Gemeente Amsterdam

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CITIES AND REGIONS FOR TRANSPORT INNOVATION
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Innovation in Transport for Sustainable Cities and Regions

International Transport Forum
Global dialogue for better transport

New directions for data driven transport safety:

Impact GDPR on road safety policy making

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Foto: Inter Visual Studio / Lucas Mol

Dilemma

- Due to *underregistration,* reliable data on road traffic accidents and casualties has been deteriorating:

  - Fatalities ≈ 15%
  - Serious Injuries ≈ 50%
  - Light injuries ≈ 95%

- Therefore search for coupling with new data sources has become fashionable:

  - Public Record (fatalities)
  - Hospital data
  - Ambulance data

➢ ‘privacy’ issues lead to loss of information for policy making

What is privacy?

Who I Am

What I Am

City of Amsterdam

Eric de Kievit
10-07-1963

BSN

ID-papers

Biometrics

Identifier / token

rijksuniversiteit groningen

gemeente Baarn

AJAX AMSTERDAM

Personal Data according to GDPR

- any information relating to an identified or identifiable natural person (‘data subject’)
- the identification or authentication of a natural person is unique
- directly or indirectly, in particular by reference to an identifier (i.e. name, address, location, number)

Database relations

customer_id	l_name	f_name	street	p_code
1	Bird	Big	Sesamestreet 2	1234 AB
2	Monster	Cookie	Sesamestreet 15	1234 AB

invoice_id	customer_id	amount	product_id
2017_1	1	15	1234
2017_2	452	200	1235

product_id	description	amount
1233		55
1234	Bird Flu pill	15

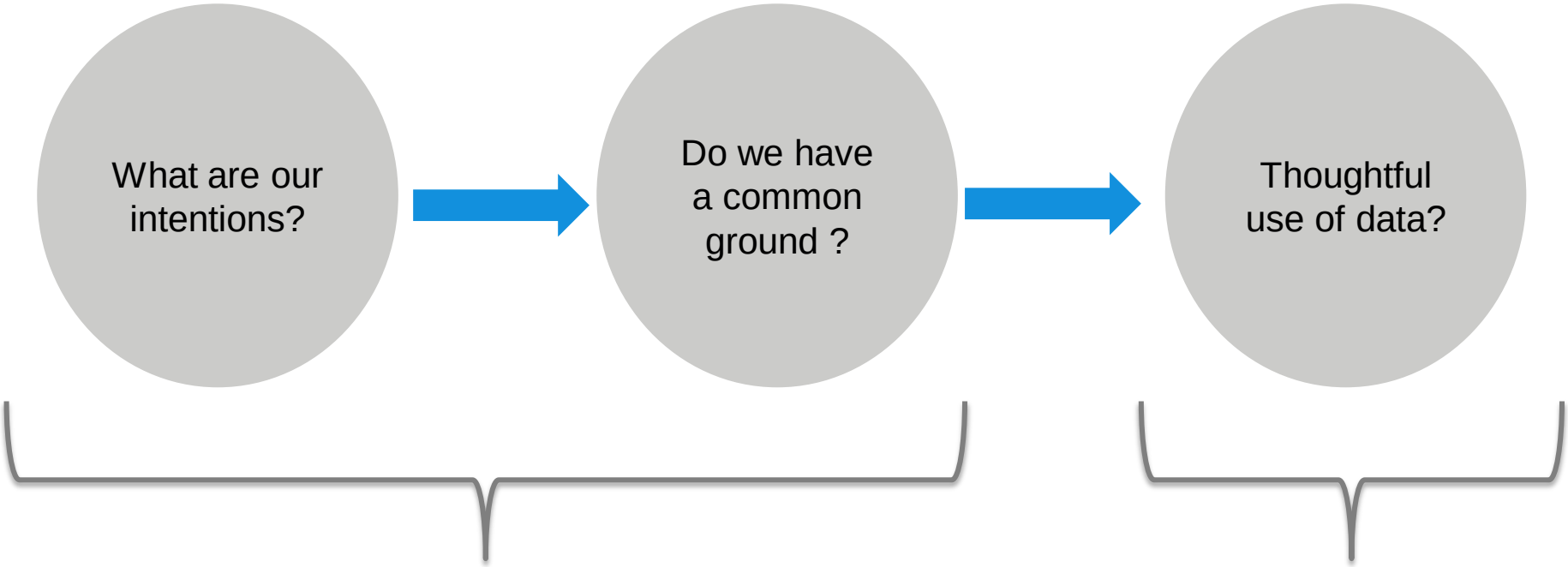
3 relevant parties according to GDPR

1. '*Data subject*'; identified or identifiable natural person

2. *Controller*; determines the purposes and means of the processing of personal data

3. *Processor*; processes personal data on behalf of the controller

GDPR Logic



Justifiable goal

1. based on the data subject's consent
2. necessity for the performance of a contract
3. legal basis or a legislative measure
4. vital interest of another natural person
5. ***performance of a task carried out in the public interest or in the exercise of official authority***

Formal requirements GDPR

1. lawfulness, fairness and transparency
2. purpose limitation
3. data minimisation
4. accuracy
5. storage limitation
6. integrity and confidentiality

demand for injury data

For every accident:

- Location and road features;
- Date and time;
- Injury severity (K+SI)
  - #casualties (K+SI)
  - #partners or objects involved;

Per party involved:

- Mode of transport / Object type (tree, wall, guiderail…)
- Age and gender
- Accident type and manoeuvre;
- Some circumstances;

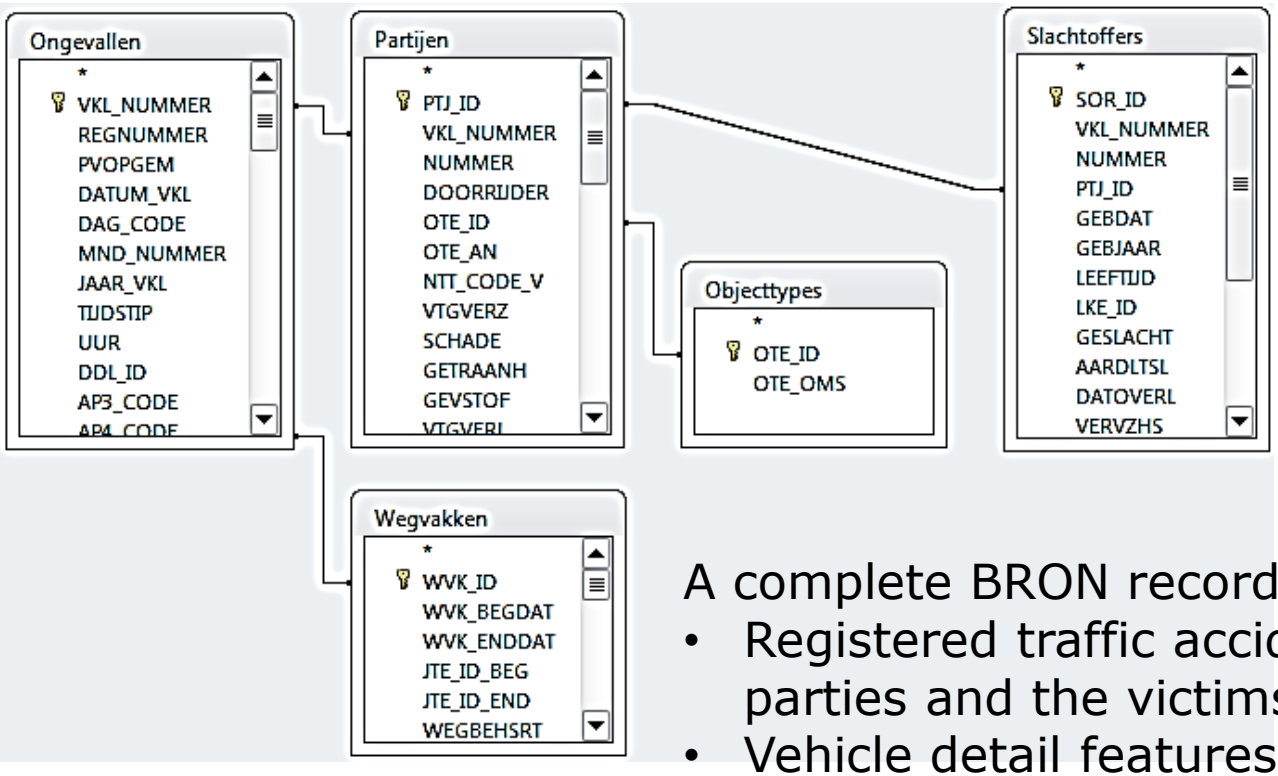
And per road authority (municipality, province, etc)

statistical aggregates:

- #casualties by severity, gender and age-class;
- #accidents with alcohol abuse

Into practice:

BRON historically contains 63 features related to car accidents.



A complete BRON record consists of data about:

- Registered traffic accidents with the involved parties and the victims per accident;
- Vehicle detail features;
- The road network of the Netherlands

supply for injury data after GRPD

Red = removed
Blue = new
Black = unchanged

CHANGES IN BRON PER JULY 2018	
Characteristic	**Definition**
DATUM_VKL	Date Accident
DAG_CODE	Day of the week of Accident
MND_NUMMER	Month of Accident
JAAR_VKL	Year of Accident
TIJDSTIP	Time of Accident
UUR	Hour
DDL_ID	Part of the Day
AP3_CODE	Termination of Accident
AP4_CODE	Termination of Accident
AP5_CODE	Termination of Accident
ANTL_SLA,	Amount of Victims
ANTL_DOD	Amount of Victims/killed
ANTL_GZH	Amount of Victims/hospitalized
ANTL_SEH	Amount of Victims/first aid
ANTL_GOV	Amount of Victims/otherwise injured
MNE_CODE	Manoeuvre
DAGTYPE	DAYTYPE "MO-FRI" of "SA-SO"

Including 'Age'
too easy coupling

Road authority *supply* after GRPD for injury data (continued)

Red = removed
Black = unchanged

PARTIES INVOLVED	
Characteristic	**Definition**
GEBDAT	Date of Birth
LEEFTIJD	Age
LKE_ID	Age Category
GESLACHT	Male or Female
BLAASTEST	Was there a breath test
ART8	Use of Alcohol
MEDICGEBR	Use of Medicine
GEBJAAR	Year of Birth
NTT_CODE_B	Nationality of driver
NTT_CODE_v	Nationality of vehicle
TDT_ID_1	Cause of Accident1
TDT_ID_2	Cause of Accident2
TDT_ID_3	Cause of Accident3
TDT_AN	Cause of Accident - others

Special category of criminal offences (speeding, Riding under Influence)

Table on vehicle characteristics (details and status) fully removed

Use of Ambulance data

- BRON has bias towards involvement of motorized traffic (Insurance; Legal issues)
- Systematic underreporting of bicycle accidents, therefore …

Kenmerken van ongeval		Ambulance-geregistreerde slachtoffers van fietsongevallen in 50km/uur-straten in Amsterdam (N=2824)	
		Aantal	%
Tijdstip	1-6 uur	363	13%
	7-12 uur	759	27%
	13-18 uur	1.172	41%
	19-24 uur	530	19%
Dag van de week	Zondag	302	11%
	Maandag	416	15%
	Dinsdag	385	14%
	Woensdag	419	15%
	Donderdag	425	15%
	Vrijdag	435	15%
	Zaterdag	442	15%
Naar zieken-huis vervoerd	Nee, gering letsel	1.268	45%
	Ja, ernstiger letsel	1.556	55%

45% was not transported to hospital

- Improving of VRU accident data & -information, especially for accidents with low level of injury seriousness

Example of open ambulance data (health service province Flevoland)

https://www.eengezonderflevoland.nl/cijfers/verkeersongevallen-flevoland/

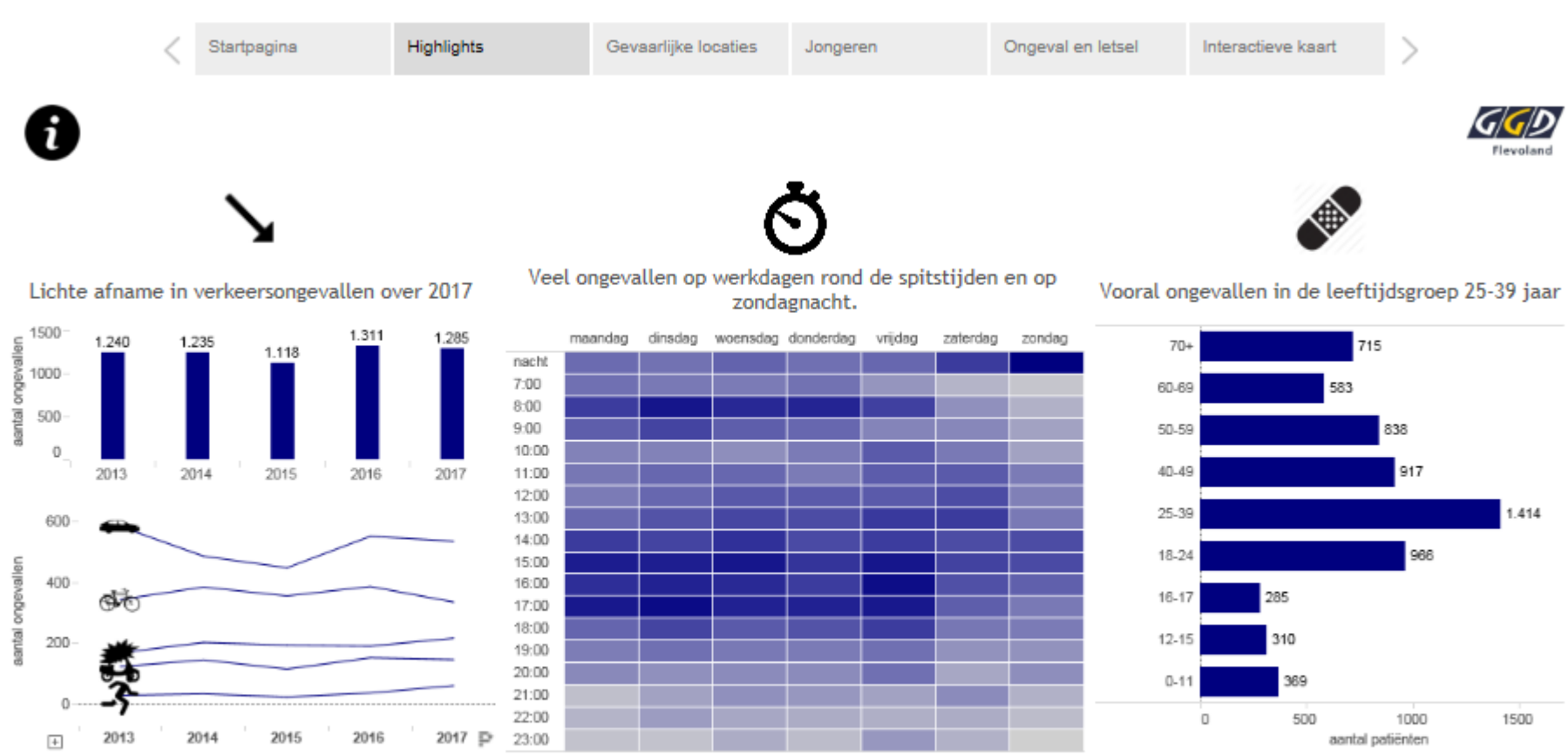


fig.1a) Aantal verkeersongevallen met letsel door de jaren heen, hoogste aantal in 2016. b) Aantal verkeersongevallen met letsel per jaar en vervoermiddel. Meeste ongevallen met auto of fiets.

fig. 2) Aantal verkeersongevallen per dag van de week en moment van de dag. De meeste ongevallen vinden plaats rond de spitstijden.

fig. 3) Leeftijdsopbouw van betrokken patiënten bij een verkeersongeval in Flevoland. Patiënten van 20-29 jaar zijn het vaakst betrokken bij een ongeval.

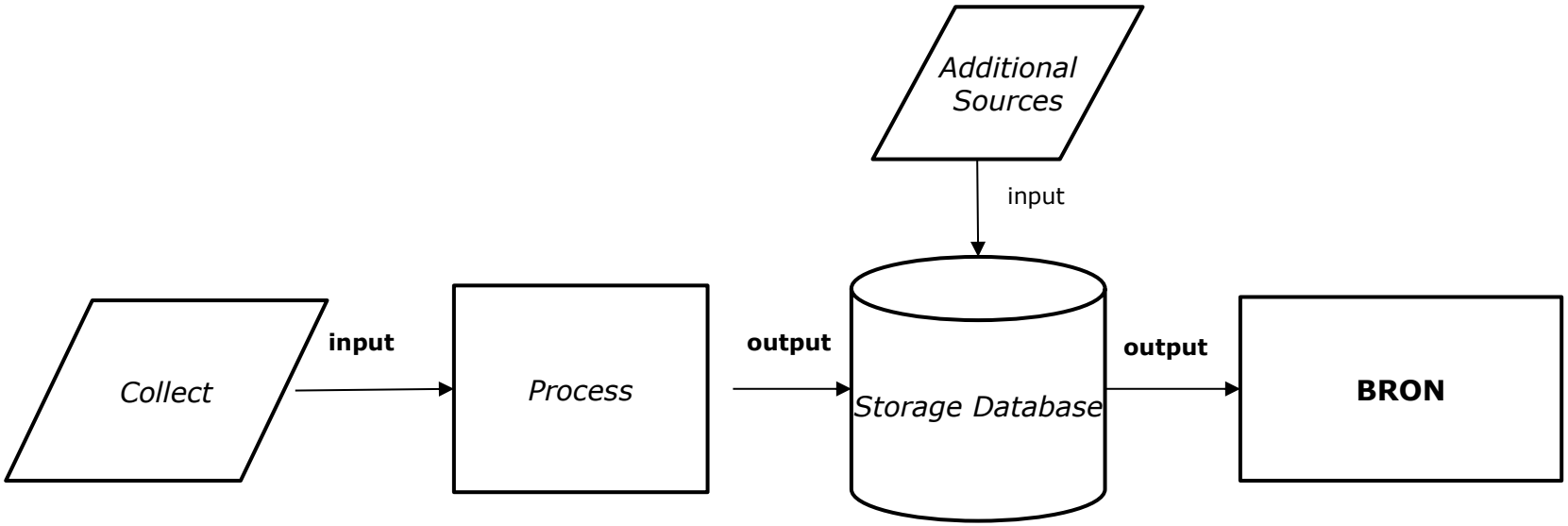
Conclusions

- The introduction of GRDP leads to “information poverty”
- It’s harder to develop tailor made road safety policies because of lack of accurate data
- The use of ambulance data can add value, but only on aggregate level

Questions

- Is a person killed in traffic “a natural person” in the sense of GRPD?
- Is reporting of traffic accidents by (social) media not a more serious threat to our privacy?

The registration process; ‘processing’



Receiving

- Remove information in advance that is not neccesary for producing BRON
- Security measurements

Process

Procedures for storage and management

- Secure access
- Storage terms

Publication (3 levels)

Layered Publication

- Open publication: BRON stripped from privacy sensitive information
- Road Administrator: Aggregated BRON
- Scientific:
- complete BRON

Levels of publication

Level 1: Open data

Intended for the general public, disclosing no details at all, but aggregated information only:

No exact dates/times of accident but only the reported year on annual basis;

Of those involved only “mode of transport” but no “human-features” such as age or even age-groups;

Type of Accident only but no details on manoeuvres.

Levels of publication

Level 2: Road Authorities

Some level of detail in order to monitor policies and design measures.

This version discloses per accident:

- *Location and road features;*
- *Date and time;*
- *Injury severity (K+SI)*
- *#casualties (K+SI)*
- *#partners or objects involved;*

Per party involved:

- *Mode of transport / Object type (tree, wall, guiderail…)*
- *Age and gender of driver*
- *Accident type and manoeuvre;*
- *Some circumstances;*

And per unit (municipality, province, etc) statistical aggregates:

- *#casualties by severity, gender and age-class;*
- *#accidents with alcohol abuse*

Levels of publication

Level 3: Researchers

Intended for researchers such as SWOV Institute for Road Safety Research:

All data provided

Use only by signed agreement stating a.o.:

- *No disclosure of records;*
- *Presentations only at levels of publication;*
- *Reports in general terms and with aggregated data only;*
- *“Raw” material to be destroyed after use*