

Using Business Intelligence software to improve our oversight (a Dutch perspective)



GIS/VALUATION TECHNOLOGIES CONFERENCE



Introduction

- Pim Hessing
 - Data/BI analyst
 - Background in Information Management
 - Netherlands Council for Real Estate Assessment
 - Oversight agency for the Netherlands





In this session I would like to:

Offer insights into our usage of data
to support decision making

Program

- Introduction into the Dutch property tax system
- The valuation cycle of 2023: “The perfect storm”
- How can we use data to improve our oversight?
- Lessons Learned
- Q&A



Introduction into the Dutch property tax system

The Wet WOZ

- The 'Act for Real Estate Assessment' in 1995
 - In Dutch: 'Wet WOZ'
 - Abbreviation: Law on (the) valuation of immovable objects
- Formal base for:
 - The yearly assessment of all property
 - Municipalities responsible
 - The Netherlands Council for Real Estate Assessment (Waarderingskamer) as oversight agency



Municipalities in the Netherlands

- 9,3 million parcels
- 342 municipalities
 - Amsterdam the largest (540,000 parcels)
- Municipalities are allowed cooperate
 - BsGW the largest (29 municipalities, 570,000 parcels)
- 159 organizations that assess property for the municipalities



The Council

Netherlands Council for Real Estate Assessment:

- Sets out guidelines
 - administration
 - valuation
 - quality control procedures
- Performs audits
- Publishes results
 - Five-star rating system



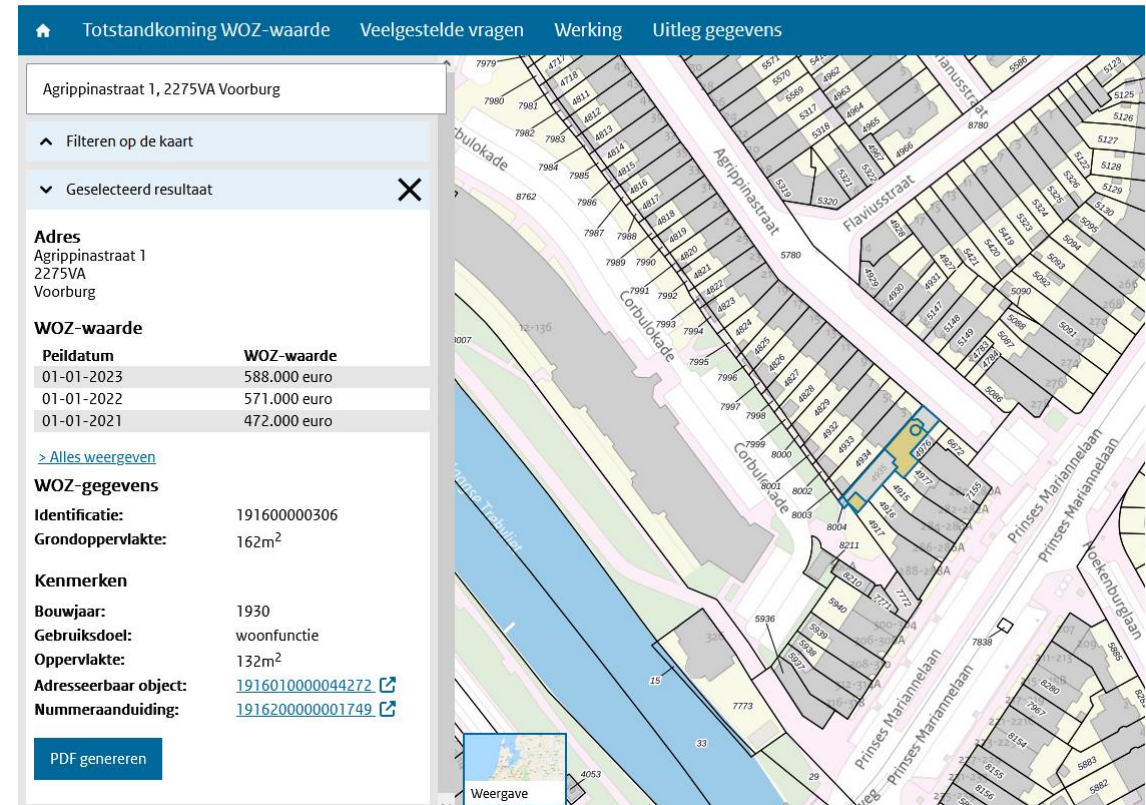
Usage of assessed values

Assessed values (WOZ-values) are used for:

- Municipal real estate tax
- Real estate tax polderboards
 - polderboards take care of “dry feet”
- State taxes
 - Imputed income for owner occupied houses (Income tax)
 - Limits fiscal depreciation of real estate (Corporation tax)
 - Inheritance tax

Base register and distribution of values

- Base register of assessed values
- Owners and users are officially informed
 - Beginning of the year
 - Part of municipal tax bill
 - Also accessible via www.wozwaardeloket.nl



Totstandkoming WOZ-waarde Veelgestelde vragen Werking Uitleg gegevens

Agrippinastraat 1, 2275VA Voorburg

Filteren op de kaart

Geselecteerd resultaat

Adres
Agrippinastraat 1
2275VA
Voorburg

WOZ-waarde

Peildatum	WOZ-waarde
01-01-2023	588.000 euro
01-01-2022	571.000 euro
01-01-2021	472.000 euro

> Alles weergeven

WOZ-gegevens

Identificatie: 191600000306

Grondoppervlakte: 162m²

Kenmerken

Bouwjaar: 1930

Gebruiksdoel: woonfunctie

Oppervlakte: 132m²

Adresseerbaar object: 1916010000044272

Nummeraanduiding: 1916200000001749

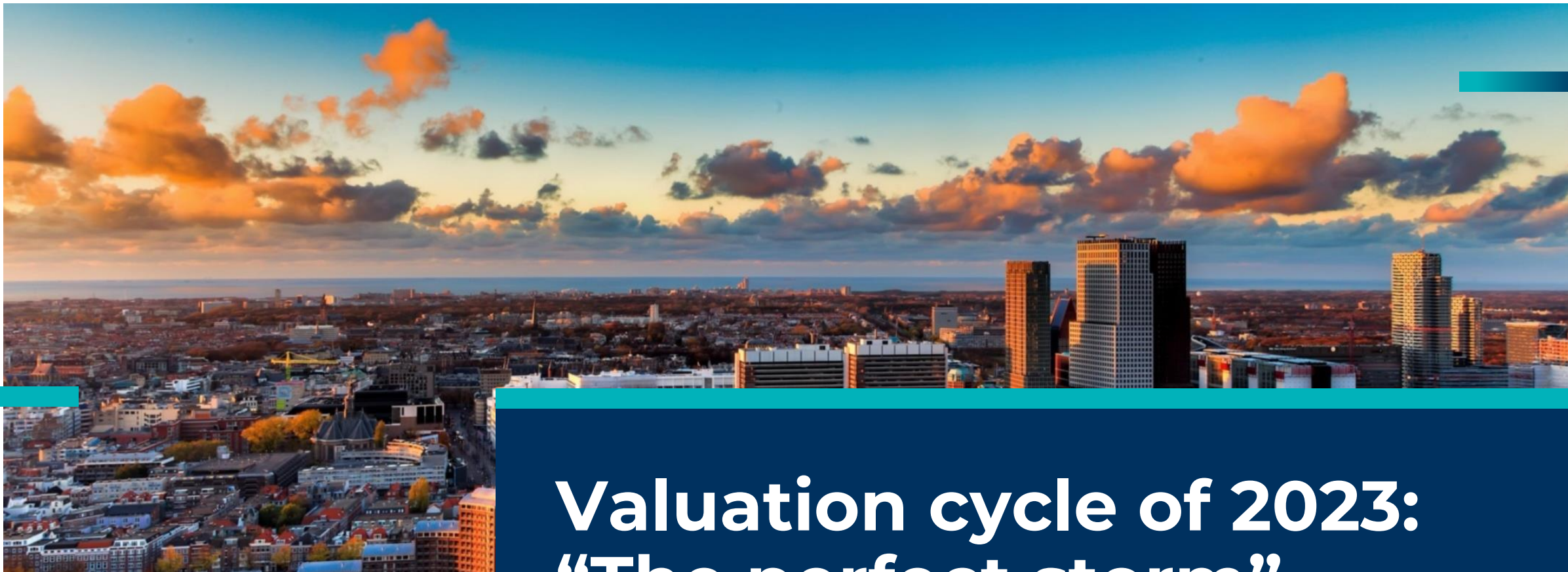
PDF genereren

Weergave

What if you do not agree with the assessed value?

- System of objections and appeals
- Representation by legal fee companies
 - Legal fee companies (LFC's) receive up to \$1000 if they win an objection
 - \$325 for the objection
 - \$325 for the hearing
 - Free for the taxpayer
 - Profit for the LFC's

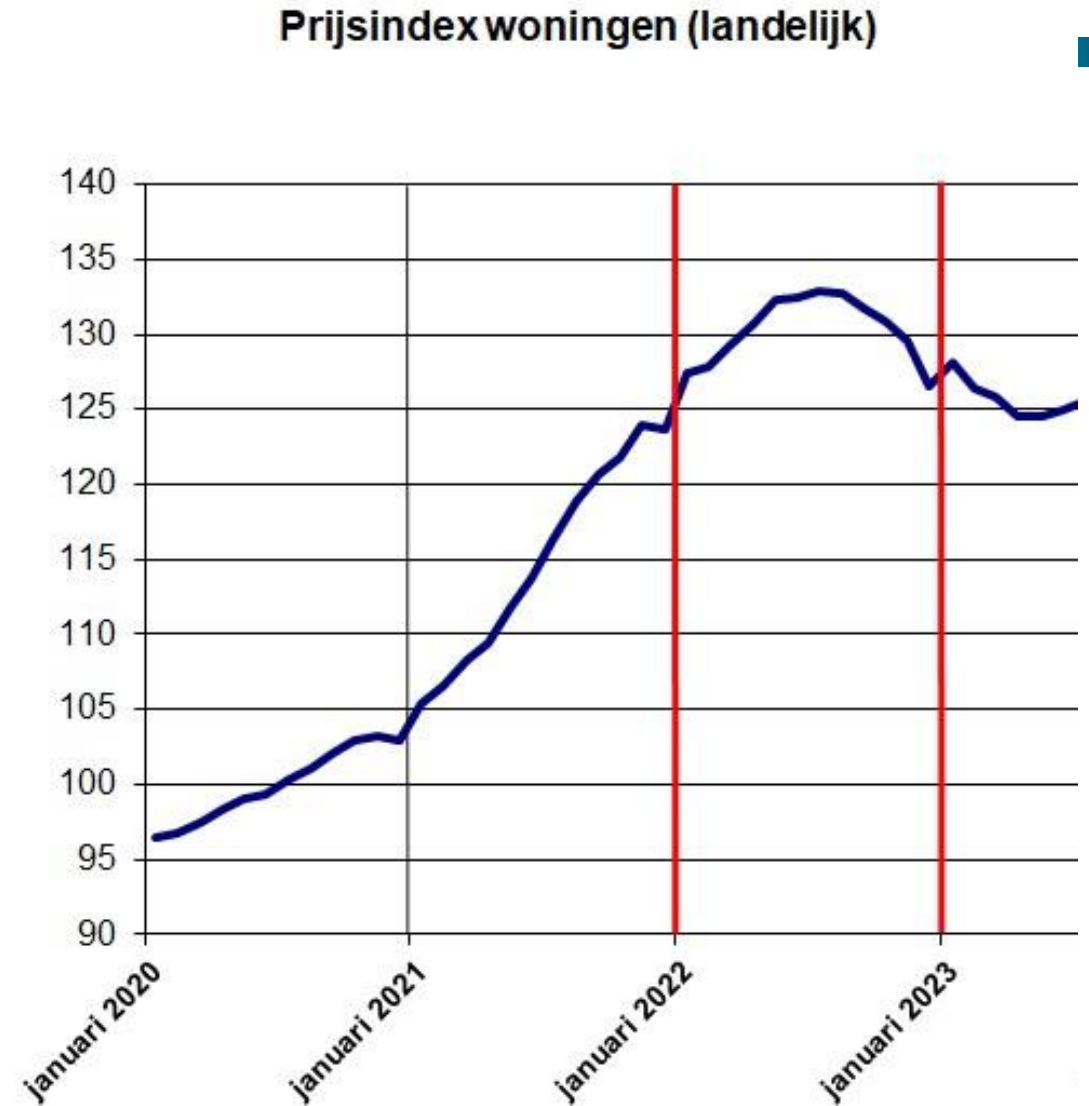




Valuation cycle of 2023: “The perfect storm”

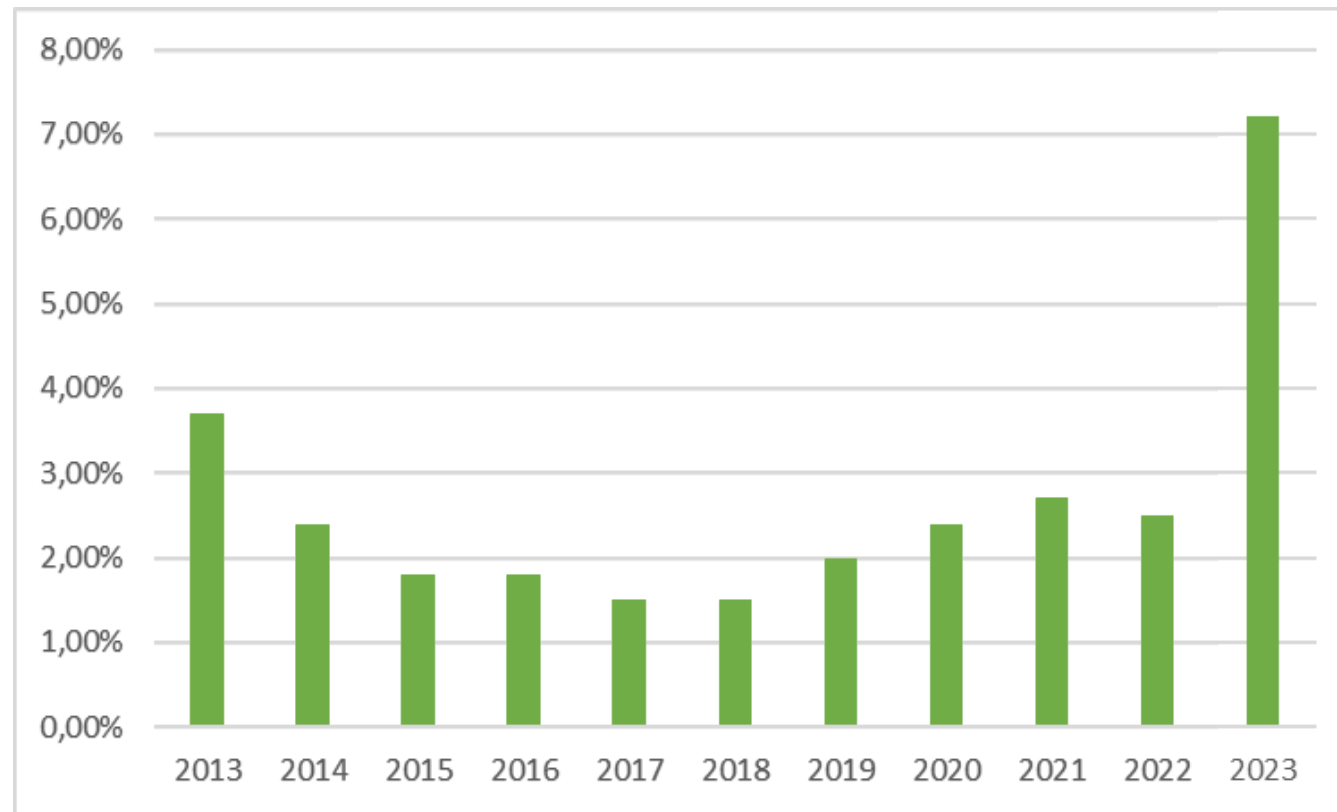
The perfect storm

- Valuation date is one year prior to the tax year
- Between 2021 and 2022 the market was rising rapidly
- In 2023, when the tax notice came the housing market was declining
- 17% increase between the assessed values of 2022 and 2023 (valuation date 2021 and 2022)



Result of the perfect storm

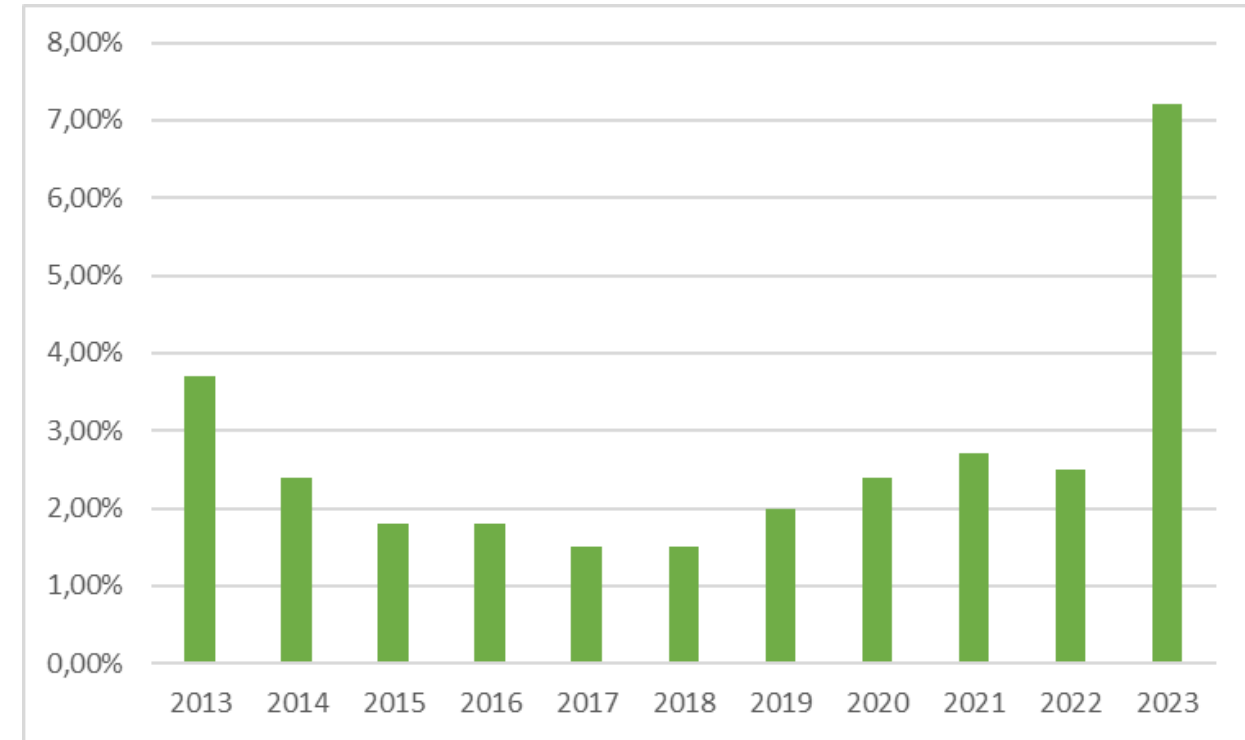
Percentage of objections

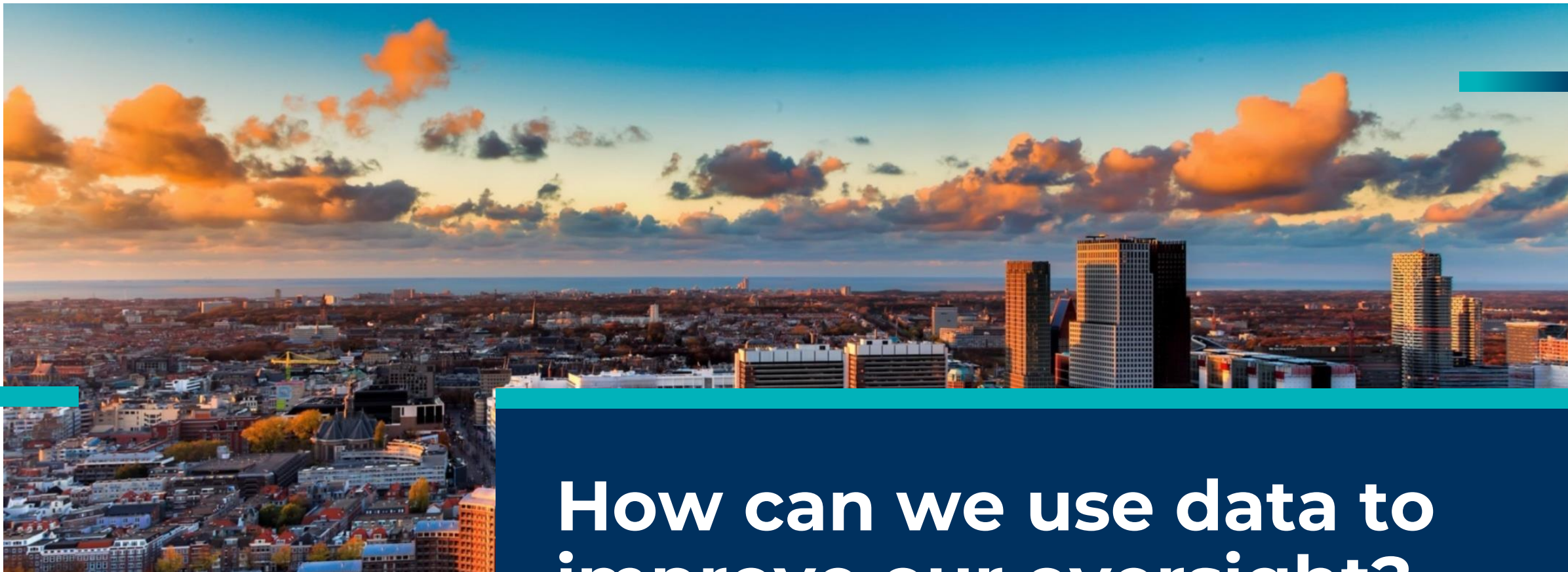


Result of the perfect storm

- 600,000 objections
- 7,2% objections (2,5% in 2022)
- Municipalities struggle with the large number of objection
- But what do we need to do as an oversight agency?

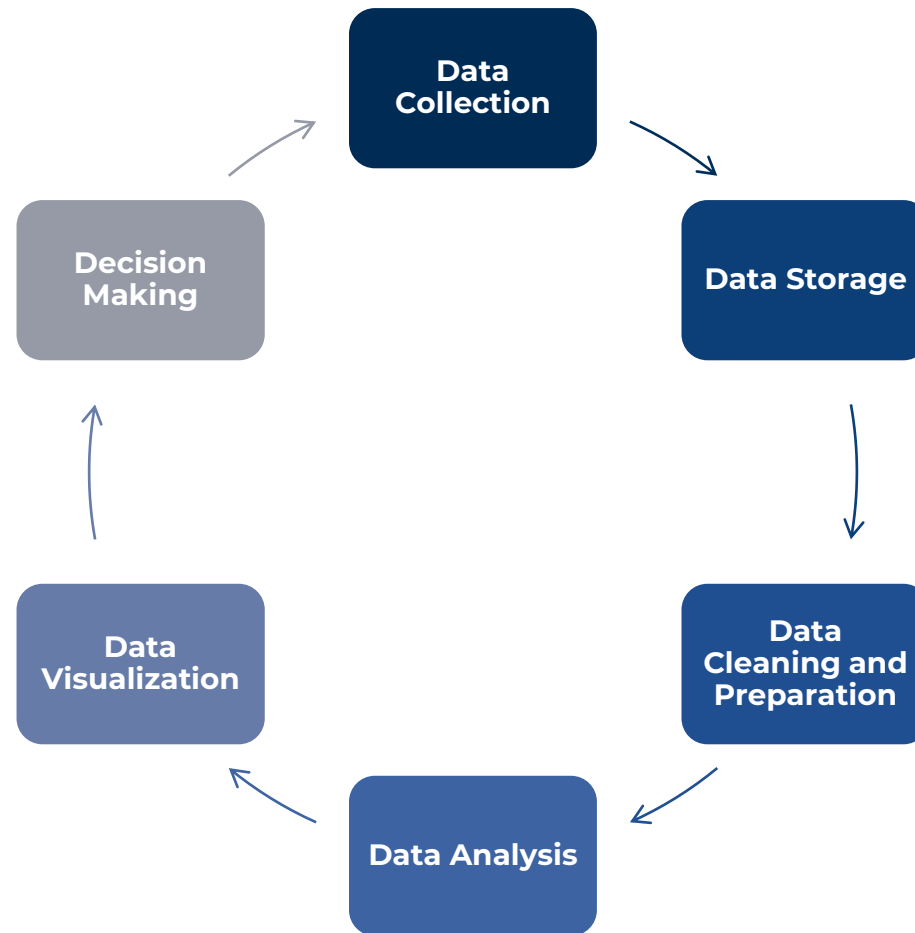
Percentage of objections



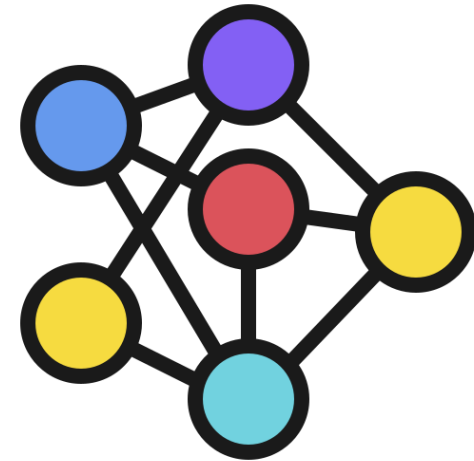
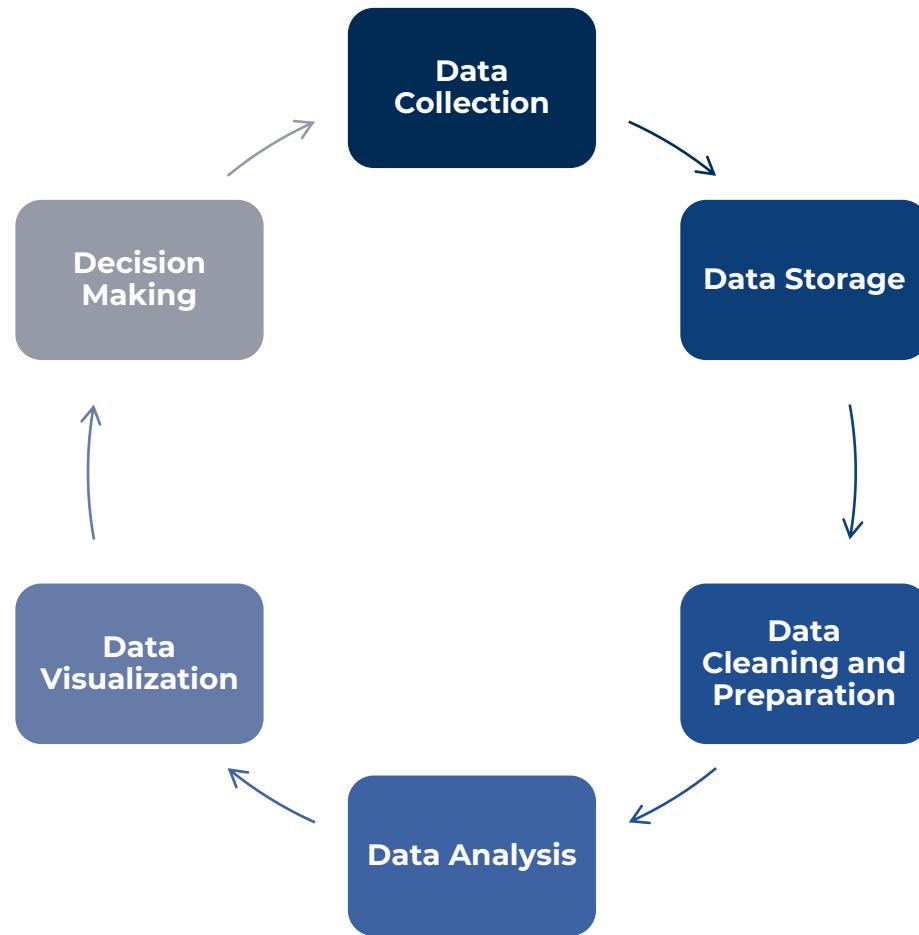


How can we use data to improve our oversight?

Business Intelligence cycle

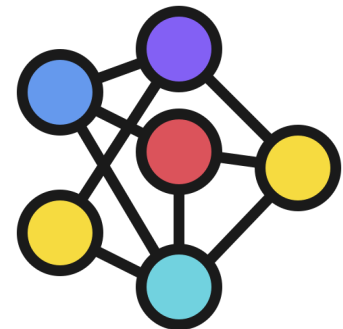


Data collection



Data collection

- As the oversight agency we have access to the base register
- Base register consists of a copy of the local municipality database
- Quality of the base register has increased over the years
 - Standards for terminology



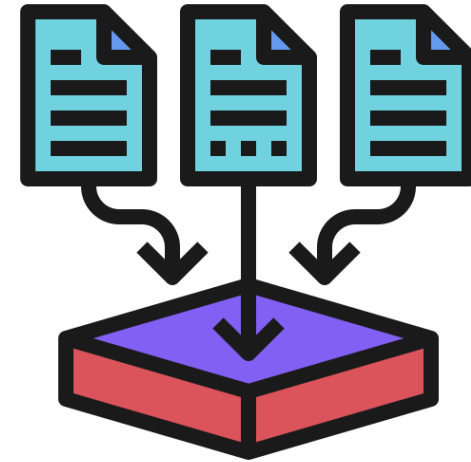
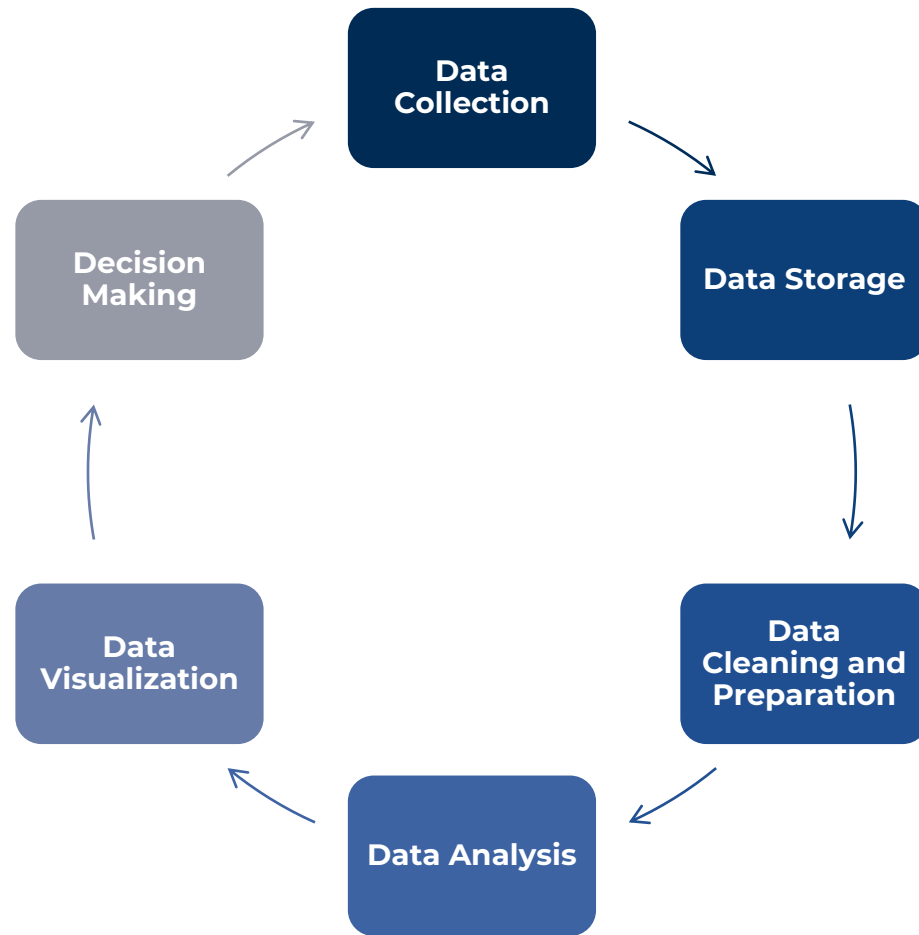
Data collection

- Started collecting 'snapshots' of the base register
- Each 1st day of the month via XML message
 - Standardized messages
- Snapshot takes about 6 hours to load
- 7 datasets of roughly 15 to 20 gigabyte each

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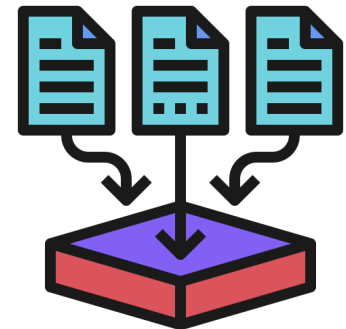
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<?xml version="1.0" encoding="UTF-8" ?>
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Data storage

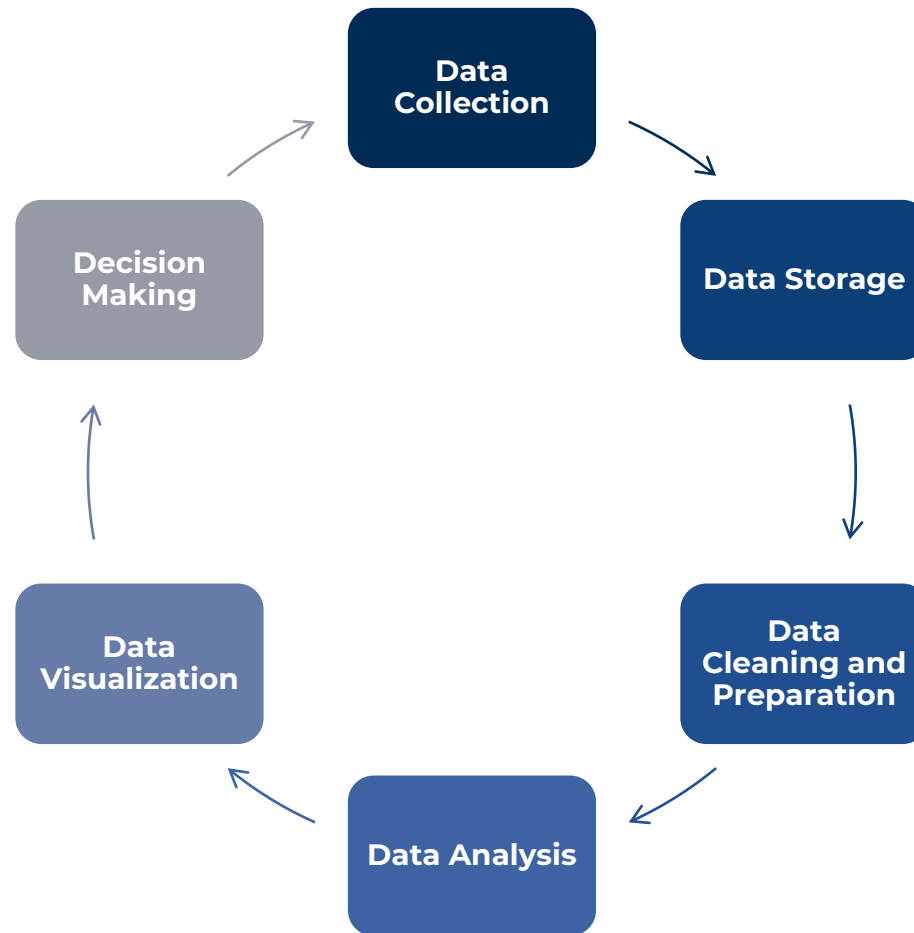


Data storage

- Data is stored on a 'on premise' shared drive
- Accessibility to the data is managed via a VPN connection and administrator rights
- Quick accessibility to data



Data cleaning and preparation



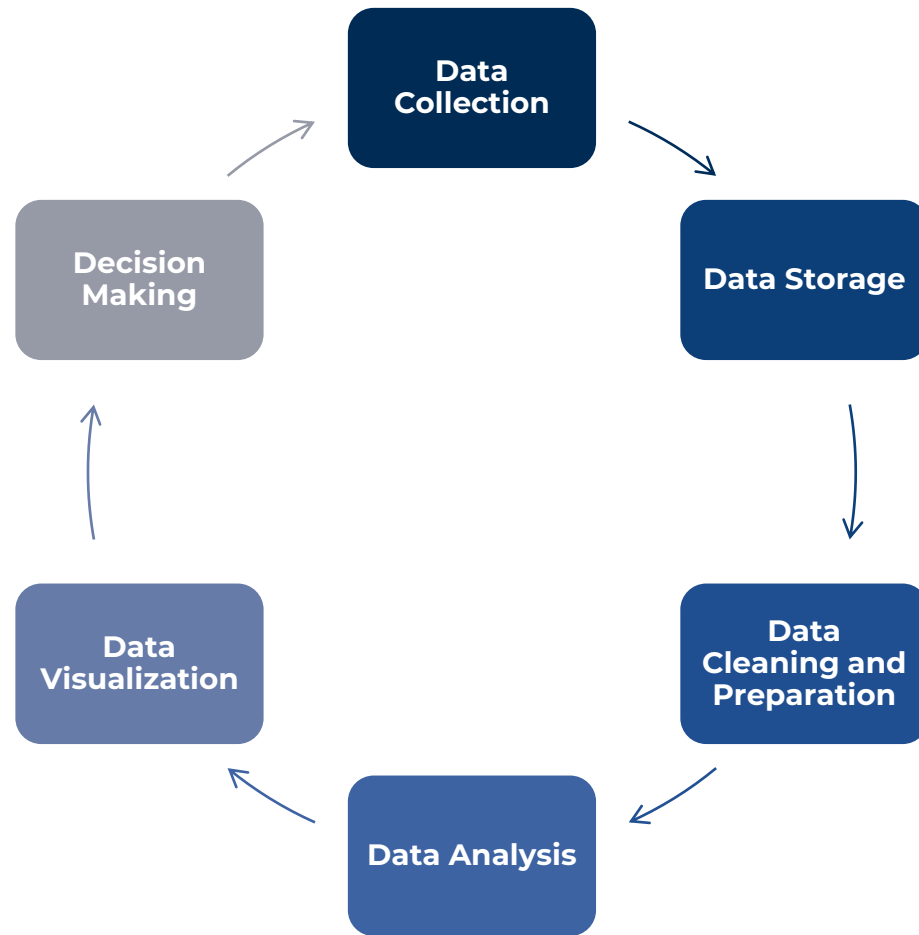
Data cleaning and preparation

- Data from XML message is quite clean
- Parcel status to indicate the step of the process
 - Status 10 = objection
 - Status 11 = objection rejected
 - Status 12 = objection accepted
- With scripting each parcel is aggregated at municipality level
- File size is now about 300kb



	RijNr	GemeenteCode	code_samenwerking_sverband	gemeente	Obj_TeBeschikken_aant	Obj_BSK_aant	Obj_nog_te_BSK_aant	Obj_nog_te_BSK_Perc	Obj_BZW_aant	Obj_nog_af_te_handelen_BZW_aant	Obj_nog_af_te_handelen_BZW_perc	Obj_StBesch_11_aant	Obj_StBesch_11_Perc	Obj_StBesch_12_aant	Obj_StBesch_12_Perc	Regels_BezwInBehand_Voor15nov_dgn
1																
2	344	0	0	0	0	0	0	0,00%	0	0	0,00%	0	0,00%	0	0,00%	0
12	1	XX	XX	_SelectieVanFilter	#####	#####	410.844	4,79%	52.054	47.798	91,82%	1.811	3,48%	3.202	6,15%	5
13	272	1680	9992	Aa en Hunze	12.081	10.596	1.485	12,29%	96	96	#####	0	0,00%	0	0,00%	5
14	105	0358	9953	Aalsmeer	14.348	14.246	102	0,71%	132	121	91,67%	0	0,00%	11	8,33%	3
15	44	0197	0197	Aalten	12.303	12.286	17	0,14%	60	60	#####	0	0,00%	0	0,00%	5
16	7	0059	9930	Achtkarspelen	12.160	12.157	3	0,03%	83	75	90,36%	0	0,00%	8	9,64%	10
17	140	0482	9998	Alblasserdam	8.850	8.754	96	1,09%	43	41	95,35%	2	4,65%	1	2,33%	10
18	170	0613	9998	Albrandswaard	11.049	10.547	502	4,54%	71	71	#####	0	0,00%	0	0,00%	5
19	106	0361	9993	Alkmaar	57.244	56.959	285	0,50%	950	909	95,68%	4	0,42%	44	4,63%	7
20	24	0141	9981	Almelo	36.151	35.542	609	1,69%	522	519	99,43%	2	0,38%	1	0,19%	7
21	3	0034	0034	Almere	94.167	89.113	5.057	5,37%	12	12	#####	0	0,00%	0	0,00%	6
22	141	0484	0484	Alphen aan den Rijn	52.656	52.387	285	0,54%	117	66	56,41%	5	4,27%	49	41,88%	4
23	288	1723	9934	Alphen-Chaam	4.480	4.251	232	5,18%	0	0	0,00%	0	0,00%	0	0,00%	0
24	331	1959	9998	Altena	23.907	22.363	1.546	6,47%	133	130	97,74%	2	1,50%	1	0,75%	10

Data analysis & visualization



Data analysis & visualization

- Now comes the fun part ;-)
- Excel format is limited but works for smaller analysis
 - 150 files -> one overview
 - Limitations in terms of aggregating and sharing results
- Power BI introduced for flexible analysis
 - Any BI tool will work (Tableau, Qlik, IBM Cognos, Oracle BI)

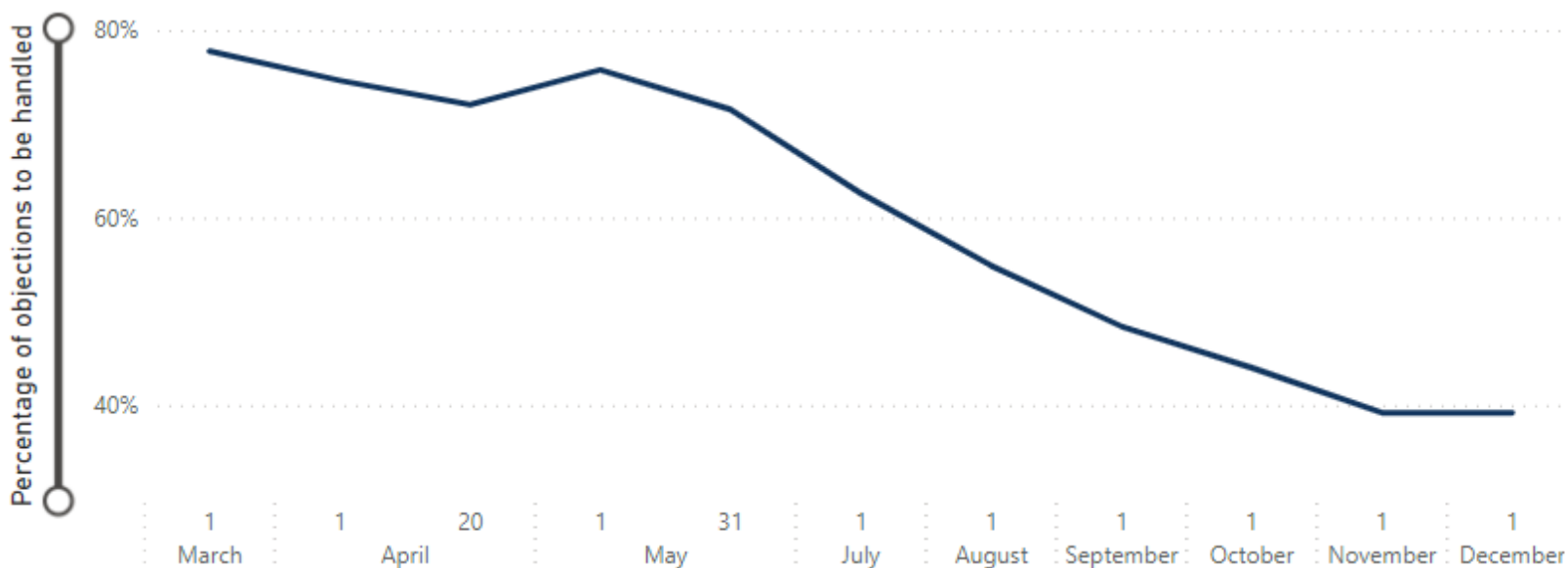


Data analysis & visualization

- BI tools handle large amounts of data more easily
- ETL in Power Query
 - Advantage: build in function to combine 150 files
- Create data model and visuals
- Use filtering to easily create overviews

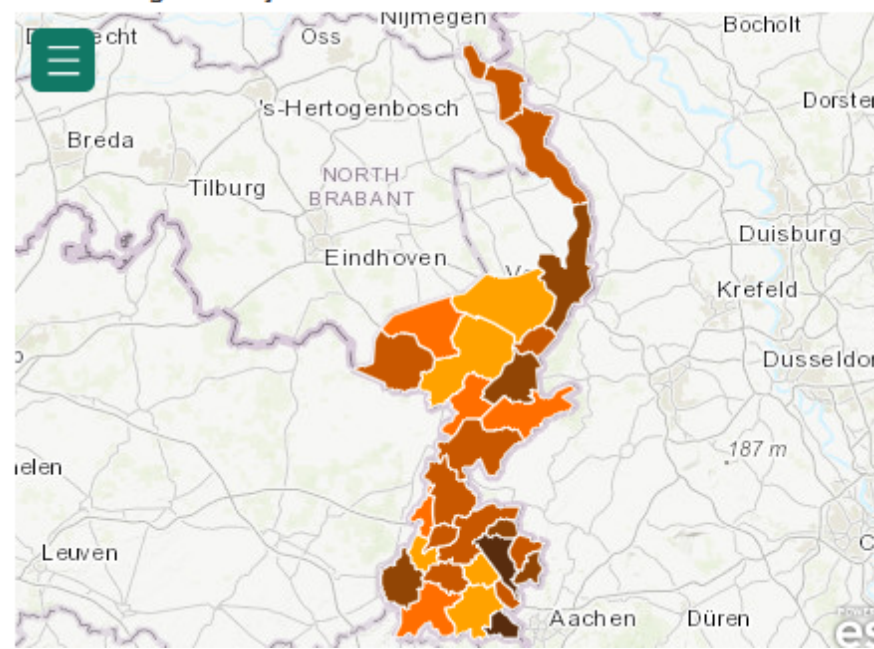


Uitvoeringsorganisatie	Objection percentage	Objections	Objections accepted	Objections handled on December 31
<input checked="" type="checkbox"/> BsGW Belastingsamenwerking Gemeenten en Waterschap	12,35%	70257	20417	60,80%
Beek	12,87%	1098	282	58,83%
Beekdaelen	12,95%	2338	682	63,47%
Beesel	12,30%	923	301	71,40%
Bergen (L)	13,95%	917	283	68,59%
Brunssum	10,49%	1659	350	60,22%
Echt-Susteren	13,84%	2392	864	71,66%
Eijsden-Margraten	14,93%	1996	709	68,04%
Gennep	13,88%	1177	332	60,15%
Gulpen-Wittem	15,56%	1230	433	63,74%
Heerlen	8,96%	4775	1312	60,57%
Kerkrade	9,49%	2475	598	62,14%
Landgraaf	12,74%	2450	711	68,90%
Leudal	18,63%	3363	1139	62,47%
Maasgouw	15,38%	1966	537	58,44%
Totaal	12,35%	70257	20417	60,80%

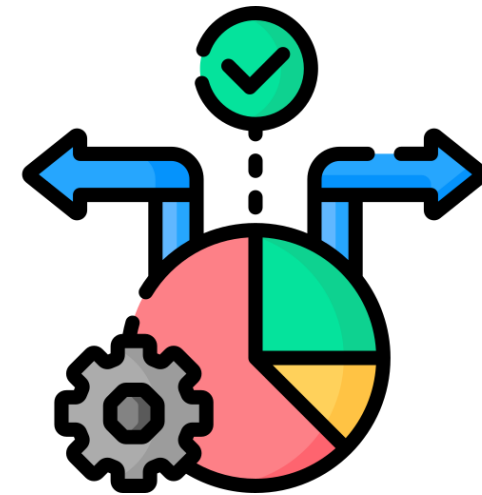
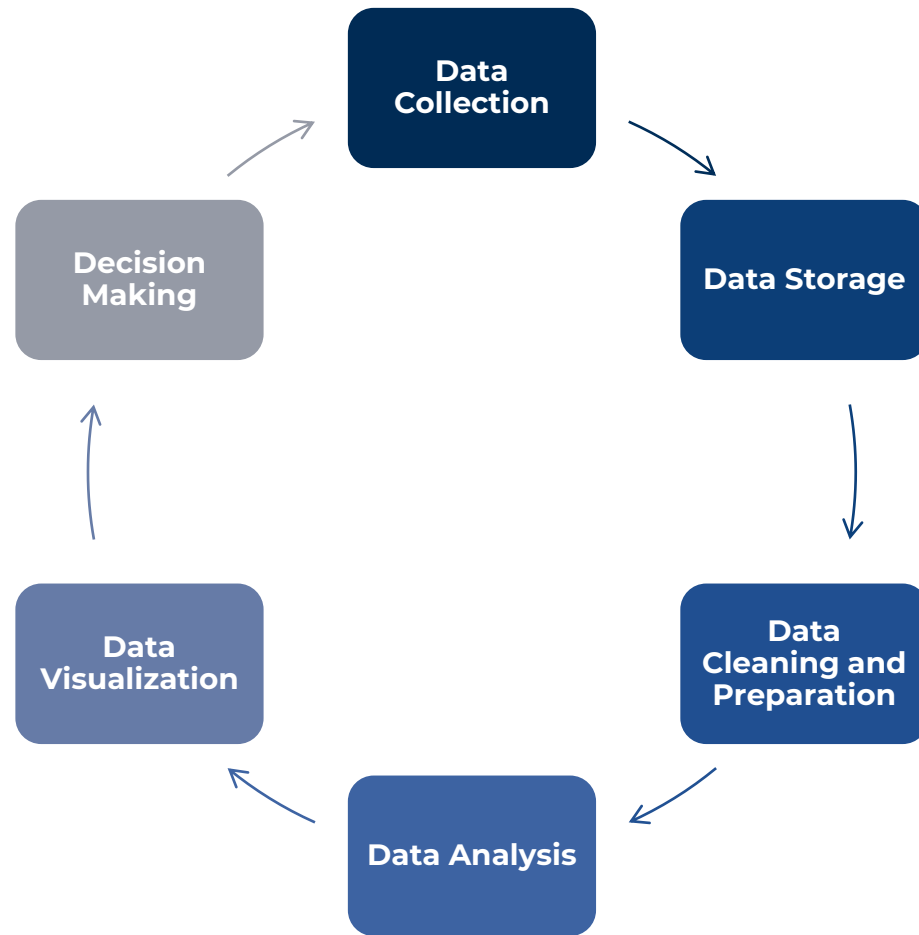


- ☐ Belastingsamenwerking West-Brabant (BWB)
- ☐ Bergeijk
- ☐ Best
- ☐ BghU
- ☐ Bladel
- ☐ Borger-Odoorn
- ☒ **BsGW Belastingsamenwerking Gemeenten en Waterschap**
- ☐ Buren
- ☐ Capelle aan den IJssel
- ☐ Coevorden
- ☐ De Connectie

Percentage of objections

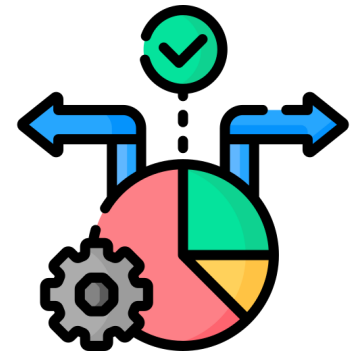


Decision making



Decision making

- Call organizations that have many objections
 - How are they going to resolve these in time?
 - Make sure that they are not just accepting all objections
 - Investigate if we are concerned
- Stay in contact with the media
 - Control the narrative
- Start monitoring appeals





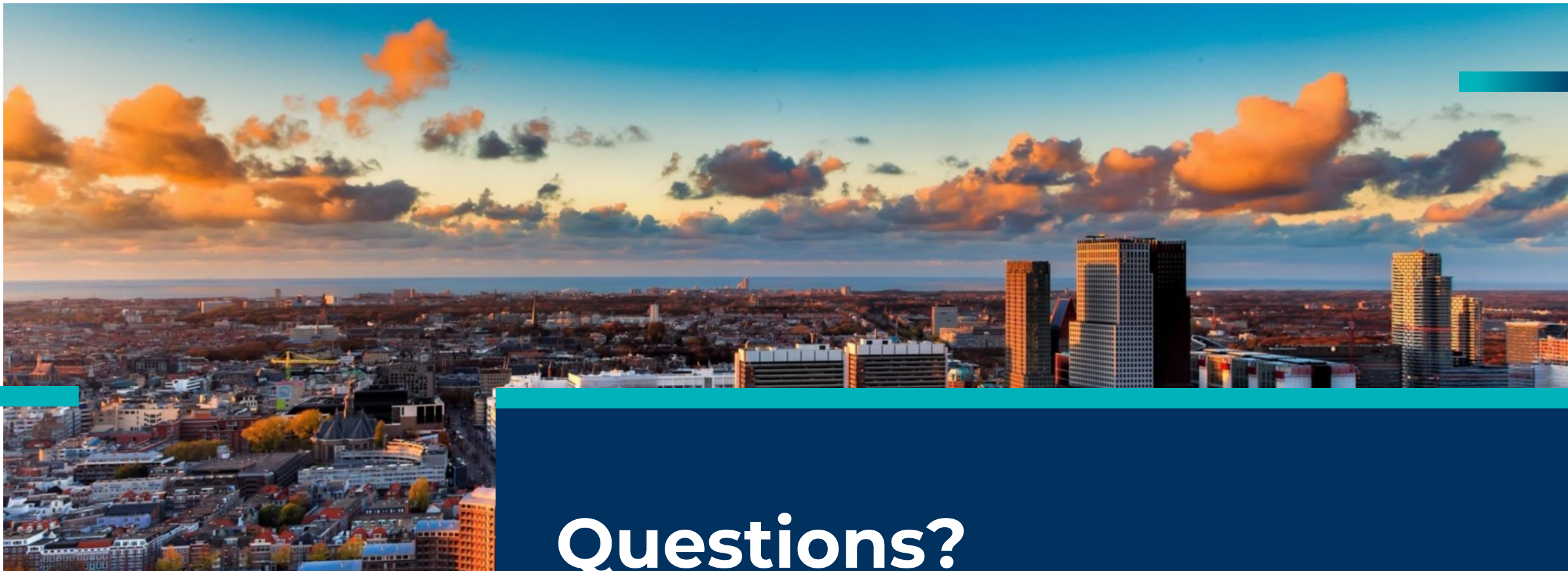
Lessons learned

Lessons learned

- Data gives a good idea
 - But it does not tell the whole story
- Transform the way of thinking within the organization
 - Continuous monitoring
- We can get a lot more out of our data
 - Is there other information available that we can monitor?

Tips if you want to start with Business Intelligence

- At the heart of every analysis: data collection
 - Bad data = bad results
- It's easier than you think
 - The software is made to be easy to use
 - Knowledge on how to use it is everywhere
- Final product is not the same as the first try
 - Start small
 - Work iterative
- Advocate for a data-driven approach in your organization
 - Make it visible



Questions?



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Thanks!

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