass valuation system in Lithuania (2)

- Mass valuation of land started in 2002.
- Mass valuation of buildings started in 2005 (pilot project in 2002).
- Annual revaluation for different public needs.
- Taxable values are valid for 5 years.

Mass valuation of land for taxation



Mass valuation of buildings for taxation

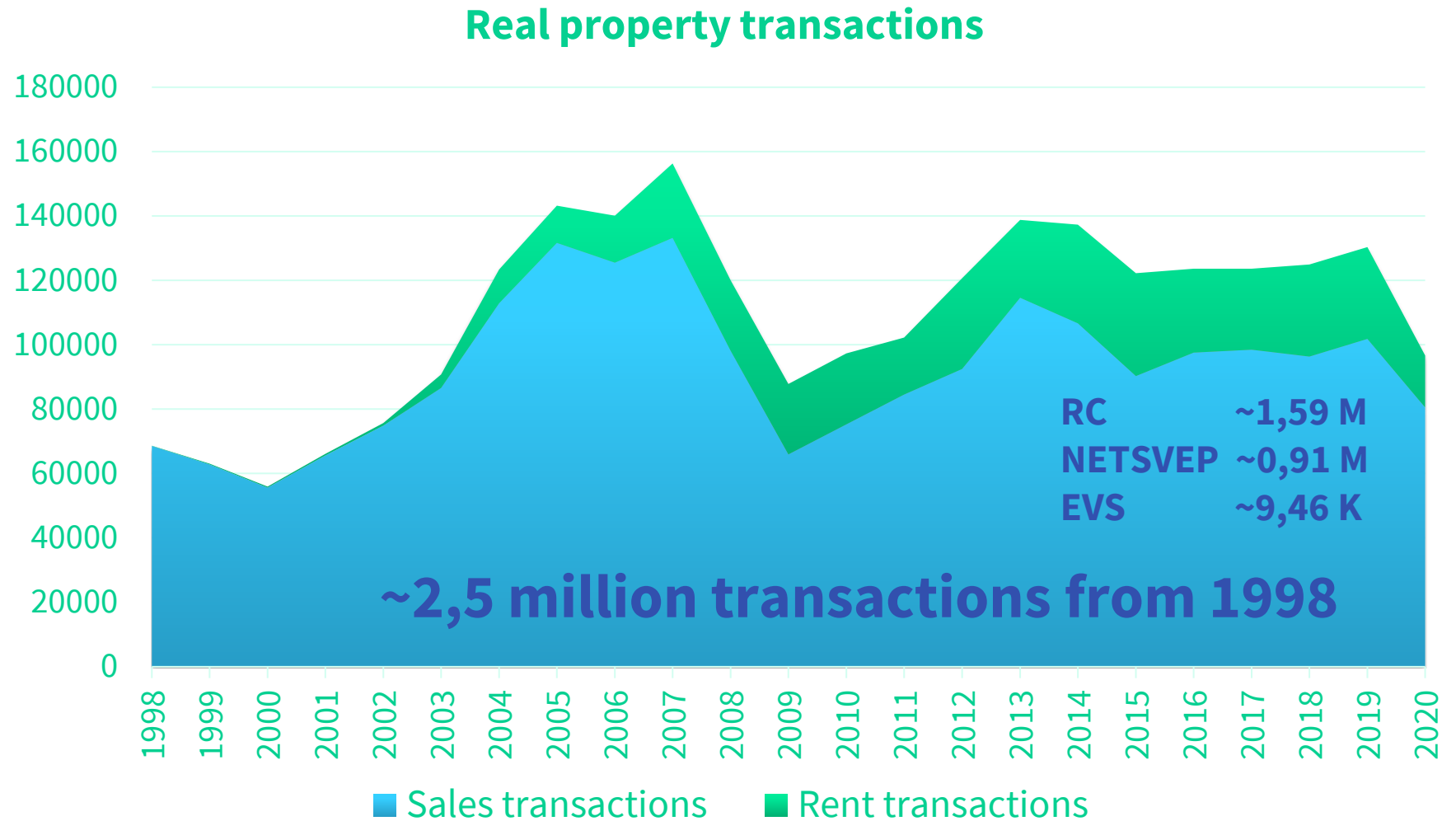
### **3. Key factors for accurate valuation**

1. Correct, complete, up-to-date property data
2. Precise location factor
3. Careful selection of data
4. Effective and reliable valuation models
5. Sales ratio analysis
6. Thorough verification of models
7. Feedback from clients
8. Frequent revaluations



## 3.1 Correct, complete, up-to-date property data (1)

- RC - registration of ownership rights
- NETSVEP - Public Electronic Service for Real Property Transactions
- EVS - Electronic auction system
- Real property sales advertisements



## 3.1 Correct, complete, up-to-date property data (2)

### Integrated digital data of Real Property Cadastre and Register

Physical characteristics of  
real property

GIS information  
Spatial data

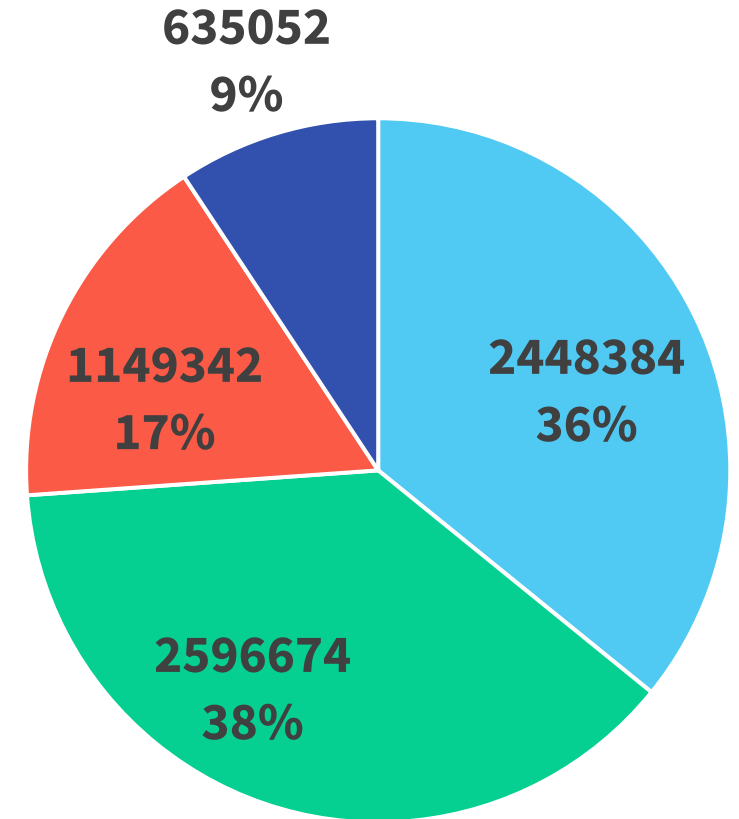
Data

Archive of e-documents

Legal status of real  
property, owners and  
users, real rights, their  
restrictions and legal facts

- Land parcels
- Buildings
- Premises
- Engineering constructions

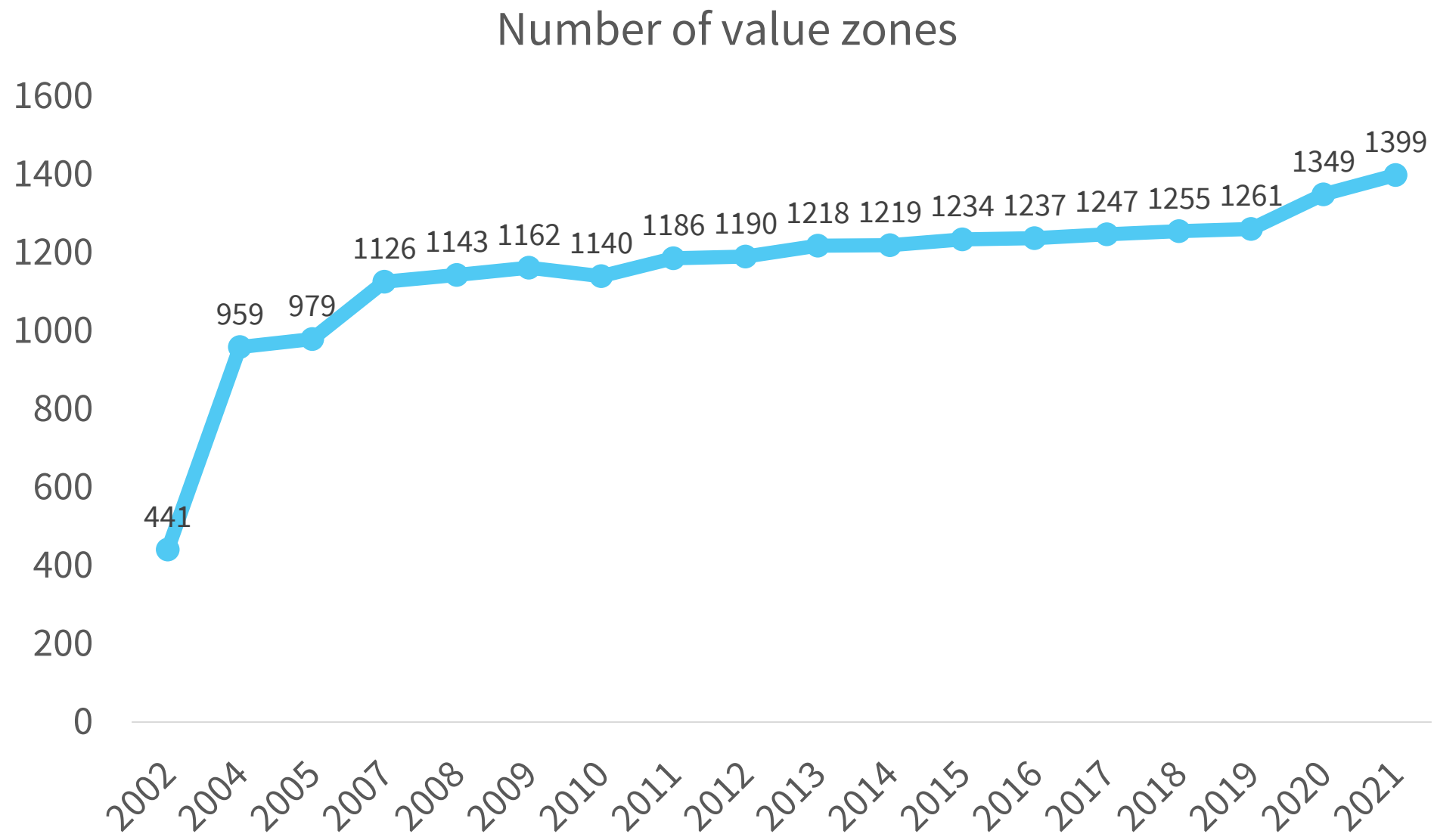
Registered real property



**~6 829 452** (2020-10-01)



### 3.2 Precise location factor (1)



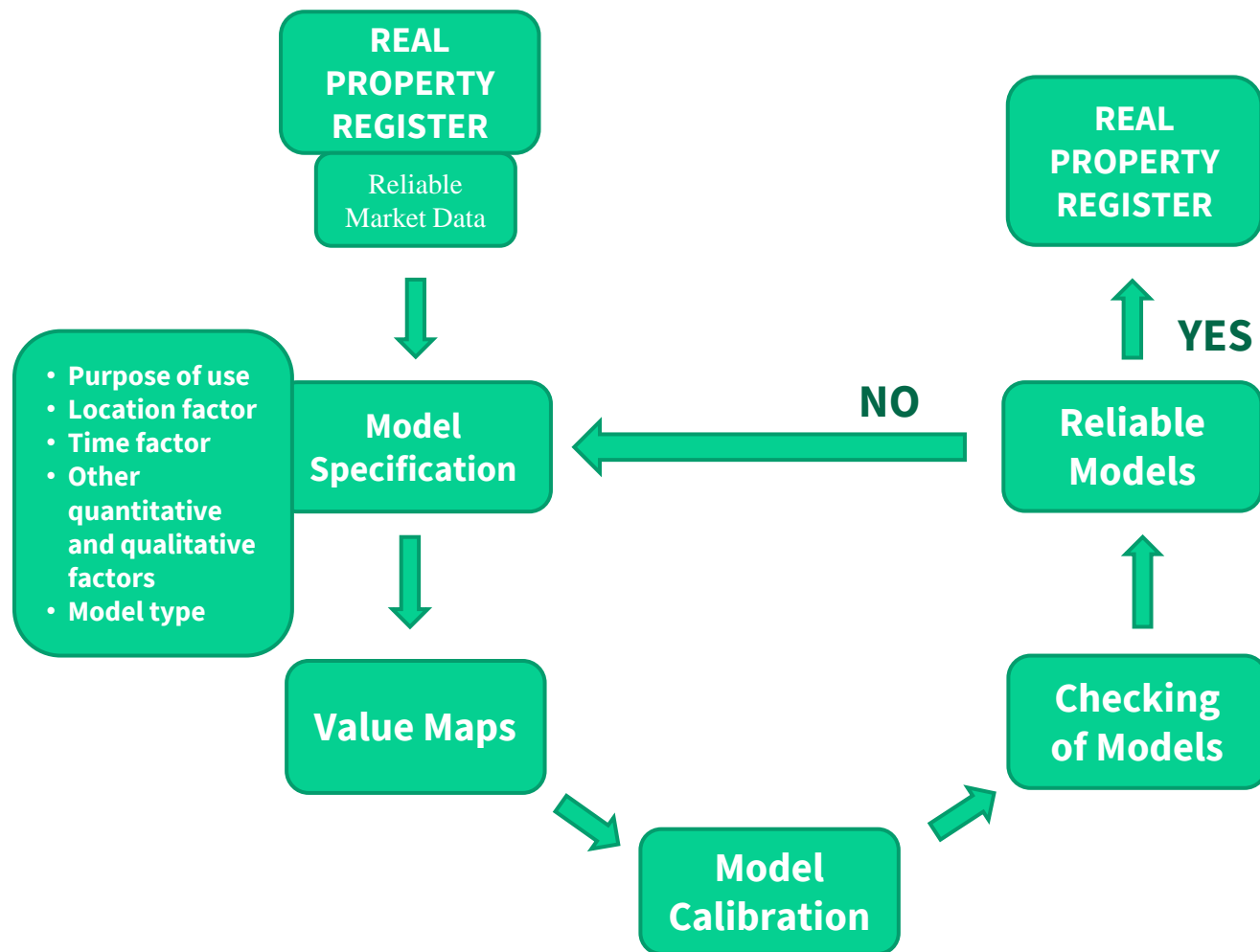
## 3.2 Precise location factor (2)

Source	Land parcels		Buildings		Premises	
	Registered objects	%	Registered objects	%	Registered objects	%
Land parcel coordinates	1513583	63.00%				
Address point	872918	36.33%	2416112	92.75%	1115393	98.95%
Building point			6640	0.25%	1188	0.11%
Settlement	15318	0.64%	116044	4.45%	4722	0.42%
Description	322	0.01%	9688	0.37%	4200	0.37%
Other	238	0.01%	55807	2.14%	1678	0.15%
Not found	121	0.01%	595	0.02%	90	0.01%
Total	2402500	100%	2604886	100%	1127271	100%

### 3.3 Careful selection of data

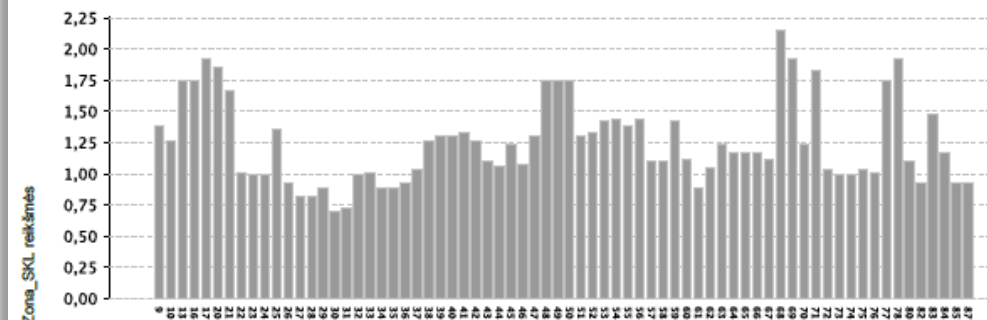
Municipality	Sale date	Sale source	Type of objects	Measure ment unit	Average market value	Price per unit	Ratio	Sale price	Total area	Acquired area
Kauno m. sav.	2018/12/21	NETSVEP	NV	Eur/m2	137000	471.45	1.17	75000.00	290.59	145.3000
Kauno m. sav.	2018/12/07	NETSVEP	NV	Eur/m2	410000	541.45	0.74	130000.00	757.22	160.2300
Kauno m. sav.	2018/09/21	NETSVEP	NV	Eur/m2	89900	1057.15	3.28	42000.00	85.04	85.0400
Kauno m. sav.	2018/07/13	NETSVEP	NV	Eur/m2	410000	541.45	2.69	30000.00	757.22	131.9100
Kauno m. sav.	2018/06/29	NETSVEP	NV	Eur/m2	110000	560.71	0.38	400000.00	196.18	196.1800
Kauno m. sav.	2018/06/01		NV	Eur/m2	23300	266.93	1.14	52000.00	87.29	43.6450
Kauno m. sav.	2018/05/03	NETSVEP	NV	Eur/m2	90300	721.88	0.48	250000.00	125.09	125.0900
Kauno m. sav.	2020/07/27	NETSVEP	NV	Eur/m2	205000	437.24	1.26	26000.00	468.85	56.2600
Kauno m. sav.	2020/07/27	NETSVEP	NV	Eur/m2	97200	750.35	0.66	90000.00	129.54	62.1800
Kauno m. sav.	2020/07/24	NETSVEP	NV	Eur/m2	83800	750.09	0.96	54000.00	111.72	58.0900
Kauno m. sav.	2020/07/23	NETSVEP	NV	Eur/m2	99000	749.89	1.11	28000.00	132.02	34.3300
Kauno m. sav.	2020/07/23	NETSVEP	NV	Eur/m2	97700	750.04	0.98	37500.00	130.26	40.3800
Kauno m. sav.	2020/07/22	NETSVEP	NV	Eur/m2	83500	750.29	0.83	60450.00	111.29	53.4200

## 3.4 Effective and reliable valuation models



Modelis Nr.: 19033.  $Zona\_SKL^{(1.014)} \times RkKr\_SKL^{(1.0)} \times Sn\_SKL^{(0.476)} \times (0.95)^{\wedge} \text{Šl\_BIN} \times (0.95)^{\wedge} \text{Kanal\_BIN} \times (1.02)^{\wedge} \text{IsApd\_BIN} \times Bpl\_SKF^{(0.998)} \times StMt\_SKF^{(0.989)} \times (661 \times Bpl\_RKS - 231 \times PgNPl\_RKS - 231 \times RūsPl\_RKS - 231 \times GarPl\_RKS)$

Verčių zonų Zona\_SKL reikšmės



Verčių zonos

Modelio kintamųjų taikymo sąlygos ir reikšmės:

Rekonstravimo / kapitalinio remonto		Pagrindas: RkKr_SKL		Laipsnis: 1.0	
1000-1970	1.0	1971-1990	1.02	1991-1995	1.05
1996-2000	1.1	2001-2005	1.15	2006-2011	1.2
2012-2016	1.25	2017-2025	1.28		

Sienų medžiagos		Pagrindas: Sn_SKL		Laipsnis: 0.476	
Akmenbetonis	0.71	Asbestcementis su karkasu	0.36	Blokeliai	0.96
Gelžbetonio plokštės	0.8	Medis su karkasu	0.43	Metalas su karkasu	0.93
Molis	0.4	Monolitinis gelžbetonis	0.96	Plastikas su karkasu	0.47
Plytos	1.0	Rąstai	0.54	Stiklas su karkasu	0.87

## 3.5 Sales ratio analysis

Assessment Ratio Section				Percentile	Section of Vert_kain_sant				
	Actual	Predicted		Percentile	Value	95% LCL	95% UCL	Exact Conf. Level	
	Price	Price	Ratio						
Number of Cases	108	108	108	99	1,9				
<b>Mean</b>	282511,9	282826,2	1,021112	95	1,2	1,201681	1,424567	95,42319	
<b>Median</b>	256674	256951,9	<b>1,022919</b>	90	1,2	1,148404	1,234068	96,53123	
Minimum	62791,5	76419,85	0,668298	85	1,2	1,12595	1,205105	95,47729	
Lower Quartile	160000	157214,5	0,921705	80	1,1	1,08558	1,178912	95,97738	
Upper Quartile	359800	354398,4	1,115624	75	1,1	1,073782	1,144089	95,44489	
Maximum	1400000	1351200	1,920386	70	1,1	1,048822	1,127934	95,32707	
Range	1,34E+06	1,27E+06	1,25E+00	65	1,1	1,044756	1,10963	95,64208	
IQR	199800	197183,9	0,193919	60	1,0	1,025565	1,081001	95,07201	
Variance	3,54E+10	3,32E+10	2,66E-02	55	1,0	1	1,070533	95,76827	
Std. Deviation	188200,9	182127,7	0,163077	50	1,0	0,977732	1,046776	95,3283	
Coef. of Variation	0,66617	0,643956	0,159706	45	1,0	0,959505	1,042496	95,67616	
Ave  Dev. from Median	124029,3	122469,1	0,117822	40	1,0	0,94638	1,020273	95,07201	
<b>Coef. of Dispersion</b>	48,32173	47,66227	<b>11,51816</b>	35	1,0	0,92231	0,993853	95,64208	
<b>Weighted Mean</b>			1,001113	30	0,9	0,910501	0,969968	95,36099	
<b>Price Related Differential</b>			<b>101,9977</b>	25	0,9	0,893479	0,94998	95,35503	
				20	0,9	0,830252	0,925125	95,71888	
				15	0,9	0,801605	0,911484	95,7472	
				10	0,8	0,761	0,886332	95,57663	
				5	0,8	0,668298	0,819346	95,1751	

- **Median** about 1
- **COD** equal or less than 15 (in some cases less than 20)
- **PRD** should be between 98 and 103
- **Ratio** (value and price ratio) – from 0.8 to 1.2

## 3.6 Thorough verification of models (1)

### Yearly changes in average market values

#### Detached houses

Modelio Nr	ZONOS_NR	Paskirtis	Ivertintu daiktų skaičius	VNT_vidurkis (Eur_ploto vnt)	MIN_vnt_verte	MAX_vnt_verte	Senas_vnt_vid	Pokytis
18,634.00	20.1	Gyvenamoji (1 butų past.)	<u>19</u>	914	643	1158	804	15.29%
		Gyvenamoji (2 butų past.)	<u>22</u>	807	581	942	683	18.19%
	20.2	Gyvenamoji (1 butų past.)	<u>38</u>	636	490	866	561	14.24%
		Gyvenamoji (2 butų past.)	<u>8</u>	647	494	858	582	12.66%
	20.3	Gyvenamoji (1 butų past.)	<u>104</u>	1080	546	1736	1026	6.35%
		Gyvenamoji (2 butų past.)	<u>25</u>	1260	624	1609	1246	1.67%
	20.4	Gyvenamoji (1 butų past.)	<u>202</u>	835	479	1444	794	6.09%
		Gyvenamoji (2 butų past.)	<u>17</u>	882	533	1191	886	1.28%
	20.5	Gyvenamoji (1 butų past.)	<u>35</u>	527	373	841	511	4.65%
		Gyvenamoji (2 butų past.)	<u>3</u>	508	432	550	471	7.93%
	20.8	Gyvenamoji (1 butų past.)	<u>986</u>	609	396	1187	562	9.34%
		Gyvenamoji (2 butų past.)	<u>72</u>	624	443	980	584	7.76%
	20.10	Gyvenamoji (1 butų past.)	<u>20</u>	800	479	1026	739	9.27%
		Gyvenamoji (2 butų past.)	<u>3</u>	621	490	702	527	17.56%
	20.11	Gyvenamoji (1 butų past.)	<u>100</u>	636	460	914	579	10.57%
		Gyvenamoji (2 butų past.)	<u>10</u>	658	484	960	614	8.76%
	20.12	Gyvenamoji (1 butų past.)	<u>400</u>	502	296	876	468	7.84%
		Gyvenamoji (2 butų past.)	<u>12</u>	547	444	689	515	6.84%
	20.13	Gyvenamoji (1 butų past.)	<u>131</u>	639	416	1071	582	10.54%
		Gyvenamoji (2 butų past.)	<u>17</u>	635	471	772	577	10.70%





## 3.6 Thorough verification of models (2)

### Main features

Vertinimas: 55 ..... Unikalus: 440040853821 .. Zona: 52.1.1 ... Paskirtis: Gyvenamoji (1 buto past.) .. Vertinimo grupe: Vieno-dvieju butu namai

Gyvenvietė	Gatvė	Namo nr	Buto nr	Plotas	Baigtumas	Statusas	Būklė
Trakai	Aukštadvario g.	10	.	230.24	100.00	.	.

### Real property factor values used in the model

Vertinimo data: 2020/09/10 10:07:47 ..Modelio nr: 19,056.00 ..Masinio vertinimo nr: 55

Vertinimo atributas	Tipas	Veiksmas	Atributo skaitm reikšmė	Atributo reikšmė	Reikšmingumas	ELEM REZULTATAS
Zona	SKL	SKL^PARAM		52.1.1	1.42	1.42
Sienų medžiaga	SKL	SKL^PARAM	8.00	Blokeliai	.98	.98
Šildymas	BIN	PARAM^BIN	3.00	Ind. centrinis šildymas	0	1.00
Kanalizacija	BIN	PARAM^BIN	1.00	Komunalinis nuotekų šalinimas	0	1.00
Bendras plotas	RKS	RKS^PARAM	.	.	230.24	130,546.08
Rūšių (pusrūšių) plotas	RKS	RKS^PARAM	.	.	90.39	-15,366.30
Bendras plotas	SKF	SKF^PARAM	230.24	.	.9084	.91
Statybos metai	SKF	SKF^PARAM	2013.00	.	1.4217	1.42

### Attributes in the Real Property Register

NTR atributai

Būdai pobūdžiai

206,000.00

### History of market values

### Transactions

Verčių istorija:

Detaliau

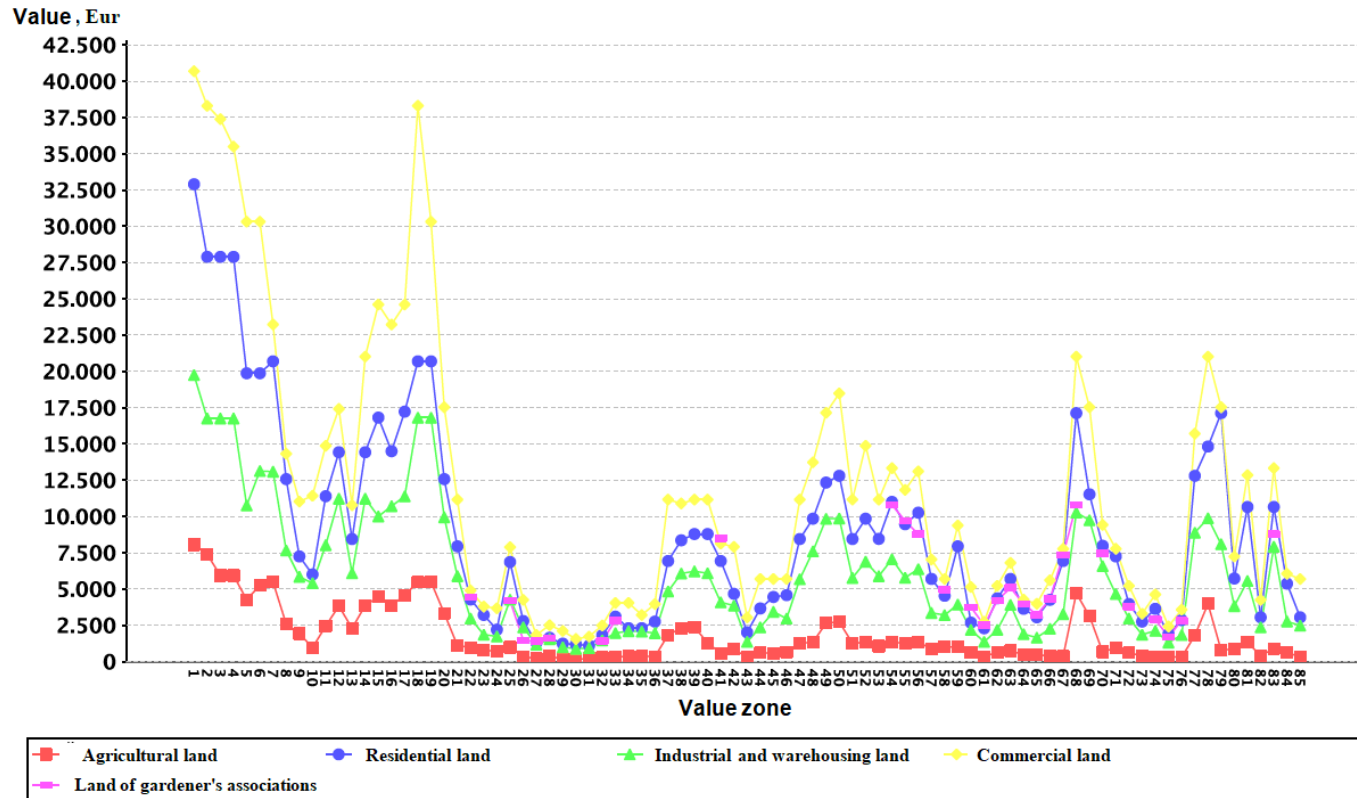
Sandorių istorija:

Detaliau

Masinio vertinimo.nr.	Vertė	Vertės nustatymo data
54	202,000.00	2020/01/01
53	200,000.00	2019/01/01
52	195,000.00	2018/01/01
51	191,000.00	2017/04/13
	158,000.00	2017/01/01
50	186,000.00	2018/01/01

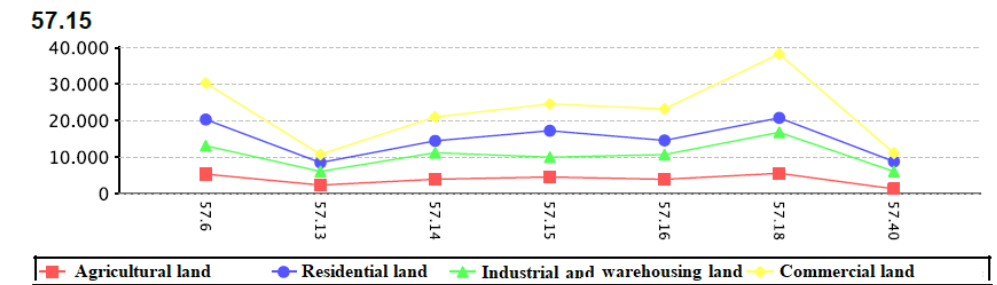
Sandorio data	Suma	Dalis	Dokumentas
2017/12/21	105000.00	1.00	Pirkimo - pardavimo sutartis
2017/08/08	100000.00	1.00	Pirkimo - pardavimo sutartis

## 3.6 Thorough verification of models (3)

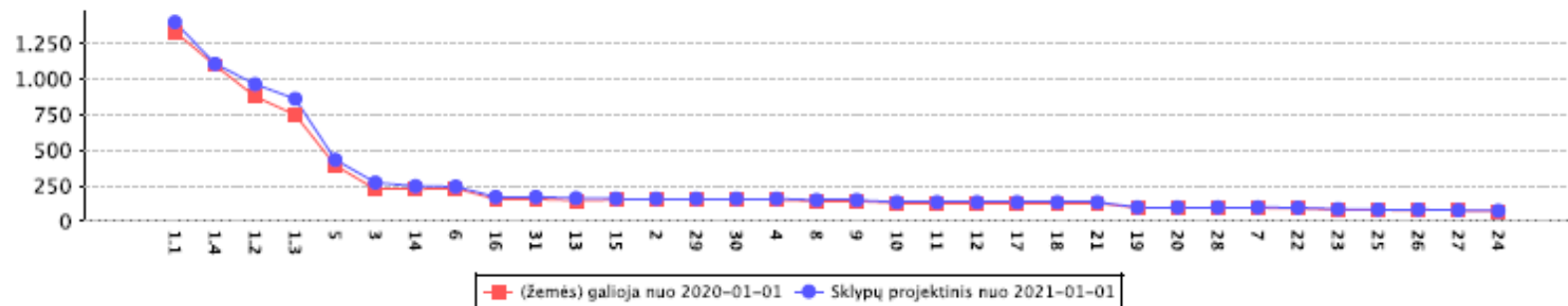


Average market value comparison in various valuation groups

Average market values in adjacent value zones



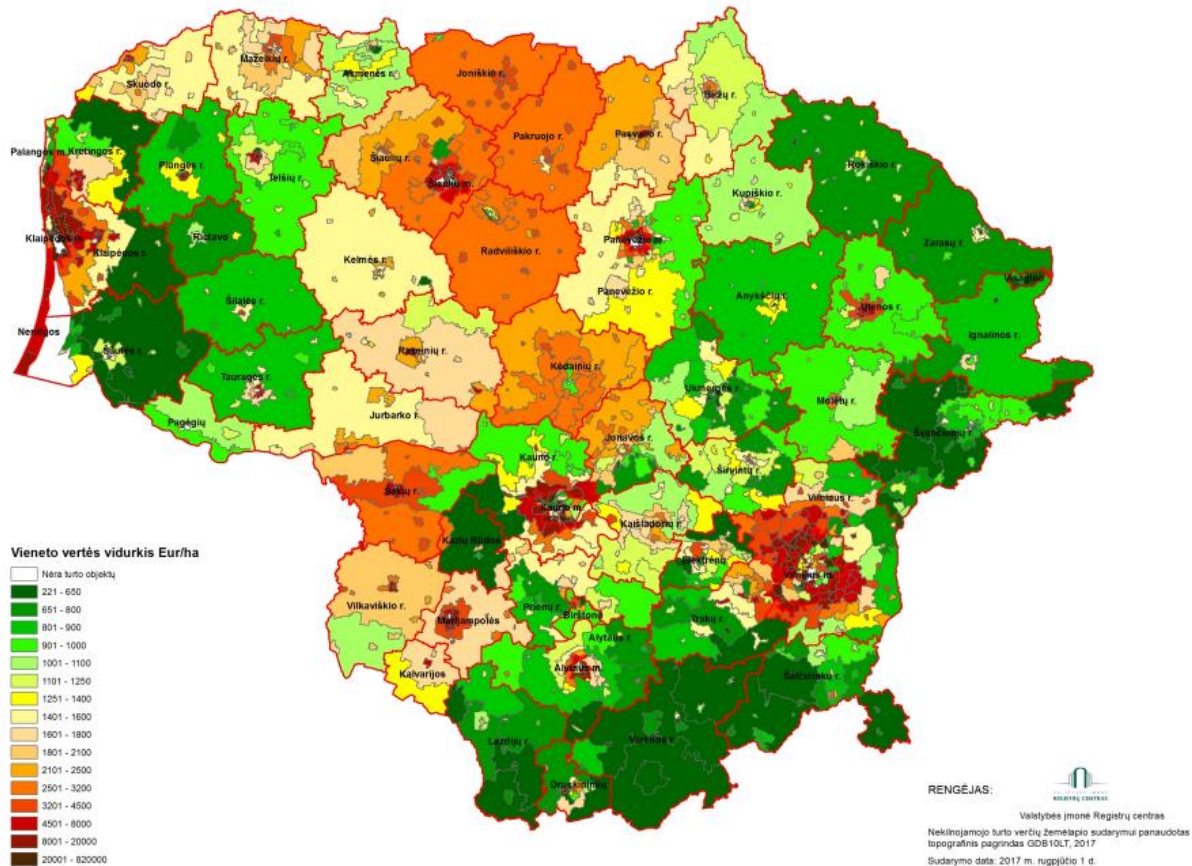
### Residential land



Comparison of newly established values with the values established in previous years

## 3.6 Thorough verification of models (4)

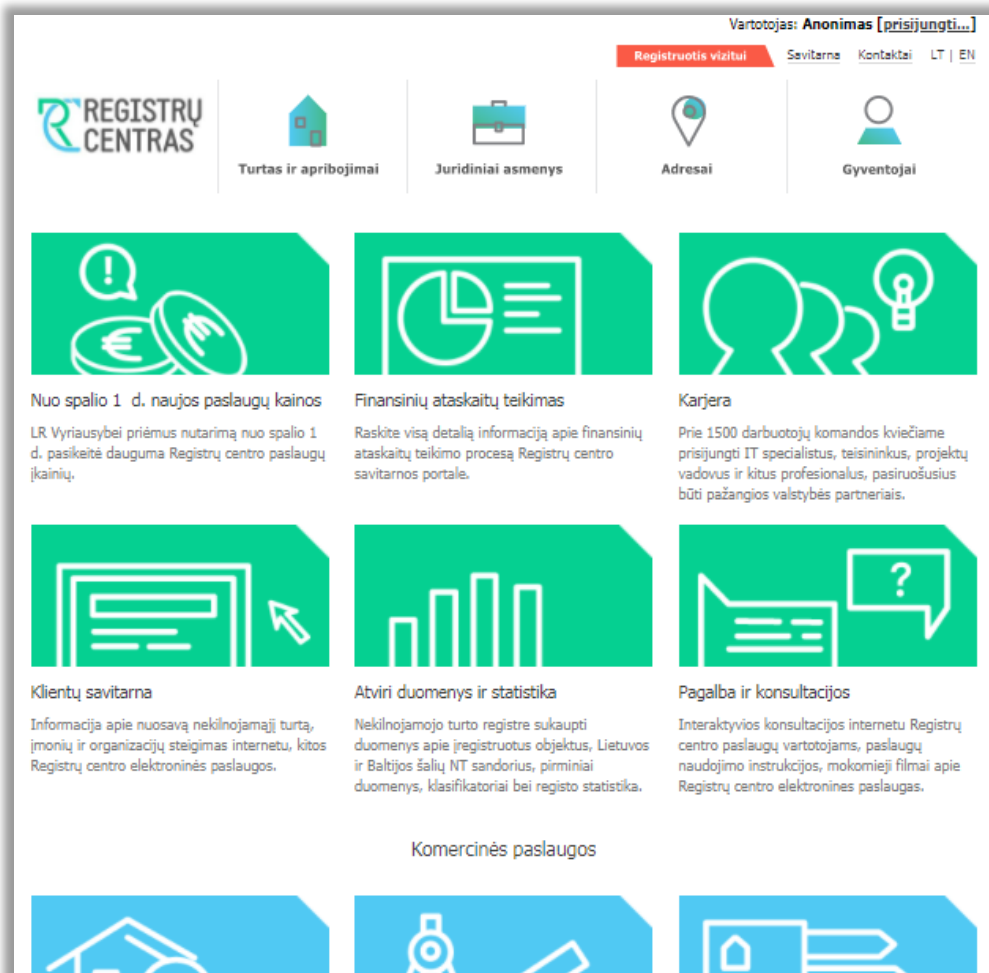
Map of average value of agricultural land in Lithuania  
(EUR/ha):



Map of average value of detached houses in Lithuania  
(EUR/m<sup>2</sup>):



## 3.7 Feedback from clients (1)



### Mass valuation results on the Internet (open for public)

#### Textual data

- Search for the average market value by unique number
- Search for the taxable (base) value by unique number
- Mass valuation documents, materials of public discussions

#### Graphical data

- Interactive value maps of the territory of Lithuania
- Graphical search for value zones (through the Address Register)
- Interactive maps of abandoned areas

#### Data for the registered users

- On-line Value Calculator for Unregistered Properties

## 3.7 Feedback from clients (2)

### Search for the average market value by unique number

Unique number:  (pvz: 2198-8002-1019:0004)

Mass valuation: ( land ) valid from 2020-01-01 ▼

Clear

Search

Back

Unique number: **4400-2139-1253**

Value: **41900 Eur**

### Feedback on calculated average market values

Iš anksto dėkojame už pareikštas mintis.

Atkreipiame dėmesį, kad konsultacijos teikiamos Informacinės tarnybos telefonu (8 5) 268 8262, taip pat klausimą galite pateikti interaktyvių konsultacijų paslaugos.

Jūsų turto vidutinė  
vertė:

Pastabos bei  
pasiūlymai:

50% and more too small  
20-50% too small  
up to 20% too small  
calculated correctly  
up to 20% too large  
20-50% too large  
50% and more too large

Send

Clear



## 4. Conclusions

- ▶ Real property mass valuation system is built on the integrated digital data of real property cadastre and register and is fully automated.
- ▶ Mass valuation results are public, published on the Internet and are easily applicable for decision-making on different issues.
- ▶ The system allows obtaining sufficiently accurate and reliable results within a short time and with minimum resources.



Award from the International Association of Assessing Officers (IAAO) and Award of the Institute of Revenues Rating and Valuation



At the annual World Bank Land and Poverty Conference this system was recognised as one of the best systems in the world.





# Thank you for your attention!



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