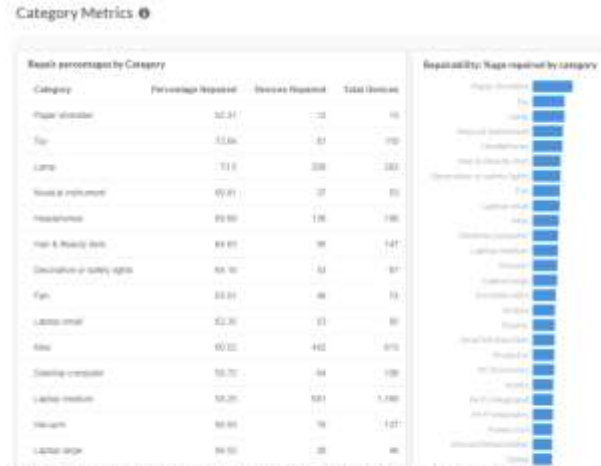


Open Repair Data Platform

*Technical exercise is promising,
start focusing on business value / architecture*

Starting point: international data on repair bring interesting insights

- Cfr. Open Repair Alliance using the Open Repair Data Standard)
- NB. Data coming from Repair Café work
- NB. Static datasets

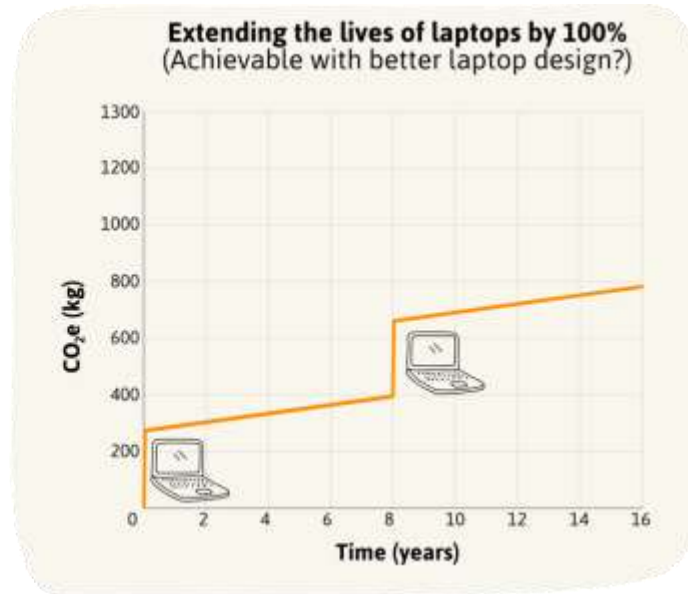
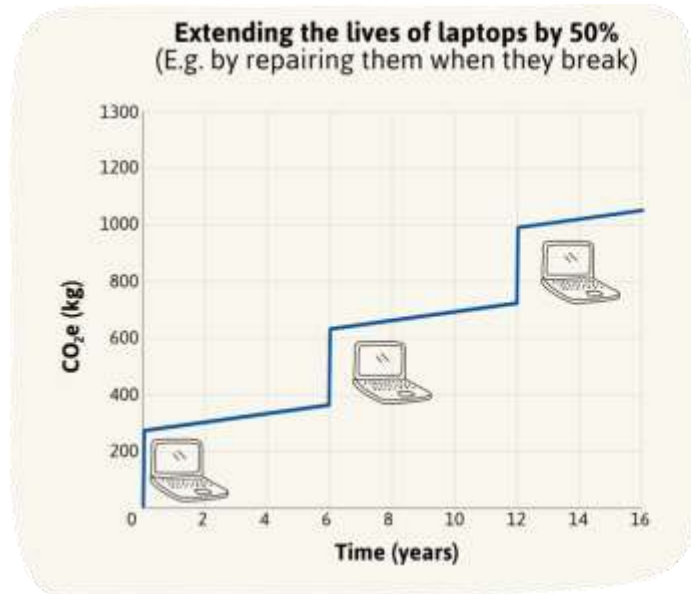


This makes it much easier to draw inferences or conclusions from the data, for example:

- Over 90% of paper shredders were successfully repaired (most likely because they are electrically and mechanically simple, and commonly fail due to blockages which can be removed)
- Only around 1 in 3 of the cameras we see are repaired successfully (potentially due to the high level of miniaturisation, complexity and fragility of small mechanical parts, likelihood of physical impact damage and non-availability of spare parts)

Starting point: international data on repair bring interesting insights

- Cfr. Open Repair Alliance using the Open Repair Data Standard)



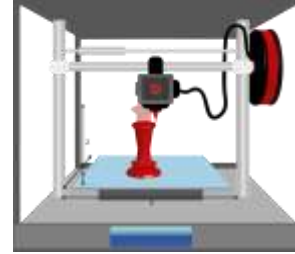
ORDP in Sharerepair: more data clusters, extending ORDS?



Repair actors data



3D designs spare parts



Repair guides



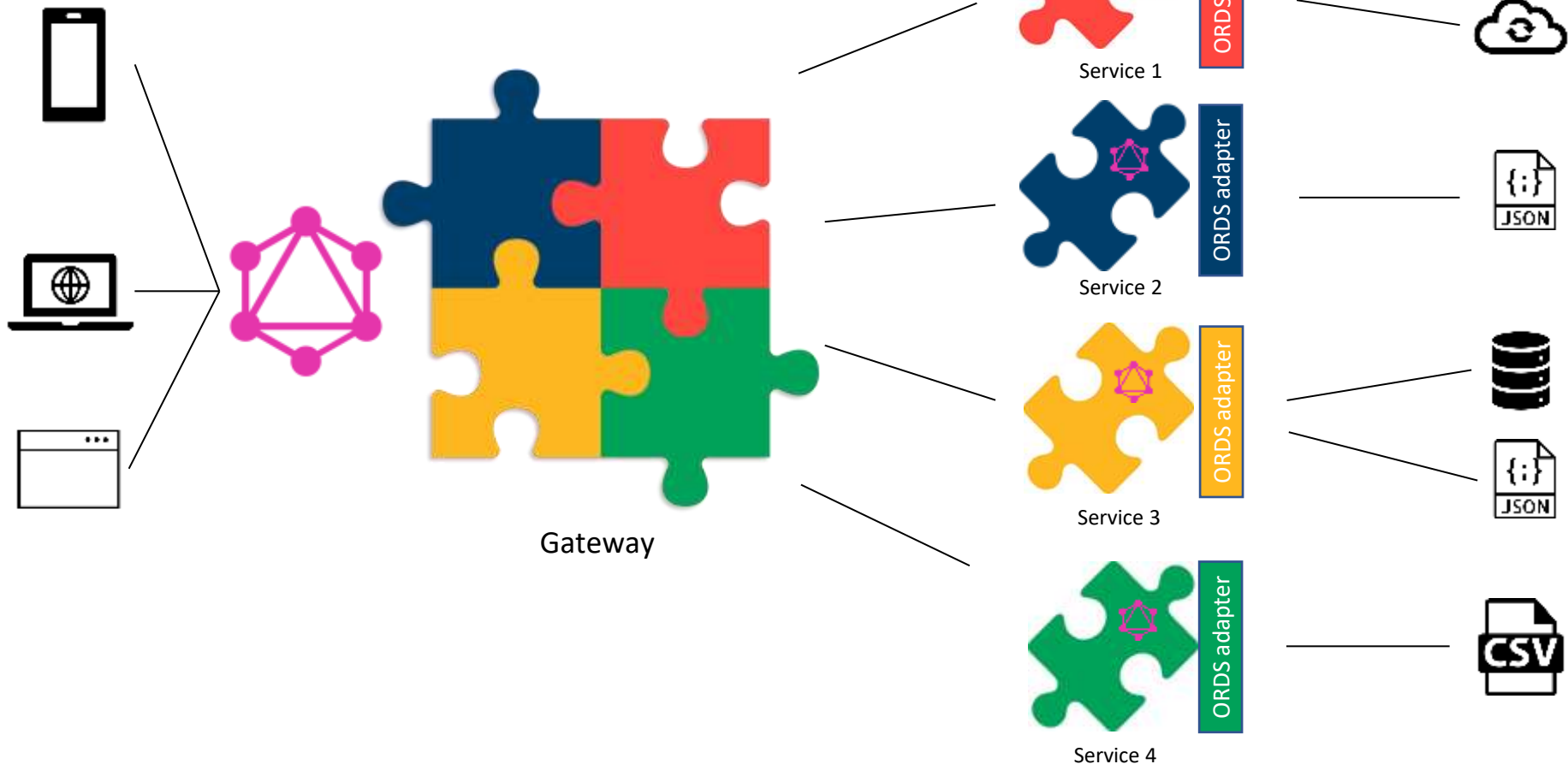
Repair related data



ORDP - Which data is available?

1. Open Repair Alliance Dataset
 - a. Repair data (< Repair Cafés)
 2. Repair Connects
 - a. Repair locations data (different types of actors)
 - b. Repair data (< Repair Cafés, professionals, DIY)
 3. My MiniFactory (3D print designs)
 4. IFIXIT (guides)
- + ORDS related (for mapping purposes)

ORDP in Sharepair: integration



ORDP - What is it? Integration of all datasets into queryable platform

```
query ORD{
  repairs {
    brand
    country
    data_provider
    event_date
    id
    partner_product_category
    product_age
    product_category
    product_category_id
    repair_barrier_if_end_of_life
    repair_status
    year_of_manufacture
  }
}
```

The screenshot displays a GraphQL query client interface with two main panels: 'Operation' and 'Response'. The 'Operation' panel shows the query defined in the previous block. The 'Response' panel shows the JSON output of the query, which is a list of three repair records. Each record contains fields such as brand, country, data_provider, event_date, id, partner_product_category, product_age, product_category, product_category_id, repair_barrier_if_end_of_life, repair_status, and year_of_manufacture.

```
Operation
```

```
query ORD{
  repairs {
    brand
    country
    data_provider
    event_date
    id
    partner_product_category
    product_age
    product_category
    product_category_id
    repair_barrier_if_end_of_life
    repair_status
    year_of_manufacture
  }
}
```

```
Response
```

```
{
  "data": {
    "repairs": [
      {
        "brand": "Unbekannt",
        "country": "DEU",
        "data_provider": "Anstiftung",
        "event_date": "2011-02-25",
        "id": "Anstiftung_1",
        "partner_product_category": "Elektronische Spielzeug",
        "product_age": 19,
        "product_category": "Power tool",
        "product_category_id": 24,
        "repair_barrier_if_end_of_life": null,
        "repair_status": "Fixed",
        "year_of_manufacture": null
      },
      {
        "brand": "Playmobil",
        "country": "DEU",
        "data_provider": "Anstiftung",
        "event_date": "2011-02-25",
        "id": "Anstiftung_2",
        "partner_product_category": "Elektronische Spielzeug",
        "product_age": null,
        "product_category": "Toy",
        "product_category_id": 32,
        "repair_barrier_if_end_of_life": null,
        "repair_status": "Unknown",
        "year_of_manufacture": null
      },
      {
        "brand": "Unbekannt",
        "country": "DEU",
        "data_provider": "Anstiftung",
        "event_date": "2011-02-25",
        "id": "Anstiftung_3",
        "partner_product_category": "Elektronische Spielzeug",
        "product_age": null,
        "product_category": "Funktionen nicht mehr",
        "product_category_id": null,
        "repair_barrier_if_end_of_life": null,
        "repair_status": "Unknown",
        "year_of_manufacture": null
      }
    ]
  }
}
```

```
Variables
```

Header	
1	top

ORDP - What can it do?

- Individual platforms can get access to all datasets by making 1 single integration/connection
- E.g. preview content
- E.g. use realtime repair statistics (repair success rate, eco impact...)

[← Back to repair options](#)

Fix it yourself

Fix it yourself? On this page you will find some tools to help you identify your problem. We base this on common mistakes that volunteer repairers encounter during Repair Cafés.

Product category: Blender

How old is the product?: 2-5

What's wrong with the device? Common problems: The appliance does not switch on

DIY guides to fix your problem


The appliance does not switch on

Problem with safety switch

Safety switches are one of the main causes of food processor malfunctions. More and more of them are protecting the user. However, when they break or get dirty, they can cause malfunctioning of your mixer or blender.


[View guide >](#)

[See all \(103\) >](#)




Hand-Held Blender Motor Replacement

The fix is needed when the motor is worn out ...



Repairing Bodum Bistro Electric Blender Stick Plastic motor transmission part

After heavy use of this blender, the rotating part may ...



Sunbeam SM8900 Stick blender Motor Brush Replacement

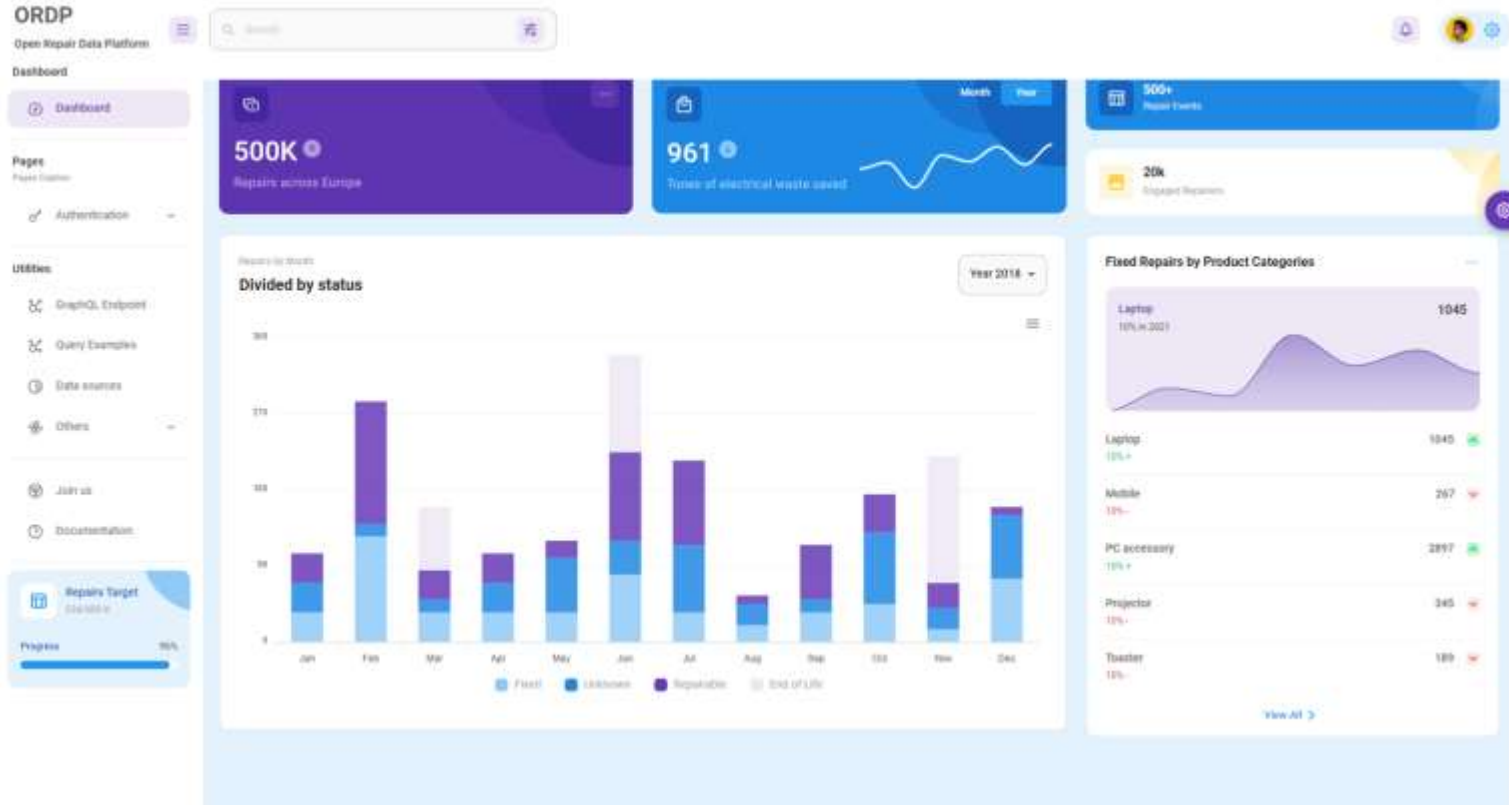
... had repaired my SM8900 stick blender stopped working. It would ...

Related DIY guides

Vivamus quis arcu ornare nulla vehicula tincidunt in quis turpis. Suspendisse maximus nisi sit amet velit euismod, eget dictum tortor auctor. Morbi et quam pulvinar, sagittis elit vitae, aliquam sem. Cras finibus urna ac arcu rhoncus placerat.

Blender: Other common problems

ORDP - What can it show?



ORDP - What can it show?

Repairs attempts per product category



Dummy data!

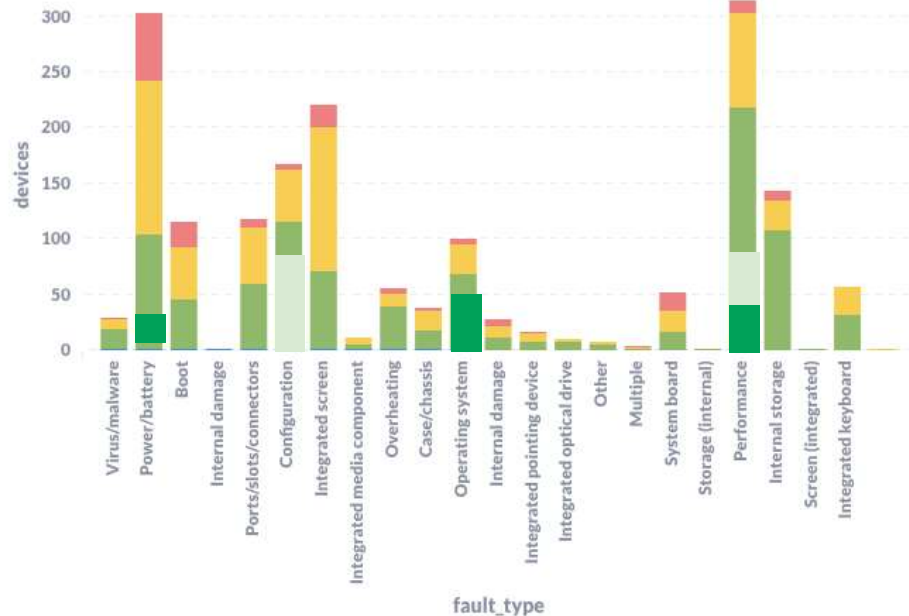
ORDP - What can it show?

Dummy data!

Known fault types by repair status ⓘ

Fixed professional Fixed DIY

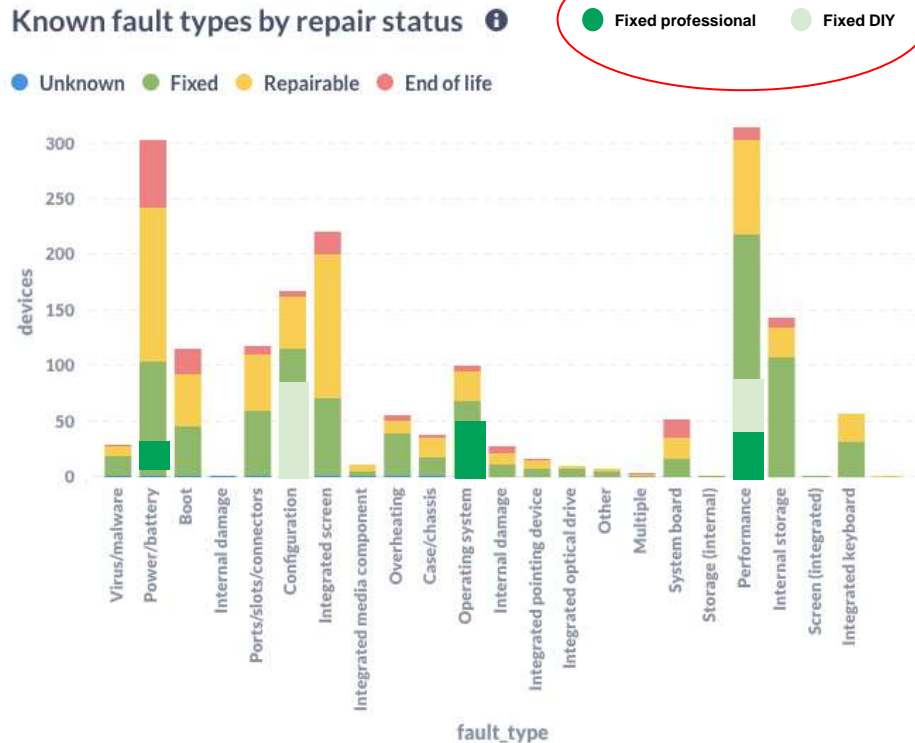
Unknown Fixed Repairable End of life



ORDP - What can it show?

Dummy data!

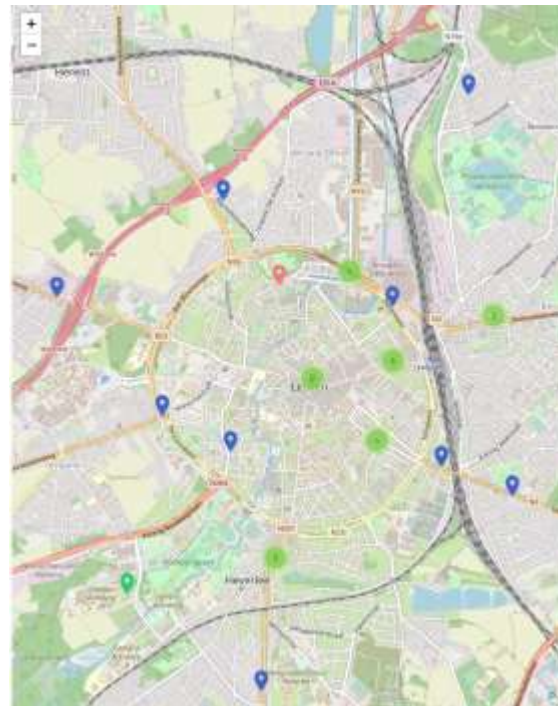
Known fault types by repair status ⓘ



Leuven
126.000
mobile
phone stock

18.000
unused
mobile
phones

18 shops
mobile
phones
repair



Pitch

Repair city monitor
Dummy data only!

1. Building a data driven policy making



'Happiness'

External
Factors

'Koopkracht' + 'Entertainment' + 'Health'

Happiness Indicator = $w1.kk + w2.Entmnt + w3.Hlth$

→ Koopkracht = $w1.Income + \dots + w_n.recycle + \dots$



'Environmental
Health'

External
Factors

'Waste' + 'Air Quality' + 'GreenSurface'

Environmental Health Indicator = $w1.w + w2.AQ + w3.GS$

→ Waste = $w1.Building + \dots - w_n.recycle + \dots$

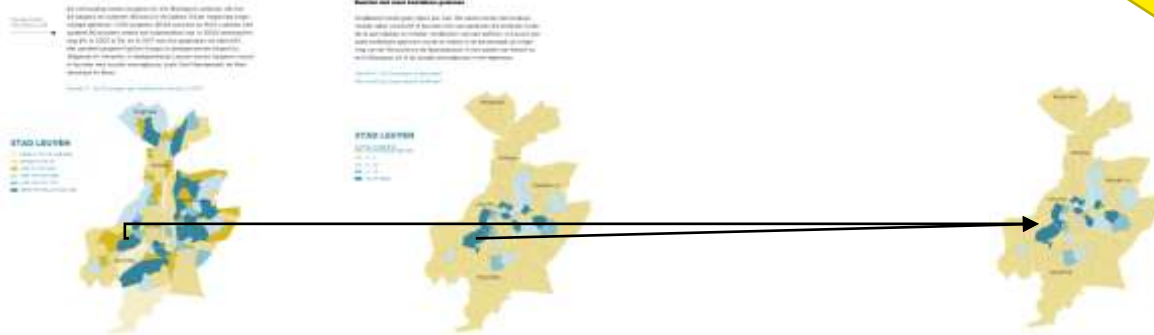
2.Strategic Repair Cafés deployments

Dummy data!

Target	Share of Clients Repair Cafés	Share of Total Popluation
Low Income	70%	40%
>65 years	30%	15%

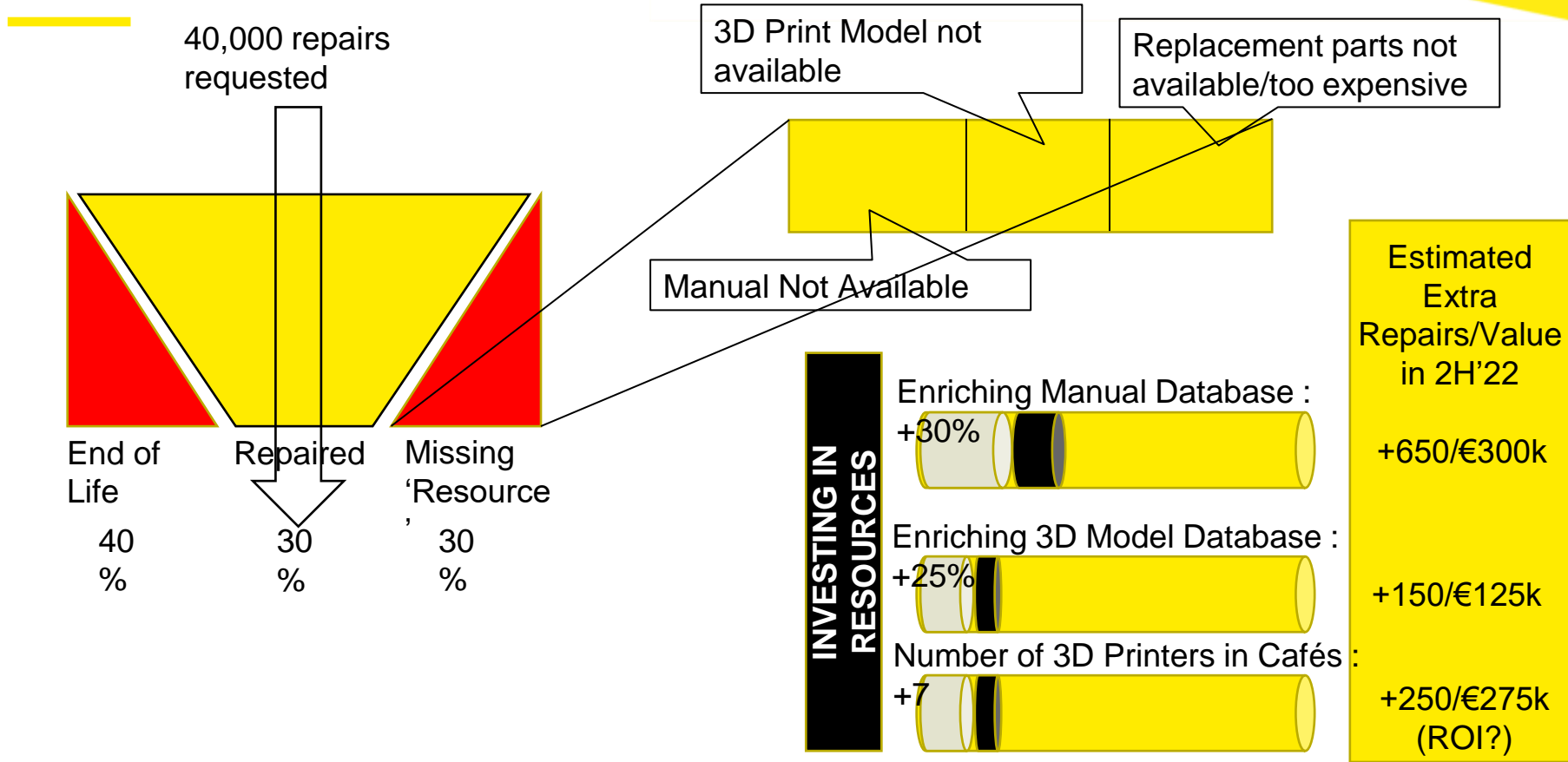


We see that there is an overproportional interest from older and/or lower income people in the concept. Hence the priority should be in those areas with higher concentration of older and lower income population.



Priority Areas of Deployment of Repair Cafés

3.Reducing the missed repair opportunities

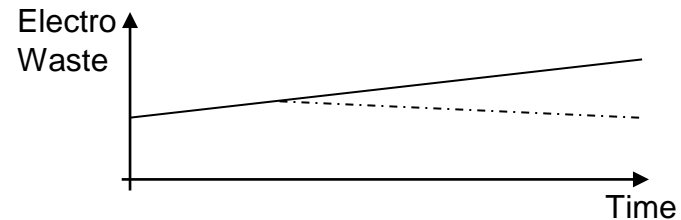
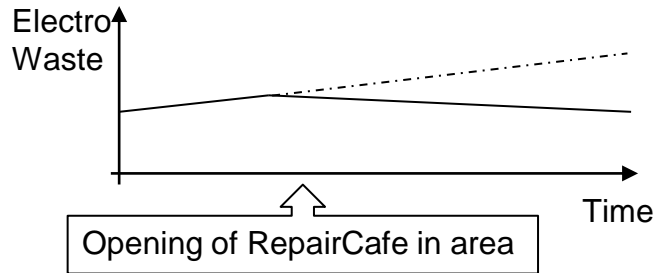


4. Impact of Repair Cafés on electro waste

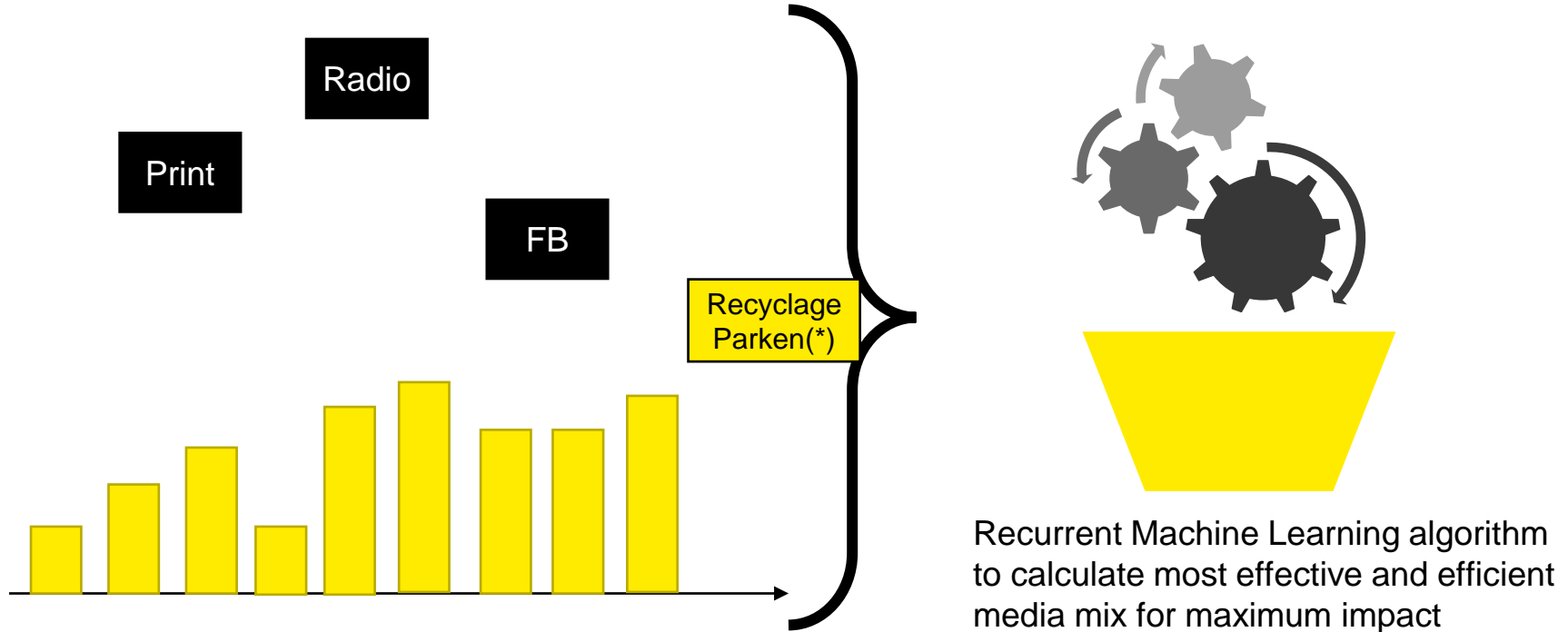
Repair Café next to (within 2 km radius)
RecyclePark



No Repair Café next to
RecyclePark

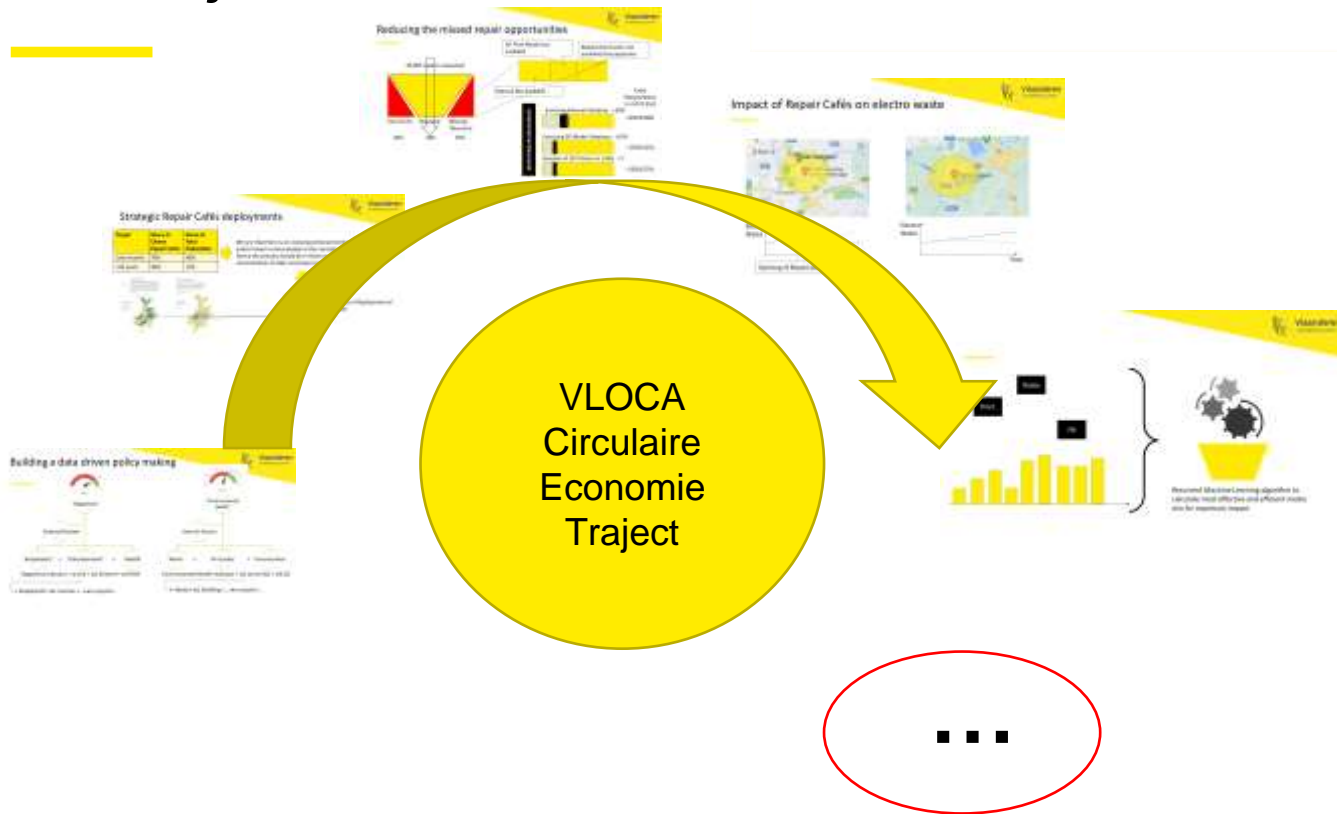


5.Campaign Performance Marketing Mix



(*) : we can communicate in a recyclepark the closest repair café at the entrance and at the drop off point inside, with a quick check list to know if interested and potentially repairable, for example.

Als we dit allemaal kunnen 'automatiseren' en 'verrijken'...



1. Building a data driven policy making



'Happiness'

External
Factors

'Koopkracht' + 'Entertainment' + 'Health'

Happiness Indicator = $w1.kk + w2.Entmnt + w3.Hlth$

→ Koopkracht = $w1.Income + \dots + wn.recycle + \dots$



'Environmental
Health'

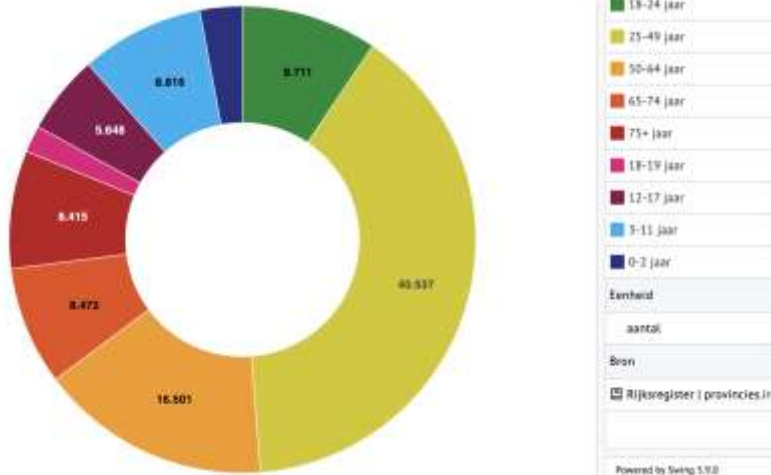
External
Factors

'Waste' + 'Air Quality' + 'GreenSurface'

Environmental Health Indicator = $w1.w + w2.AQ + w3.GS$

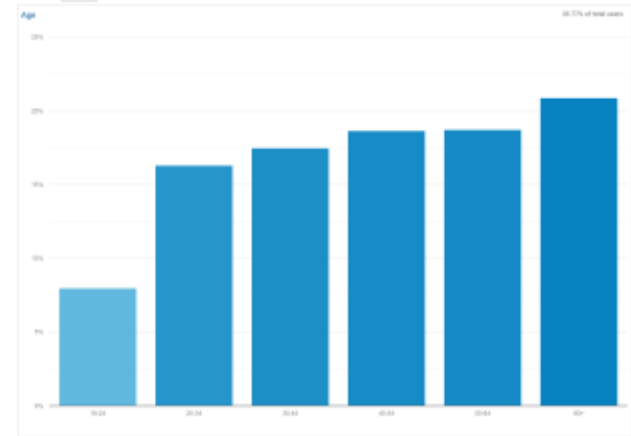
→ Waste = $w1.Building + \dots - wn.recycle + \dots$

Stadsmonitor Demografie - Leuven



101.992
Inhabitants

Demografische gegevens < comms tools



Doelgroep

Huidige doelgroep | Potentiële doelgroep

Wordt in deels bij Facebook pagina

1,7 d.

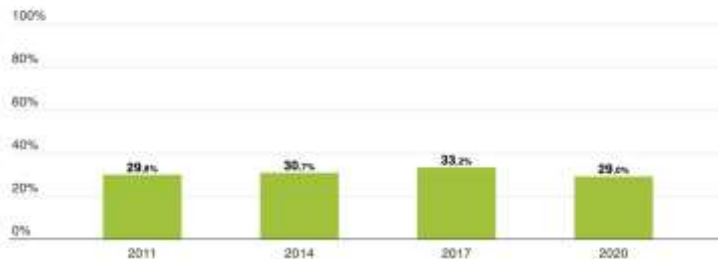
Leefstijl en gezin



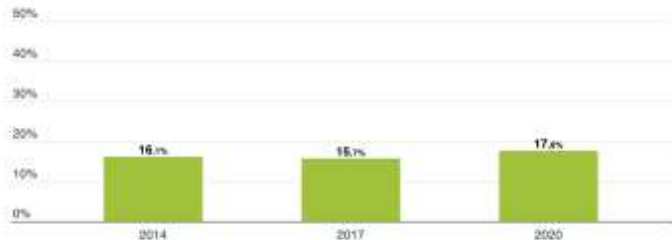
Stadsmonitor Samenleven - Leuven

Bevraging bezoekers Repair Café Maakbaar

Deelname aan buurtactiviteiten in afgelopen jaar | Stad Leuven



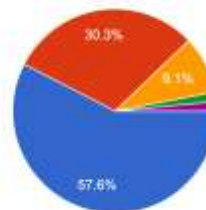
Regelmatig vrijwilligerswerk | Stad Leuven



[Klik hier voor de betrouwbaarheidsintervallen](#)

Did you ever visit a (physical) repair café event before?

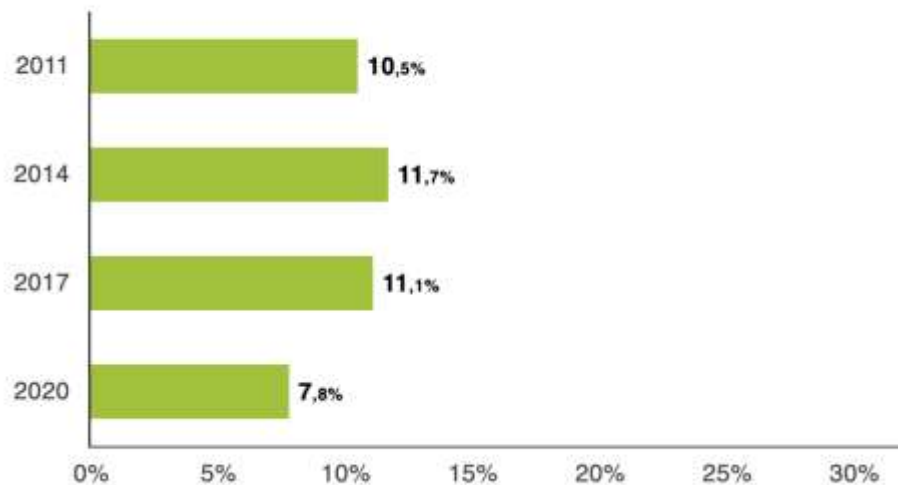
66 responses



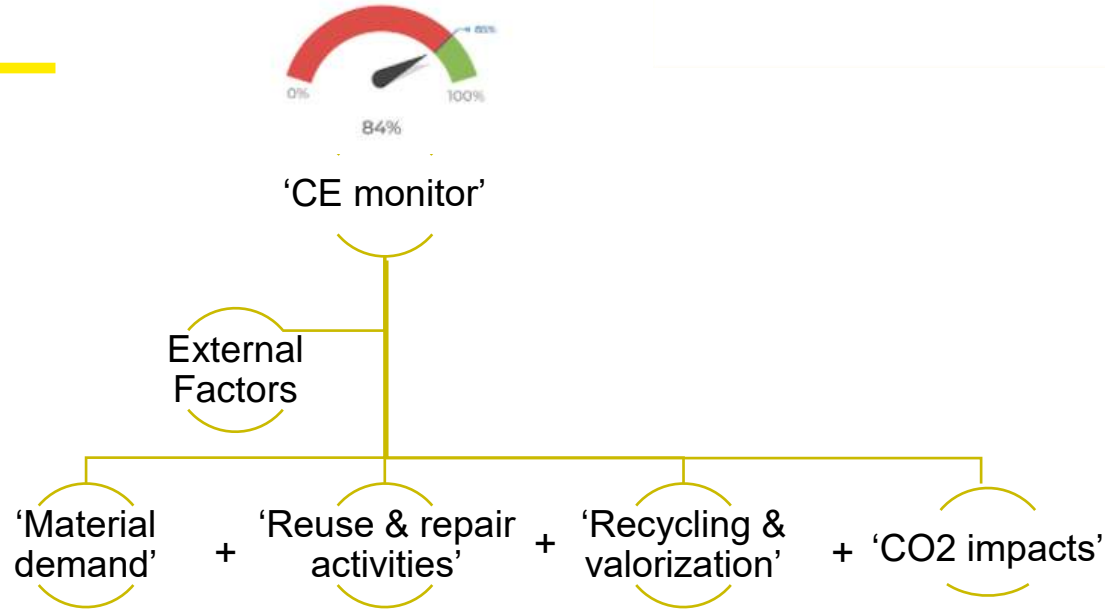
- I never visited a repair café event before
- Yes, 1-2 times
- Yes, 2-5 times
- Yes, more than 5 times
- Weir wollten hingehen aber wegen Covid war es zu

Stadsmonitor Armoede - Leuven

Huishoudens met betalingsmoeilijkheden | Stad Leuven



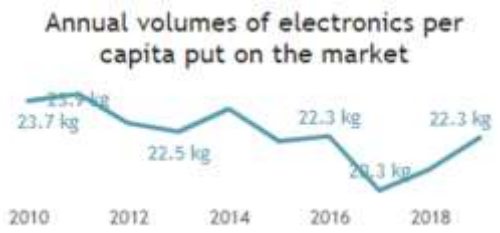
1. Building a data driven policy making



Material demand & stock

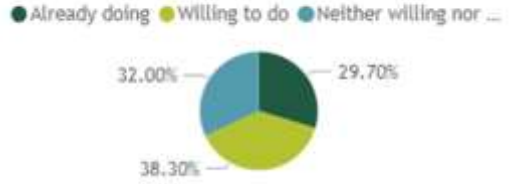
INFLOW

Annual volumes of electronics per capita put on market



Bron: Eurostat; BE data

Attitude towards sharing small goods



Bron: stadsmonitor

STOCK



EEA / hh

79

Of which

11

Unused

Select device:

- Average in Stock /hh 4,7
- Unused (well functioning)^(x1000) 1415
- Unused (broken)^(x1000) 1419



To relate with material composition to estimate the CRM urban mine...

Bron: Recupel bezitsmeting

Repair activites: repair community

Dummy data!					# followers	
Repair Café - social fabric	Monthly visitors	Volunteers	#repaired devices - monthly	on social media (coverage)	Score	
Repair Café Leuven	55	86	89	2478 (3,1%)		
<i>Comparable: Repair café Hasselt</i>	48	69	144	3331 (4,2%)		
Repair Café Wijnmaal	12	3	24	644 (5,5%)		
<i>Comparable: Repair café Diest</i>	33	5	29	785 (7,5%)		
Total	67	89	113	3122		

Repair events
(over 30 days) **15**
(+3%)

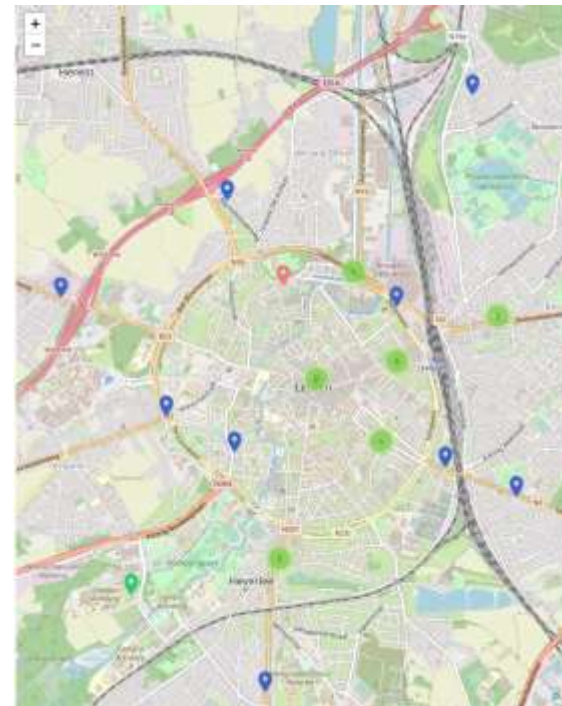
present or interested
indicated on Facebook **95**
(+8%)

Repair activities: professional repairers

47

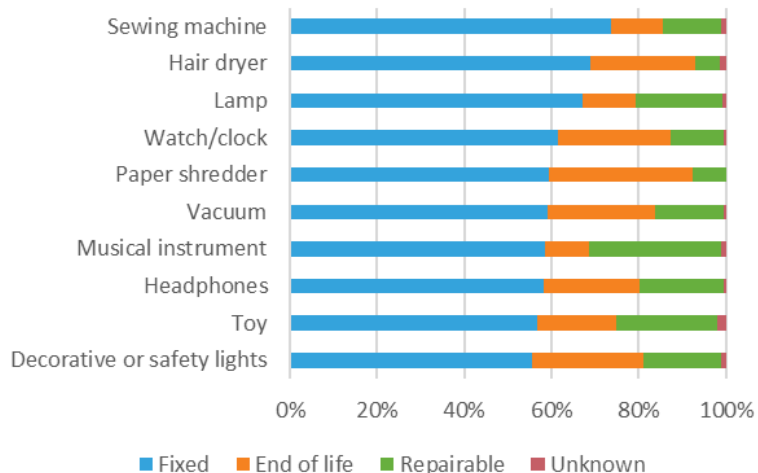
Professional
herstelshops

Naam	Adres	Gemeente	Personeelsbestand (Laatste jaar) Laatst beschikb.
CTCP	Blijde-Inkomststraat 97	LEUVEN	4
PHONETECH	Bondgenotenlaan 175	LEUVEN	3
NEW STYLE TRADING	Redingenhof 8	LEUVEN	2
STEDIMO	Diestsestraat 194C	LEUVEN	2
WEX	Naamsestraat 37	LEUVEN	1
STEIN Johan	Diestsestraat 235	LEUVEN	1
GULUNAY Habib	Vaartstraat 4	LEUVEN	1
SIMONYAN Gagik	Tiensesteenweg 356	LEUVEN	1
VANDERMAELEN Jeroen	Diestsestraat 149	LEUVEN	1
ABDUL SAMED Ahmad	Glasblazerijplein 3 b.301	LEUVEN	1
VAN DEN NOTELAER Tim	Tiensevest 194	LEUVEN	1
COPMAN EN CO	Frederik Lintsstraat 61	LEUVEN	1
DEOL PUNJAB	Rector De Somerplein 6	LEUVEN	1
FIETSATELIER DE FIETSFIXER	Sint-Maartenstraat 12 E en F	LEUVEN	1
DATEX	Voorzorgstraat 6	LEUVEN	1



Repair activities

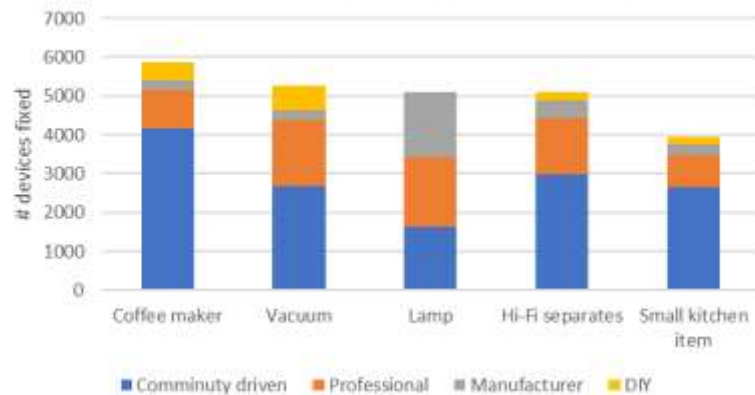
Fixing rate per category



Failures to repair



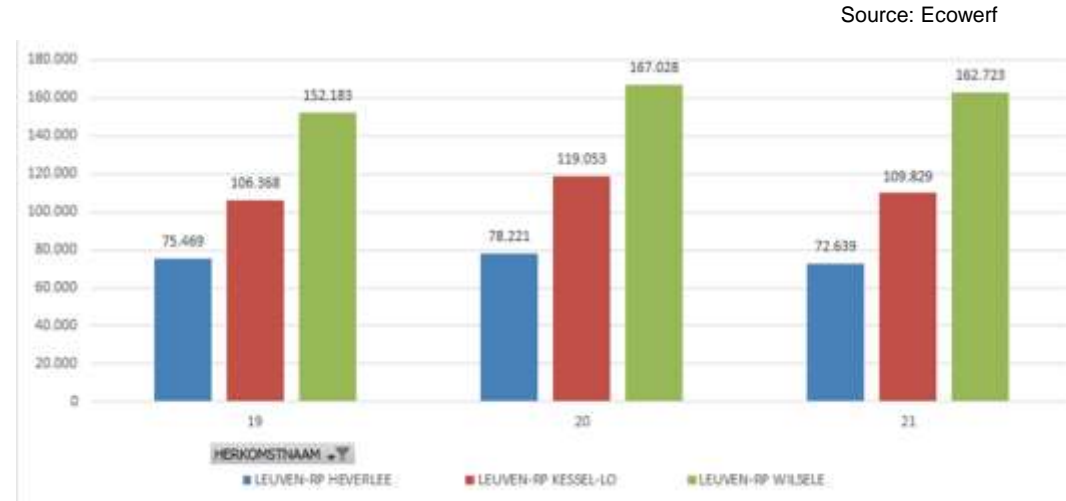
Top 5 most fixed (all time) per repair resp.



Recycling & valorization

Amounts collected for recycling through different channels

- Intercommunales: recycling center(s)
- Kringwinkel
- Recupel
- Totale: BeWEEE



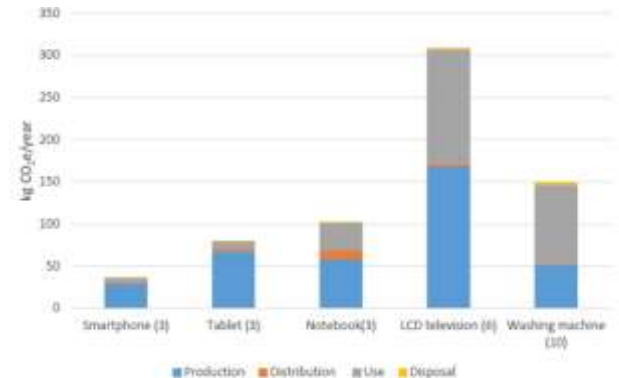
Ondernemingsplan ecowerf: Op middellange termijn heeft EcoWerf de ambitie om haar kennis inzake materiaalbeheer verder te vermarkten, onder meer door advisering op basis van deze kennis. Een adviestak zou een geheel **nieuwe nevenactiviteit** van EcoWerf kunnen worden

Op langere termijn zou het wellicht interessant zijn om data en informatie op specifiek verzoek te vergaren, te verwerken en in al dan niet bewerkte vorm aan te leveren (bijvoorbeeld **geospecifieke data inzake materiaalbeheer**, of het **koppelen van databronnen zoals gezondheidsdata die gecorrigeerd kunnen worden met data gerelateerd aan afval**)

Carbon & material footprint

On product and stock level:

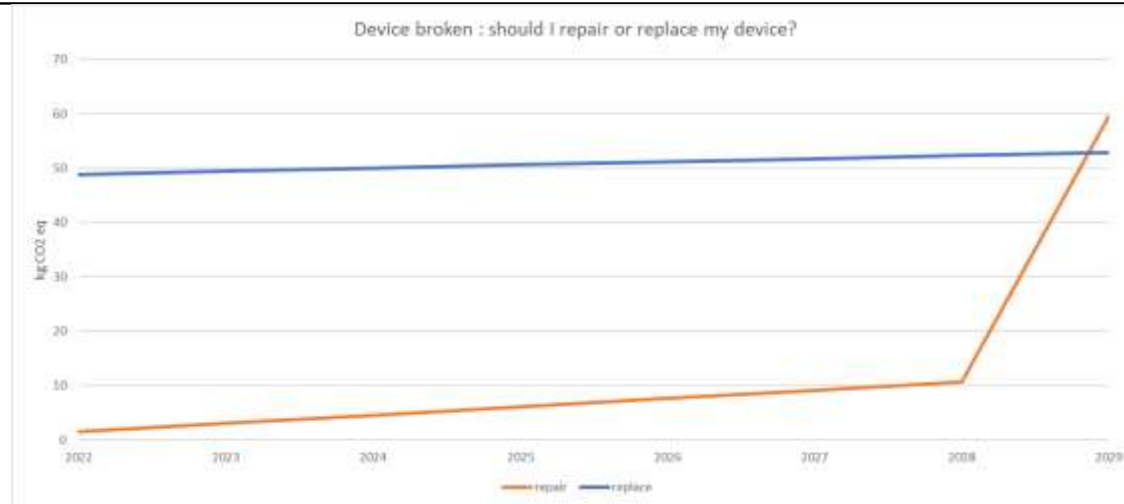
- CO2 per lifecycle phase (Production / Distribution / Use / Disposal);
- Waste avoided & carbon savings due to repair in kg CO2 saved or in “taking X cars of the road for a year”;
- Hh carbon footprint wrt EEA usage compared to other consumption domains (food, housing, transport,...)
- ...



Repair impact tool SHAREPAIR

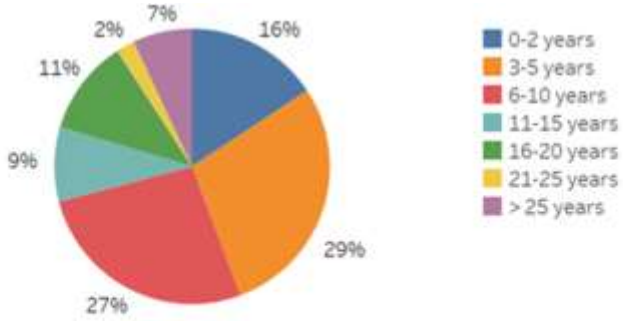
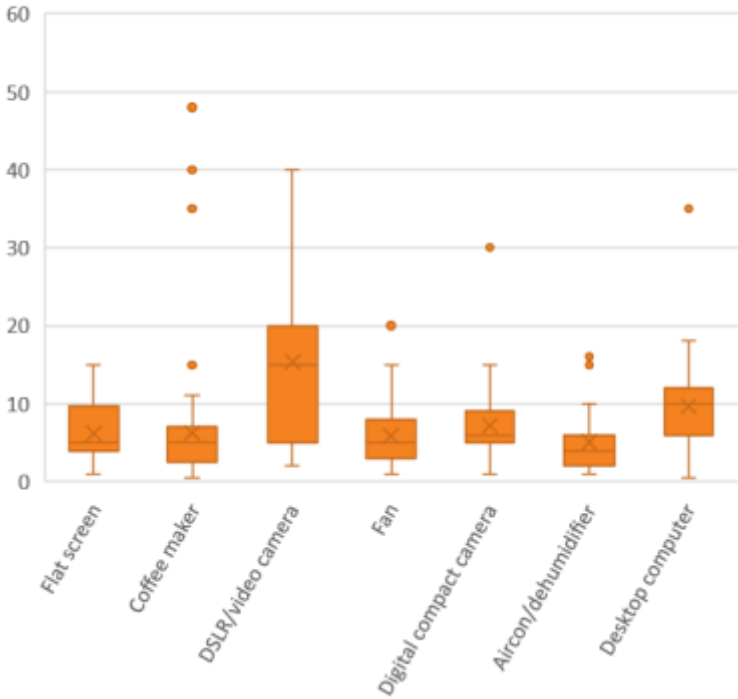
CO2 - EUR

Scenario 1 :	device broken > replace or repair?	
Current device :	stofzuiger - C / F	
Age of device :	5 years	
New (considered) device	stofzuiger - A+++ / A	
Failure type :	Dust bag	
By repairing your device instead of replacing it, you'll save	41,64 kg CO2 over	8,00 years (typical device lifetime)
which is equivalent to driving	217 km with your car	
After the repair, the device still need to work for:	3 years in order to compensate the repair related CO2 impacts.	
<i>total life time (after repair)</i>	8	
This seems to be (based on statistics):	more or less likely	
Should you repair or buy a new one?	repair	



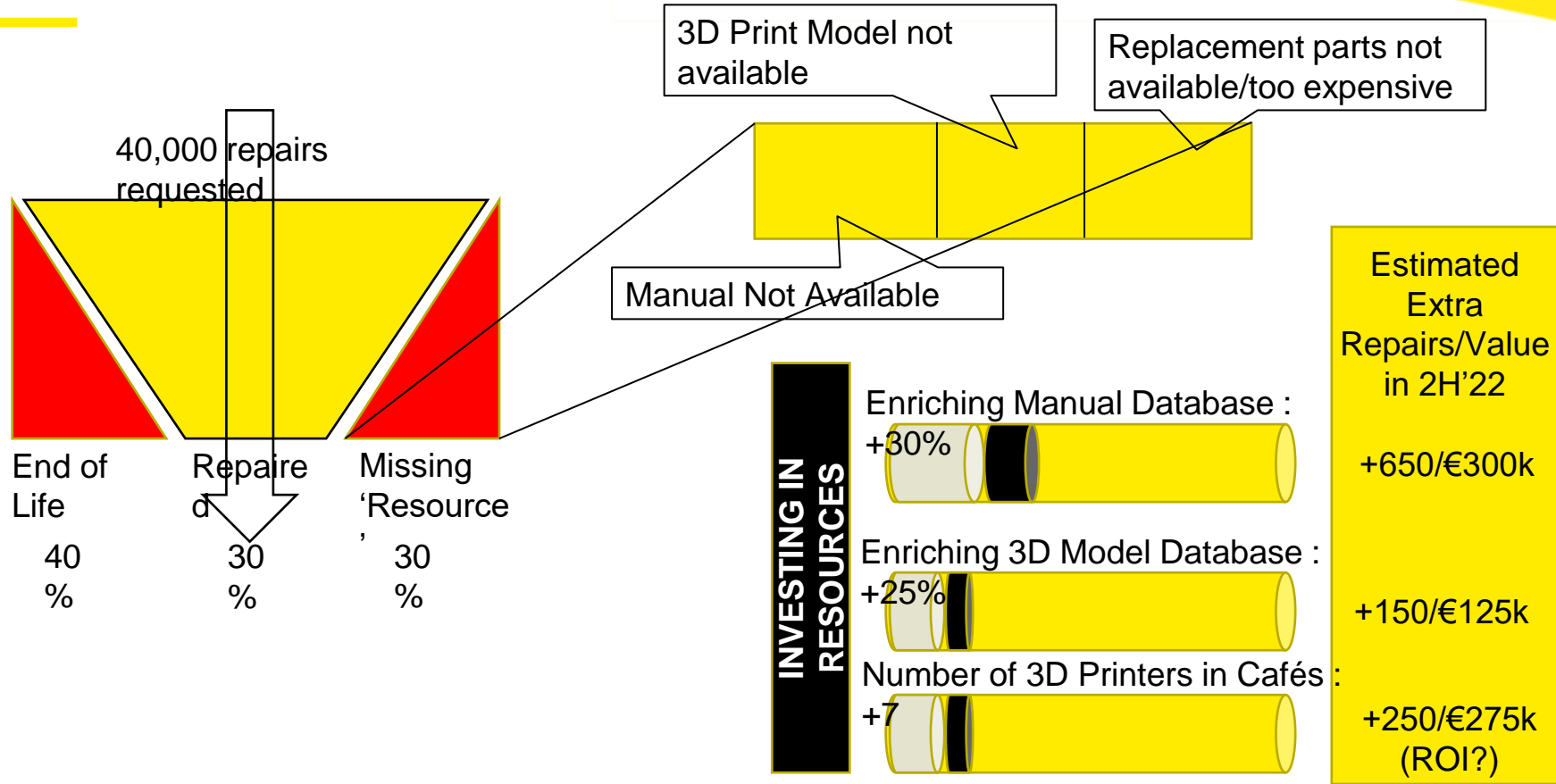
CO2 impact

Product age by device category

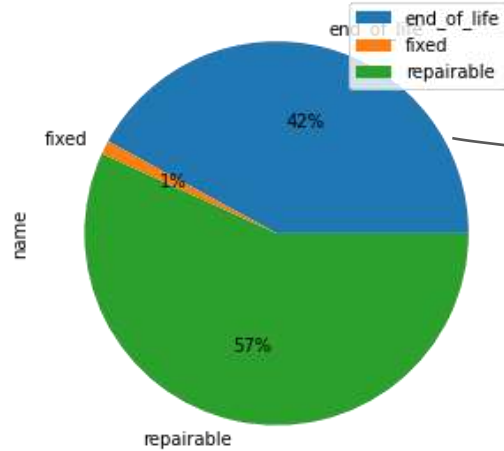


Age of incoming products per category, based on ORA data (total)

3.Reducing the missed repair opportunities

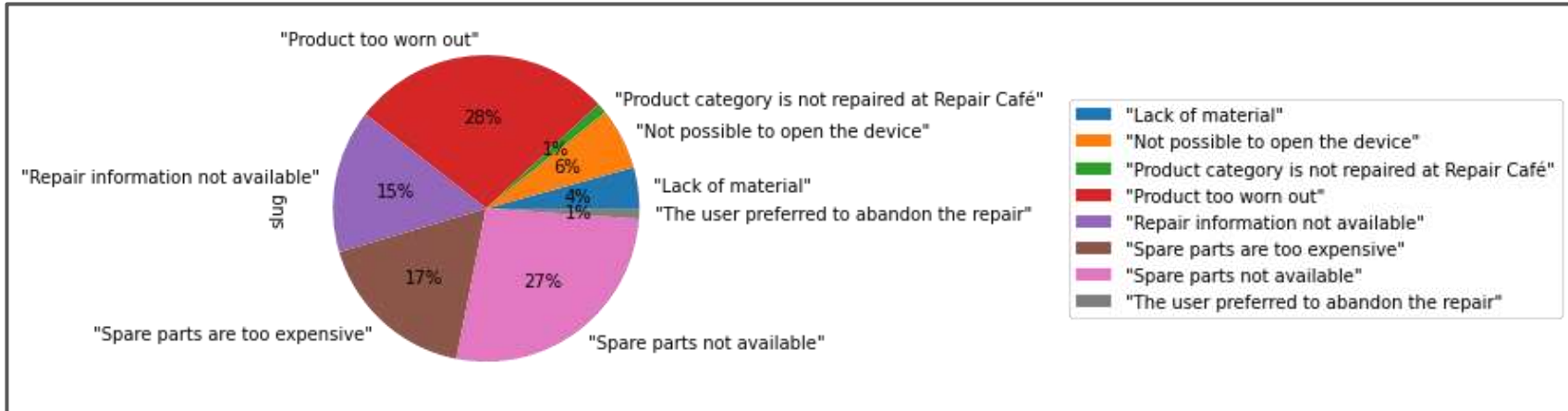


Repair barriers



42% is end of life. What can we do to still repair them?

"No or too expensive spare parts & lack of material" is 48% of the barriers



Is investing in 3D printers worthwhile?

From manual analysis of repair logs of 15 small kitchen appliances and coffee makers, we believe 3 missing parts could be printed easily and maybe 5 more.



18 to 31% of these kitchen & coffee devices could be repaired with a 3D printer.



Thus, of **all end-of-life devices 8 to 15% could be repaired with a 3D printer**



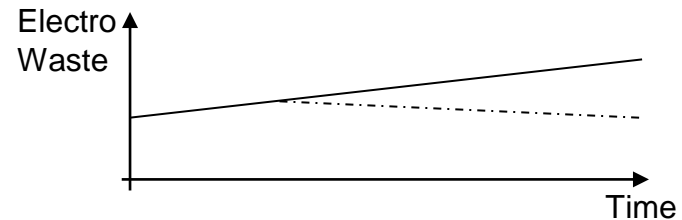
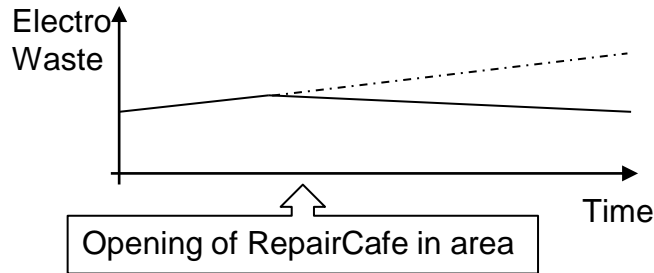
The repair success could be increased by 3.3 to 6.3% with 3D printed parts!

4. Impact of Repair Cafés on electro waste

Repair Café next to (within 2 km radius)
RecyclePark



No Repair Café next to
RecyclePark



Is geographical spreading of repair locations & offering event infrastructure impacting total waste reduction?

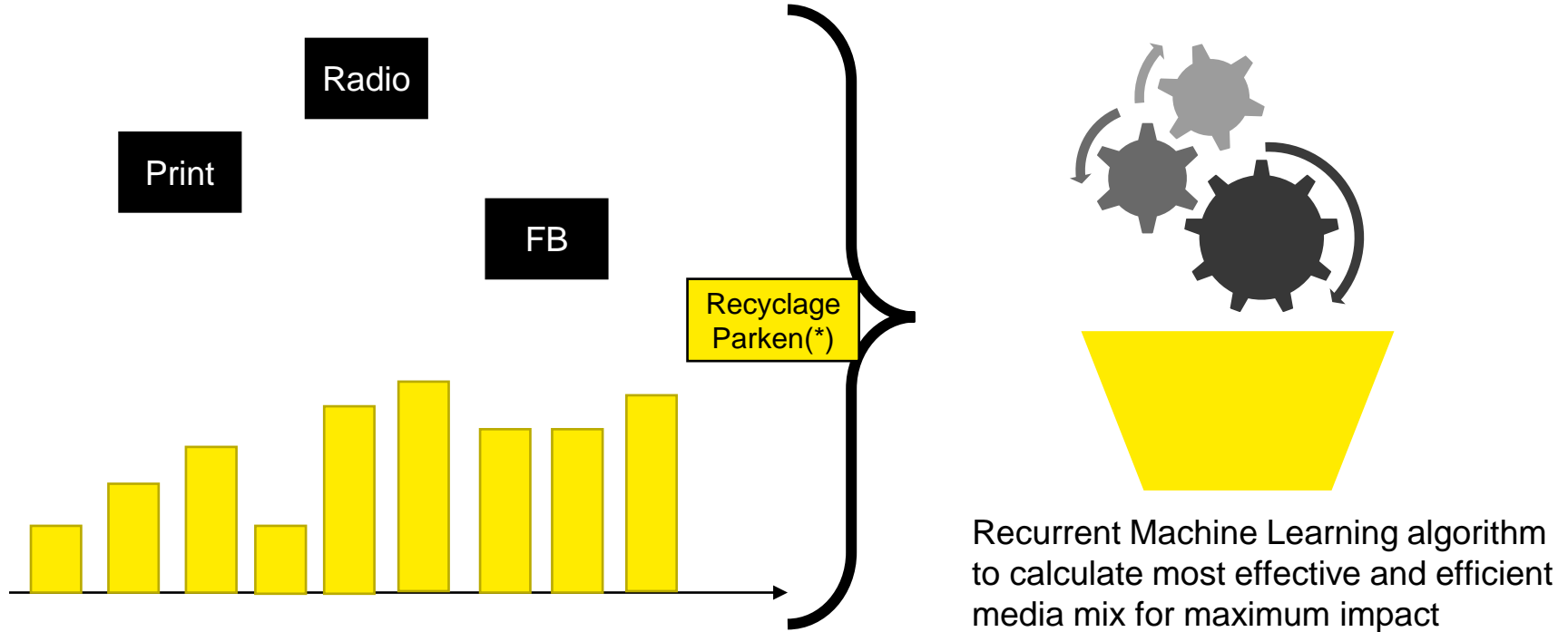


More analysis.

Recycle park data Ecoverf available

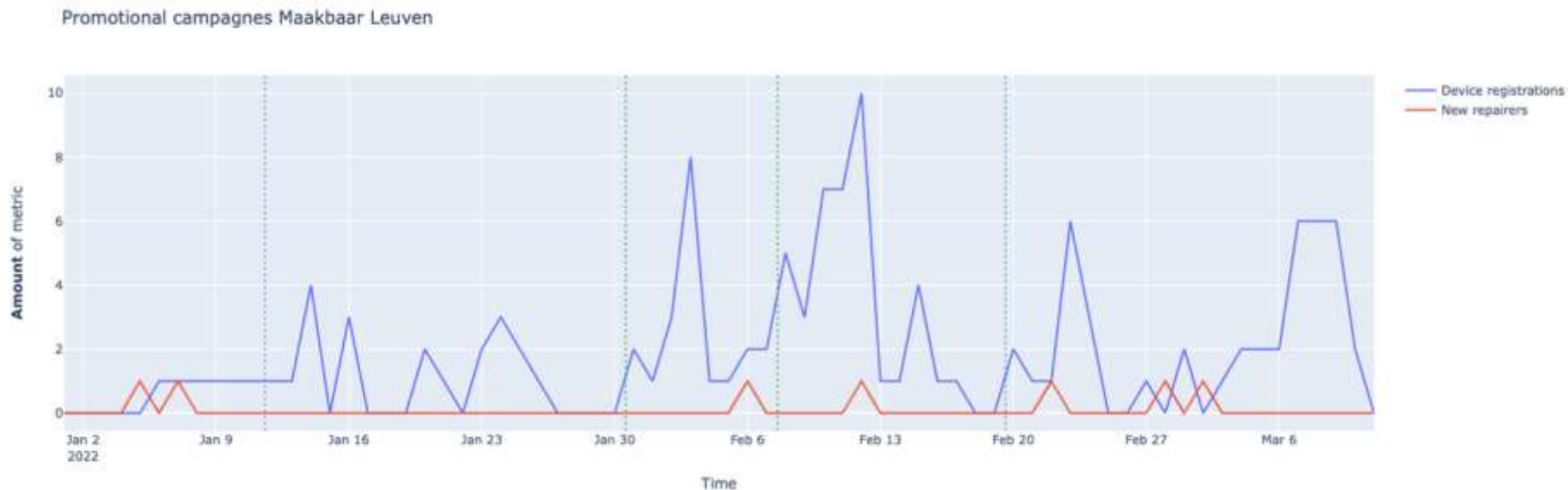
Heatmapping events in RC locations

5.Campaign Performance Marketing Mix



(*) : we can communicate in a recyclepark the closest repair café at the entrance and at the drop off point inside, with a quick check list to know if interested and potentially repairable, for example.

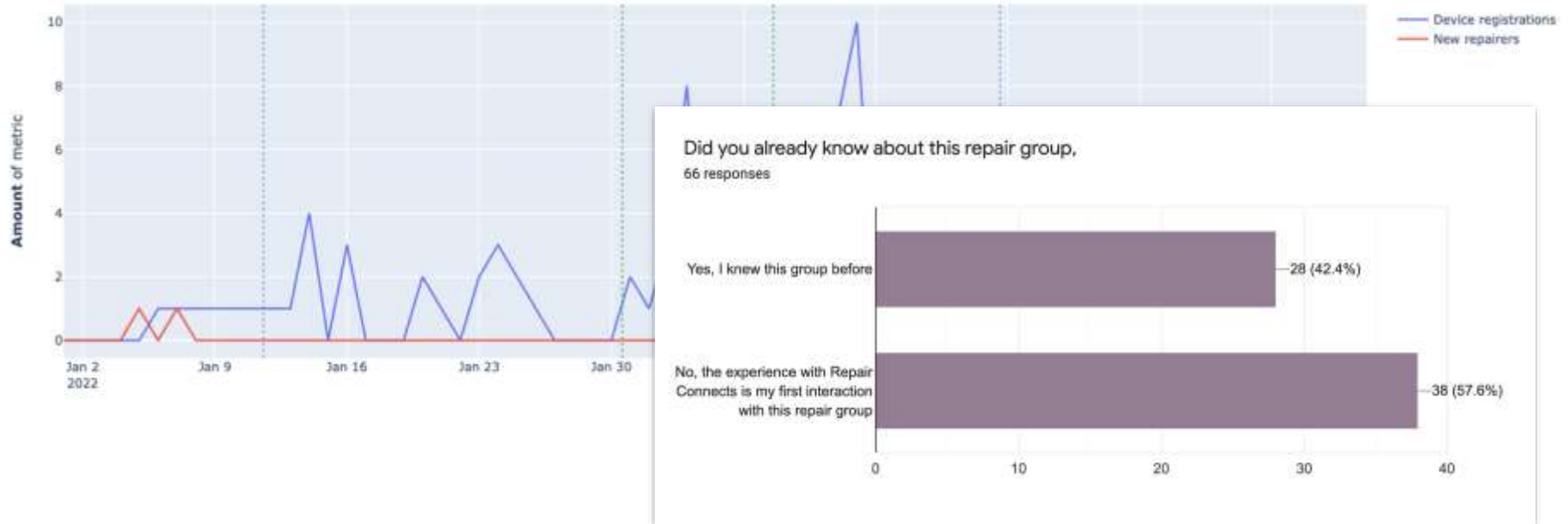
5. Impact of campaigns on device registrations & new repairers



Vertical lines are promotional campaigns: blue lines are organised by Maakbaar Leuven & green lines by Leuven

5. Impact of campaigns on device registrations & new repairers

Promotional campaigns Maakbaar Leuven



5. Impact of campaigns on device registrations & new repairers

