

29 September 2017 Data Lab Amsterdam

Survey for Validation City Rhythm Data Model for Recognizing Neighborhood and Street Rhythms for Social Safety

- YUTPA Framework
- Based on CBS open data
- Mixed Hidden Markov Model



How the Survey is Structured



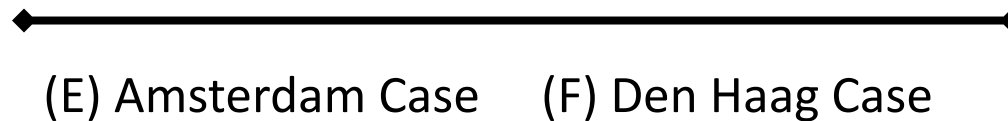
Base rhythm

Entire model is collection of beats



Beats

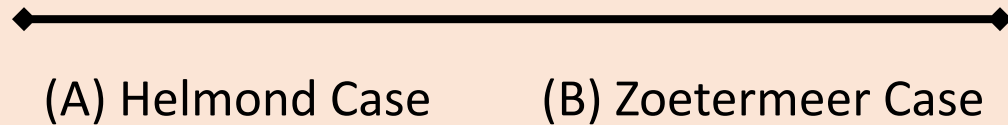
In a base, what beats are identified



Specific character of beats and bases

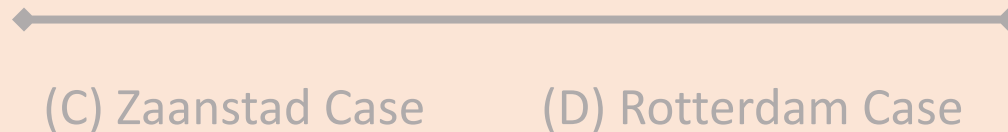
Combination of datasets through time result in different beats and bases

1st Session - Base Rhythms for Social Safety



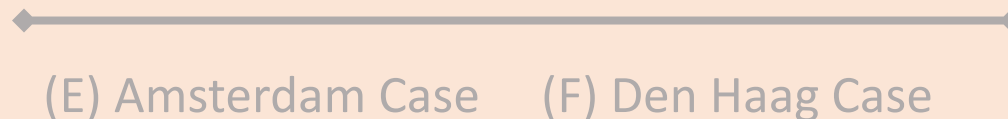
Base rhythm

Entire model is collection of beats



Beats

In a base, what beats are identified



Specific character of beats and bases

Combination of datasets through time result in different beats and bases

(A) Helmond Case

Social Safety in Tulpstraat

Question A1 on Social Safety

What factors influence social safety?

Please add maximum two factors:

- a)
- b)

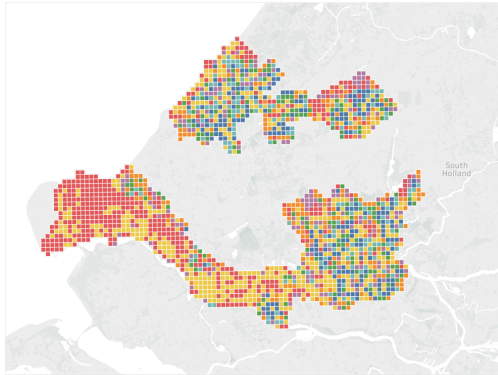
A1. What factors influence social safety?



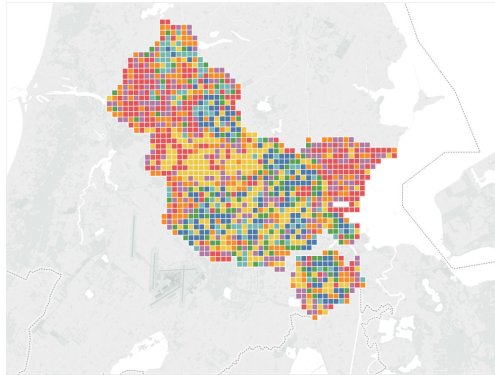
Question A2 on Base Rhythms in the Netherlands

The model finds 7 types of base rhythms in the Netherlands.

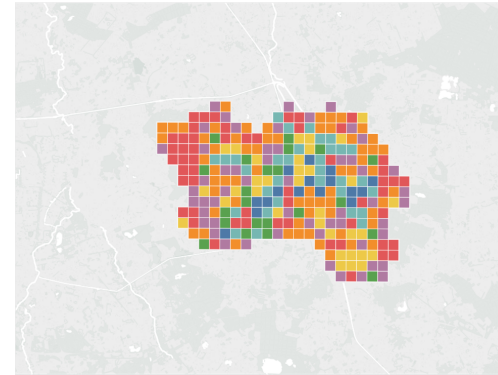
Rotterdam, Den Haag and Zoetermeer



Amsterdam and Zaanstad



Helmond



If you were to divide your city into neighborhoods and color them, would this be the pattern that you would come up with?

Yes ☐ No ☐

A2. If you were to color the different areas in your city, would this be the pattern that you would come up with?

6



Yes

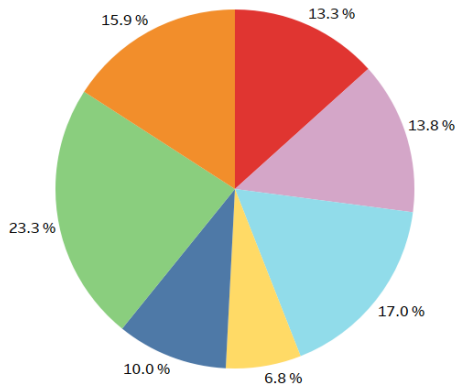
18



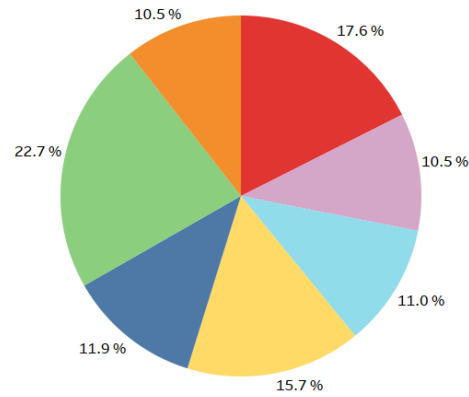
No

[Show image](#)

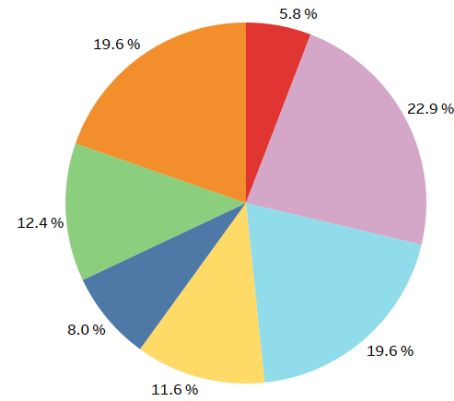
Question A3 on Base Rhythms in the Netherlands



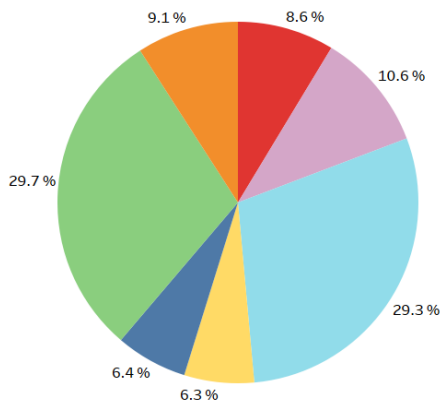
Amsterdam



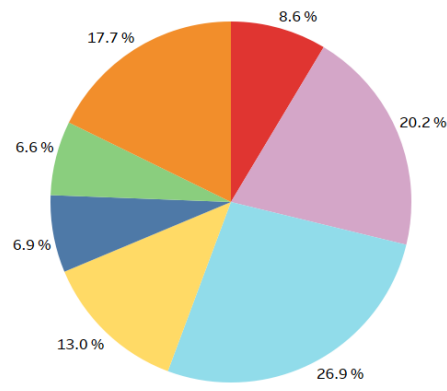
Den Haag



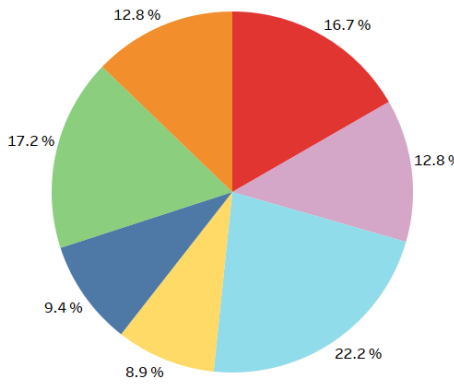
Helmond



Rotterdam



Zaanstad



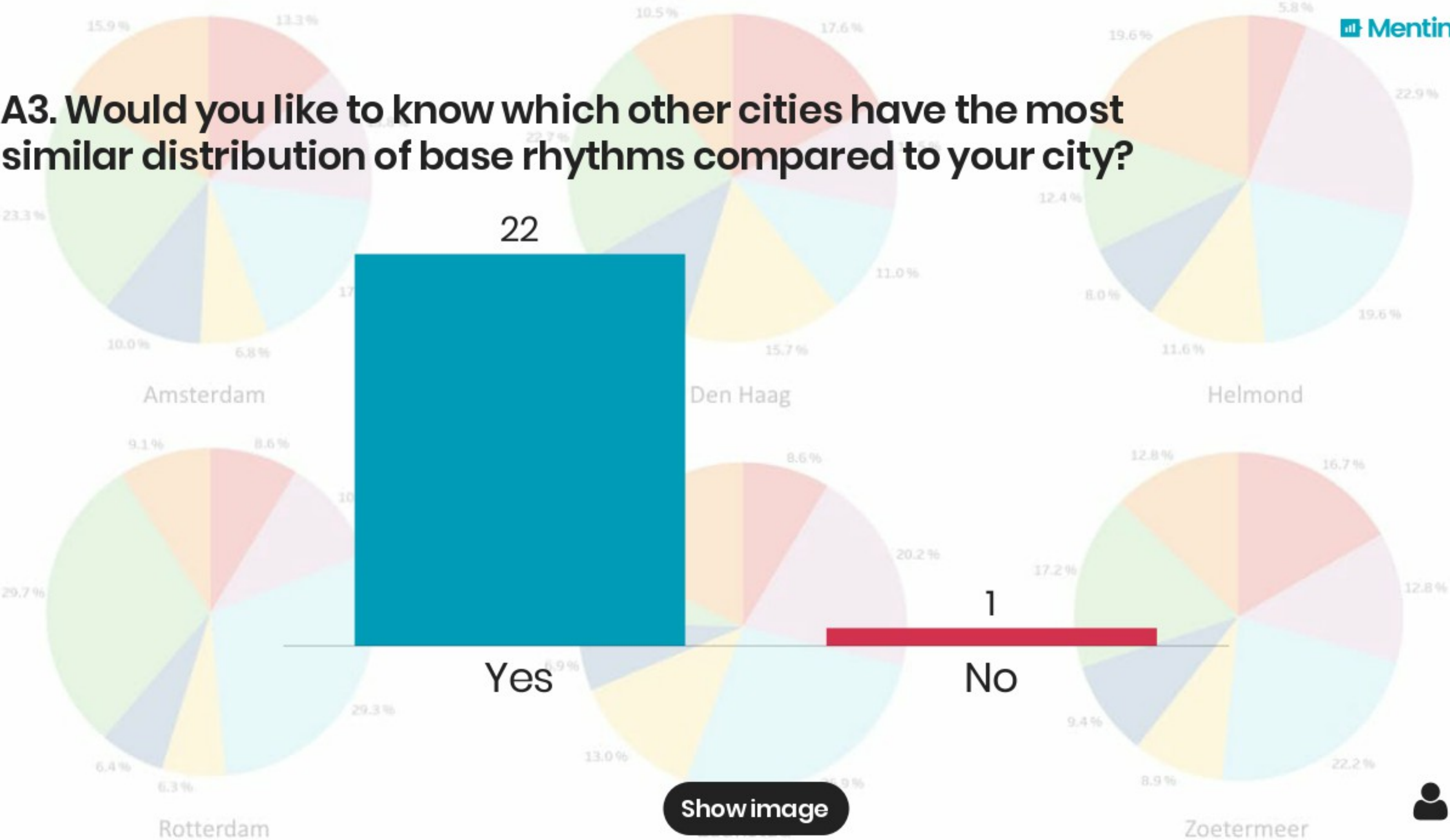
Zoetermeer

The previous work showed that in rhythm analysis comparison adds meaning.

Would you like to know which other cities have the most similar distribution of base rhythms compared to your own city?

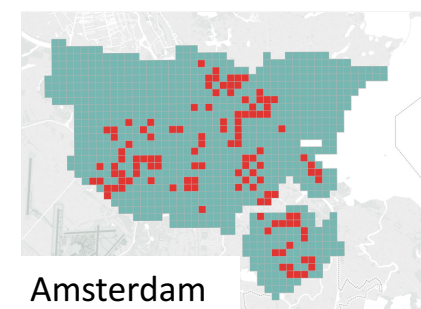
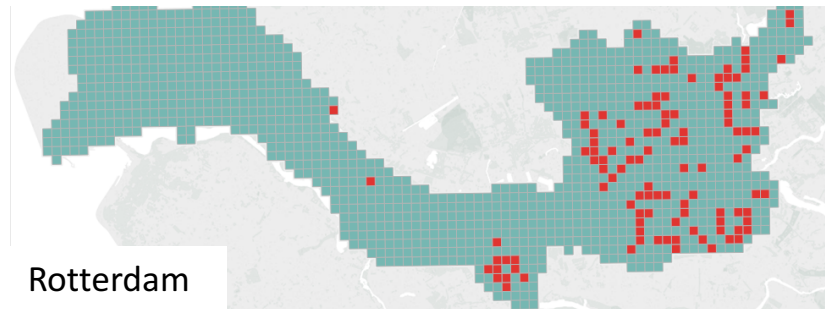
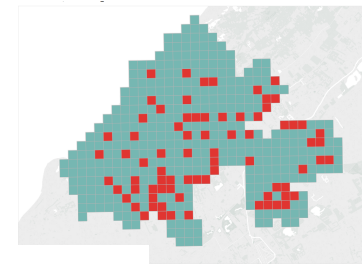
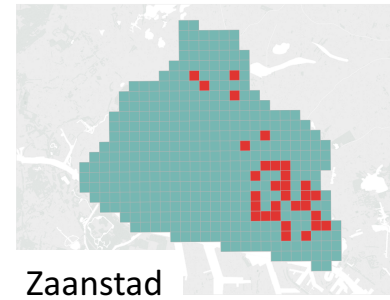
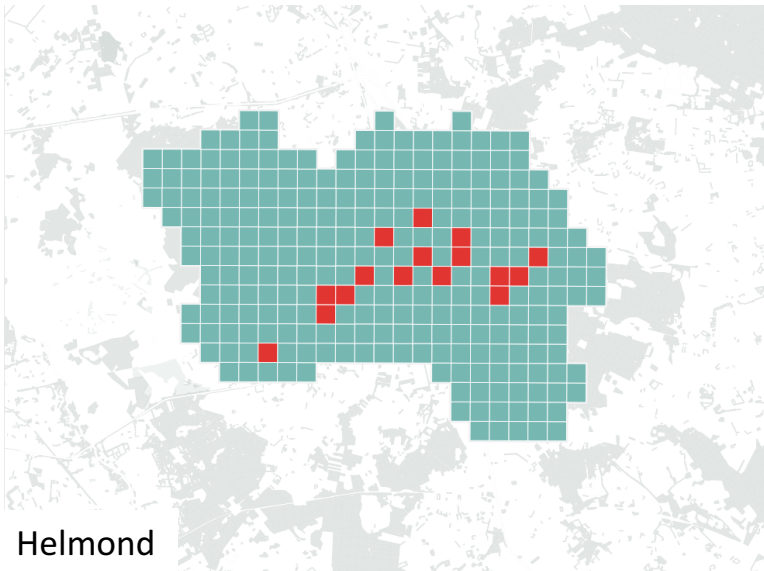
Yes ☐ No ☐

A3. Would you like to know which other cities have the most similar distribution of base rhythms compared to your city?



Question A4 on Base Rhythms (Helmond)

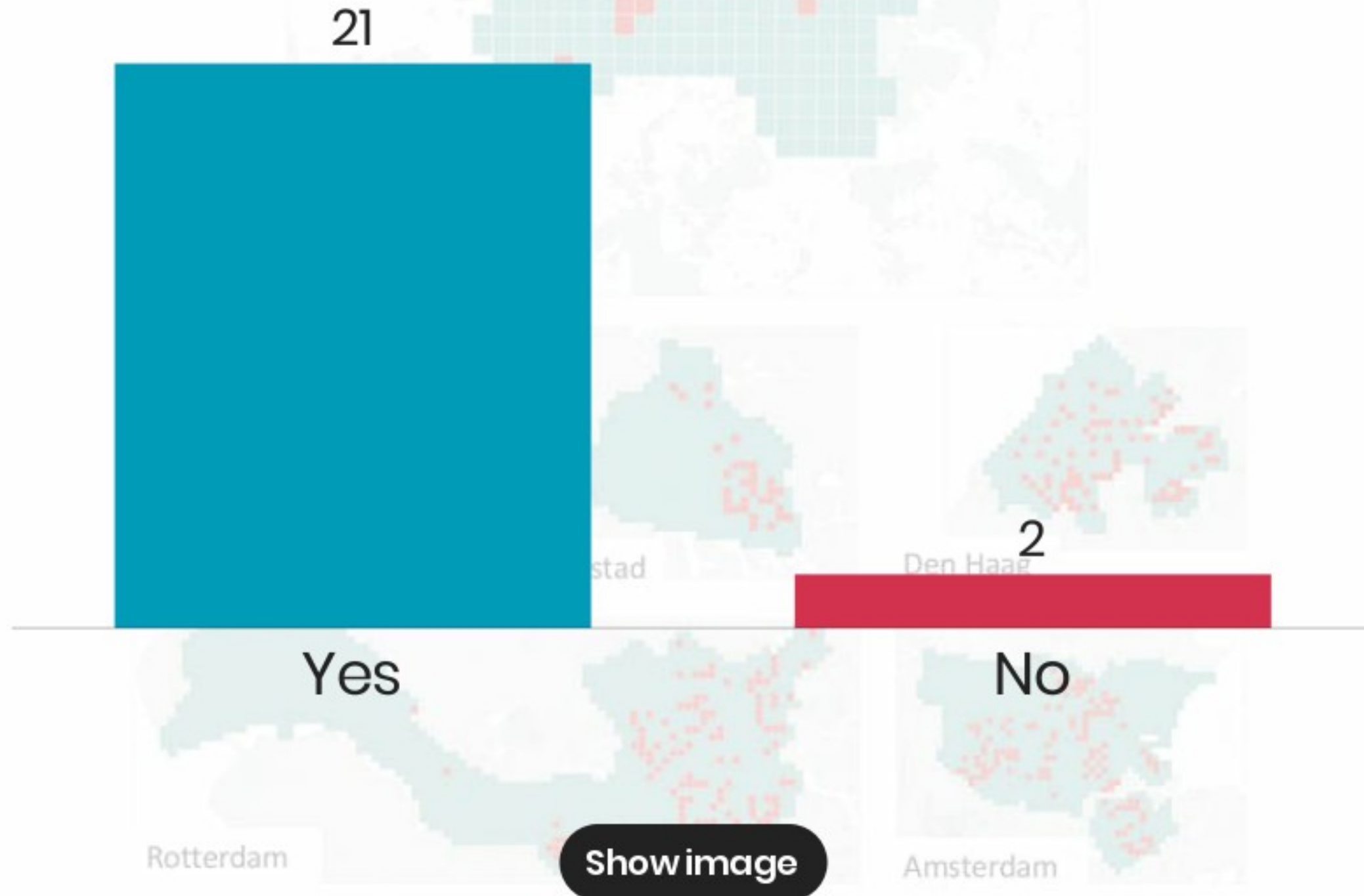
The model spotted that the Tulpstraat in Helmond has the red base rhythm. Neighborhoods in other cities have red base rhythms too.



Do you also think that the Tulpstraat can be found in other cities?

Yes ☐ No ☐

A4. Read the text below and look at the images. Do you also think that the Tulpstraat can be found in other cities?



Question A5 on Base Rhythms (Helmond)



Tulpstraat, Bijsterveld, Helmond



Zwaardemakerstraat, Zaanstad



Tuindreef, Zoetermeer



Blokmakerstraat, Rotterdam



Westerlengte, Amsterdam Zuidoost

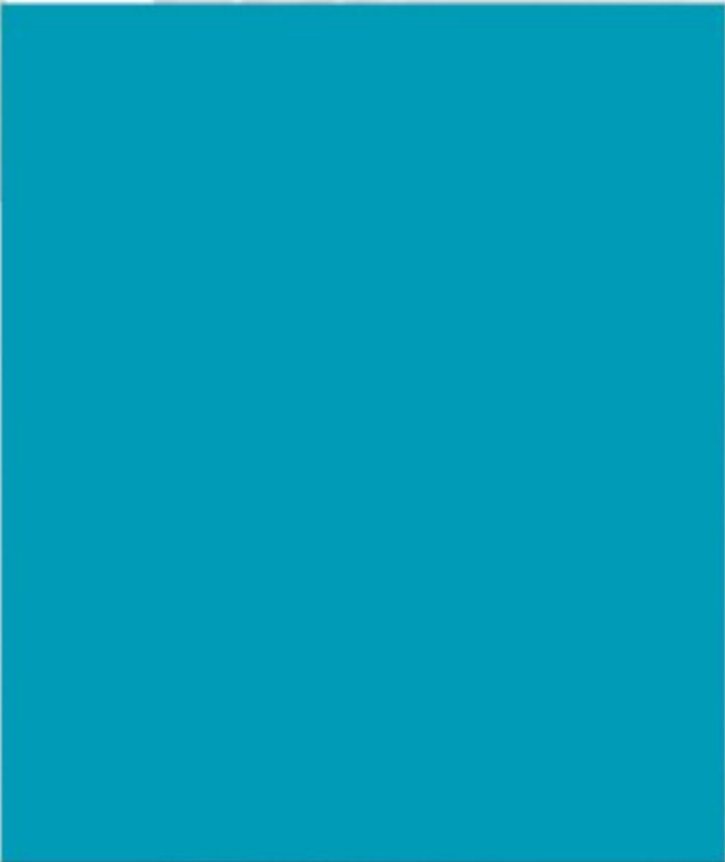


Zuringveld, Den Haag

Is it interesting to see the visual comparison between neighborhoods with same base rhythm? ☐ Yes ☐ No

A5. Is it interesting to see the visual comparison between areas with the same base rhythm?

24



Yes

0

No

Show image

24

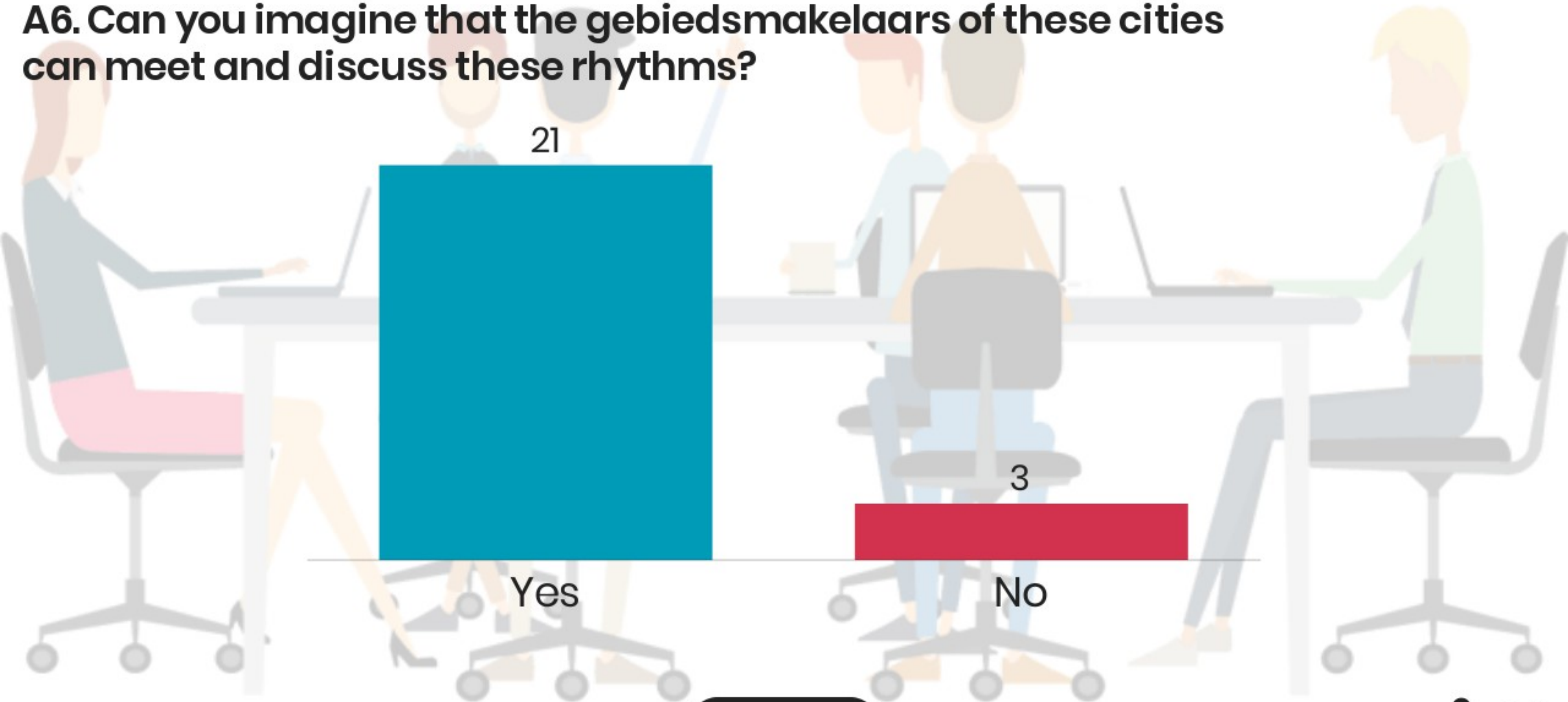
Question A6 on Base Rhythms (Helmond)

Given all this input on the Tulpstraat in Helmond and all over the Netherlands, can you imagine that the gebiedsmakelaar of Zaandam, Den Haag, Zoetermeer, Amsterdam, Rotterdam and Helmond can meet and discuss these rhythms?

Yes ☐ No ☐



A6. Can you imagine that the gebiedsmakelaars of these cities can meet and discuss these rhythms?



Show image

24

We have established that:

- There are a limited amount of base rhythms in the Netherlands.
- Base rhythms can be seen visually as well.
- Data do relate to actual areas.
- It is interesting to compare base rhythms.

(B) Zoetermeer Case

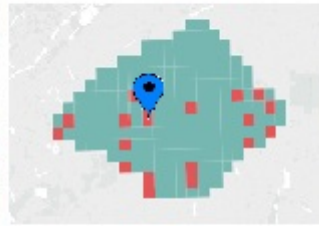
Social Safety in Meerzicht Winkelcentrum

Question B1 on Base Rhythms (Zoetermeer)

The model has spotted neighborhoods in other cities with the same base rhythm as Meerzicht. Here are pictures of some of these neighborhoods.



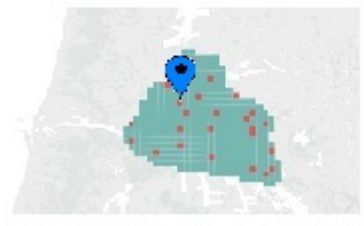
Winkelcentrum, Meerzicht
Zoetermeer



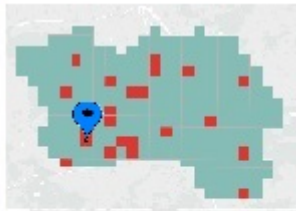
Walenburgweg,
Rotterdam



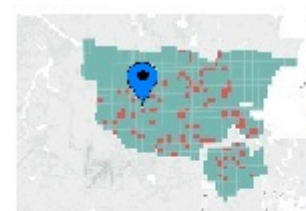
Assendelft,
Zaanstad



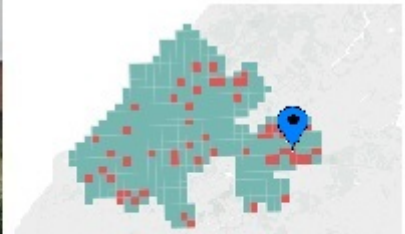
Broederwal,
Helmond



Egidiusstraat,
Amsterdam



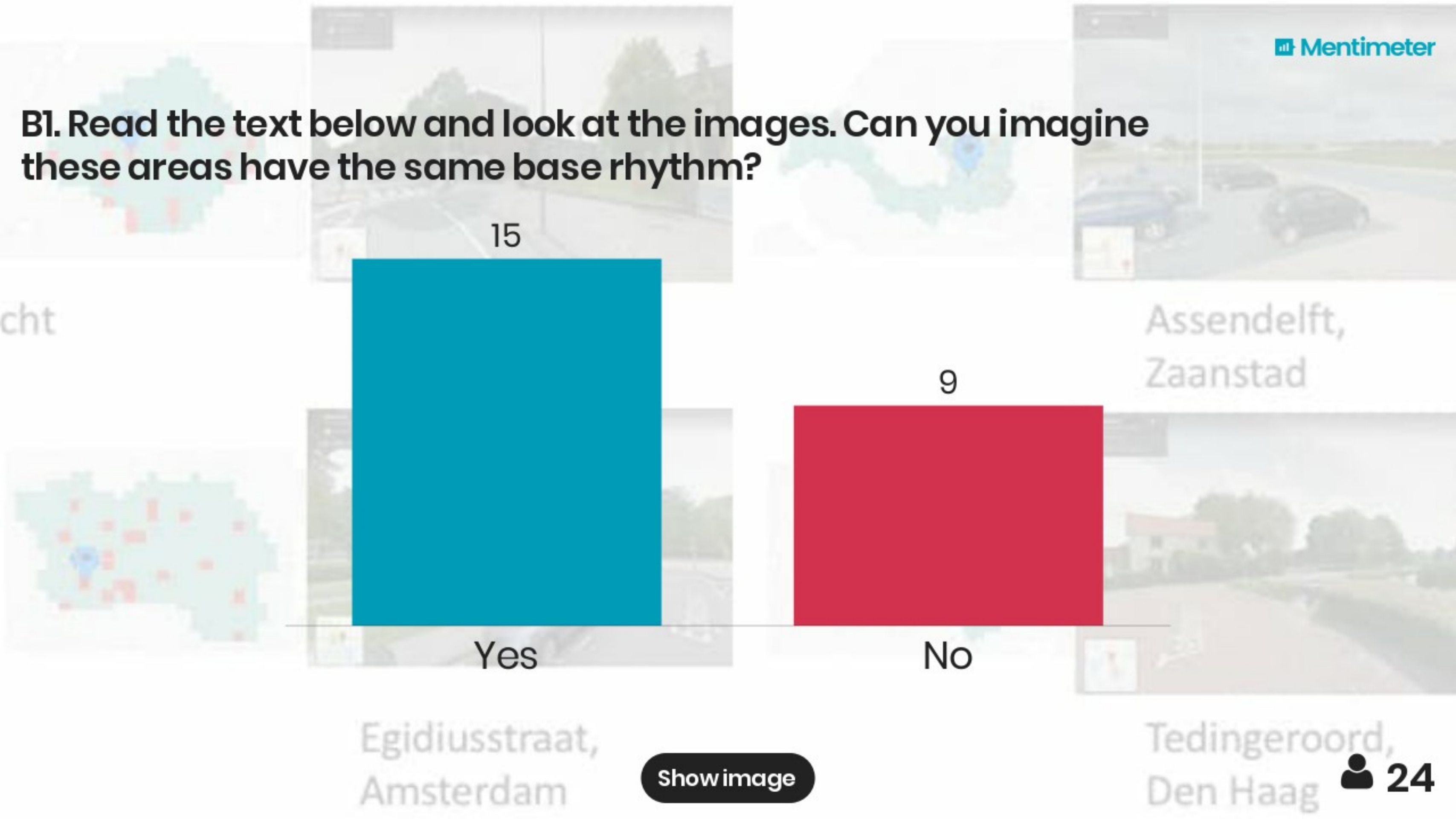
Tedingeroord,
Den Haag



Can you imagine they have the same base rhythm?

Yes ☐ No ☐

B1. Read the text below and look at the images. Can you imagine these areas have the same base rhythm?



Show image

Information Slide on Base Rhythms and Beats (Zoetermeer)

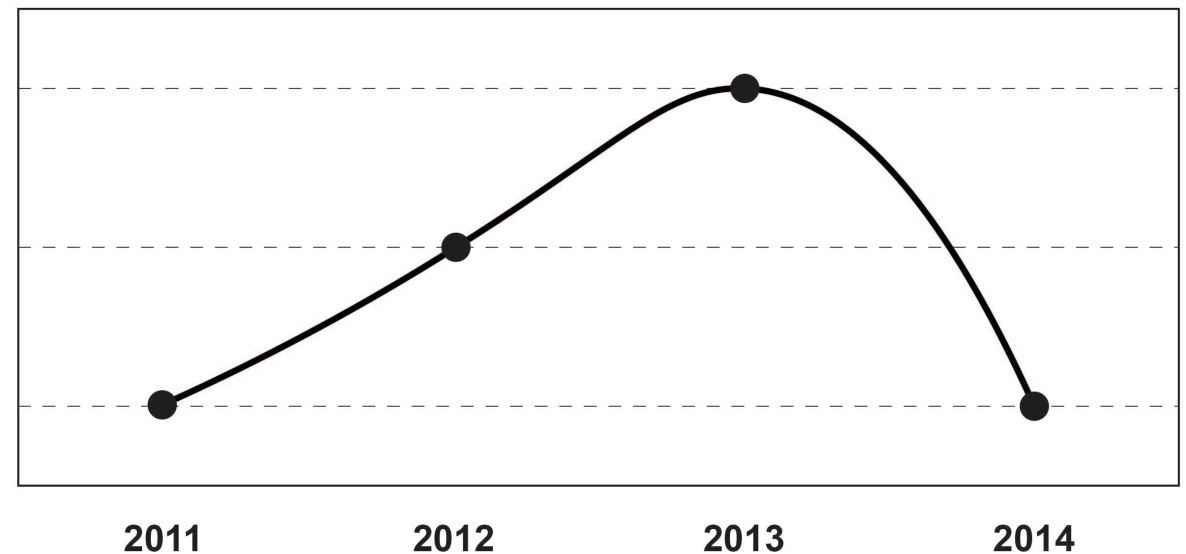
The base rhythm of Meerzicht consists of several underlying beats. Those beats emerge from data about actions and activities of people in this area. A series of beats create a street rhythm.

Imagine in Meerzicht the beats over time in 4 years are:

Beat 1
No students

Beat 2
Lots of students

Beat 3
Little students



The different street rhythms affect the atmosphere of an area.

Information Slide on Base Rhythms and Beats (Zoetermeer)

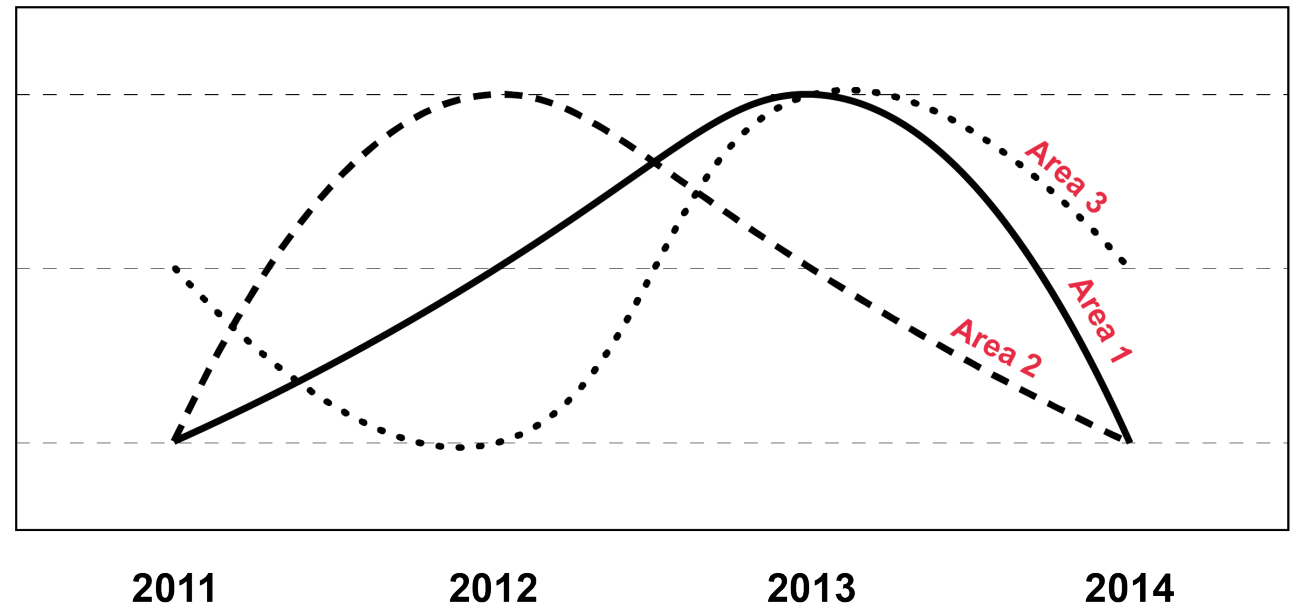
In the same base rhythm, areas have different specific street rhythms.



Beat 1
No students

Beat 2
Lots of students

Beat 3
Little students

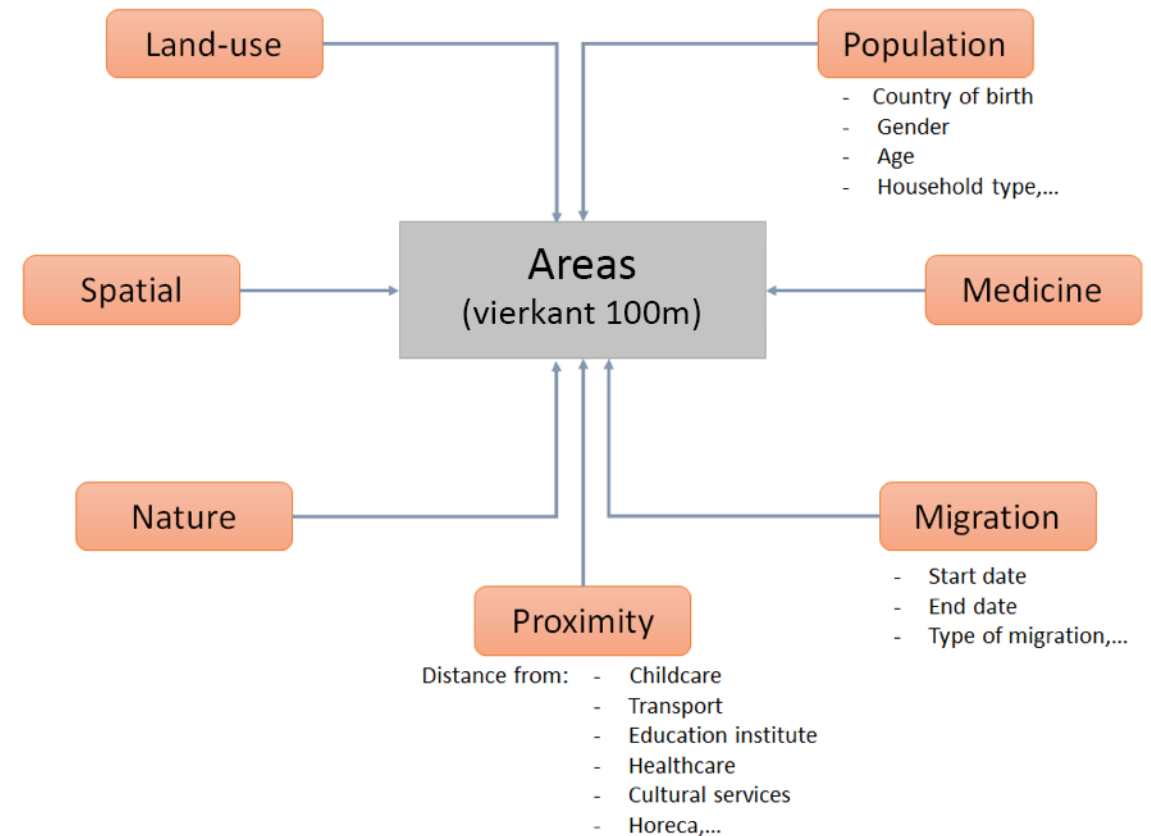


Question B2 on Data and Social Safety

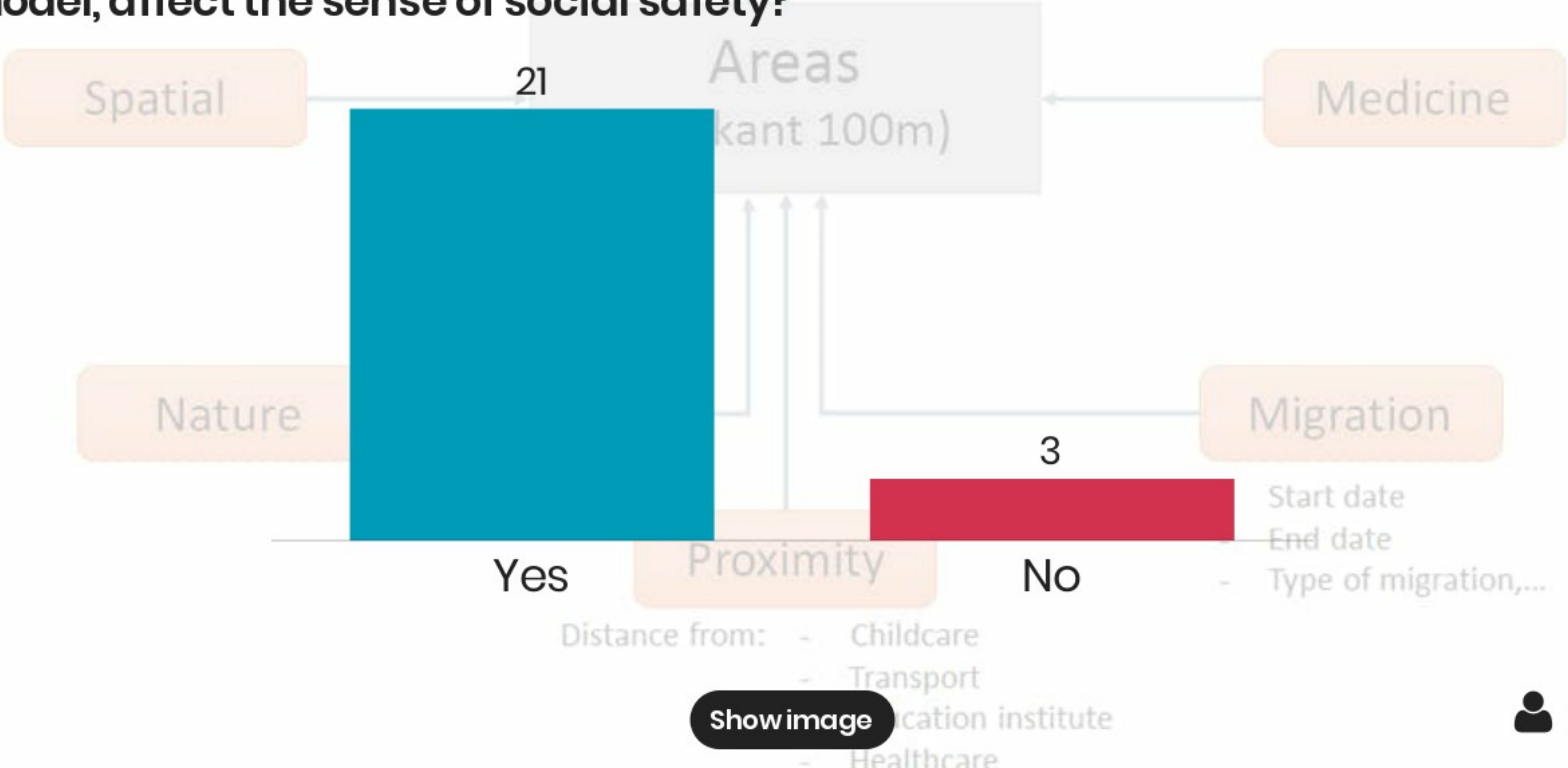
The beat is constructed by comparing data and mapping it on a location.

Do you think these are the datasets affect the sense of social safety?

Yes ☐ No ☐



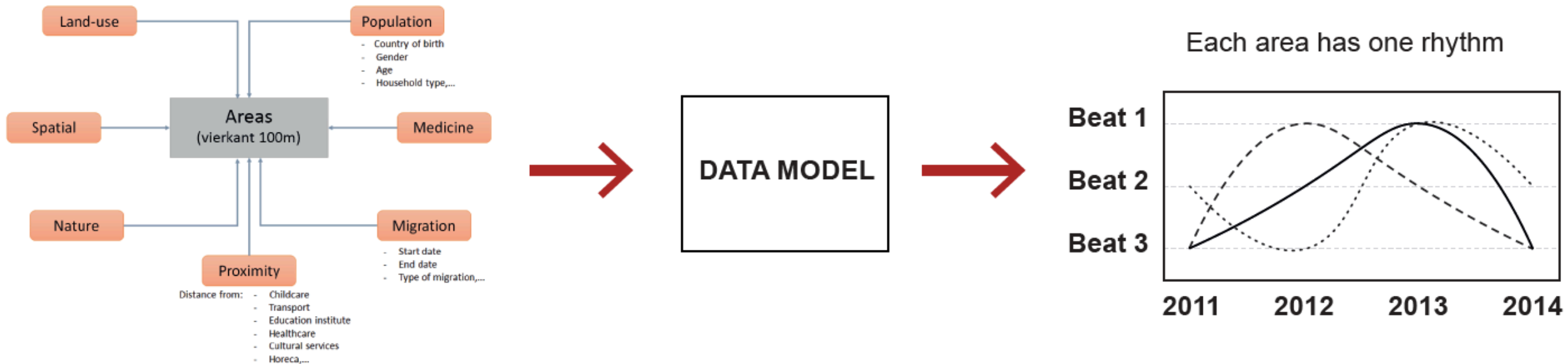
B2. Do you think the datasets below that are included in the model, affect the sense of social safety?



Information Slide on Base Rhythms and Beats

- Beats emerge from location based data in relation to other data.
- Beats reflect what happens in an area.
- Beats do not reveal anything about individuals.

Data over time over all areas



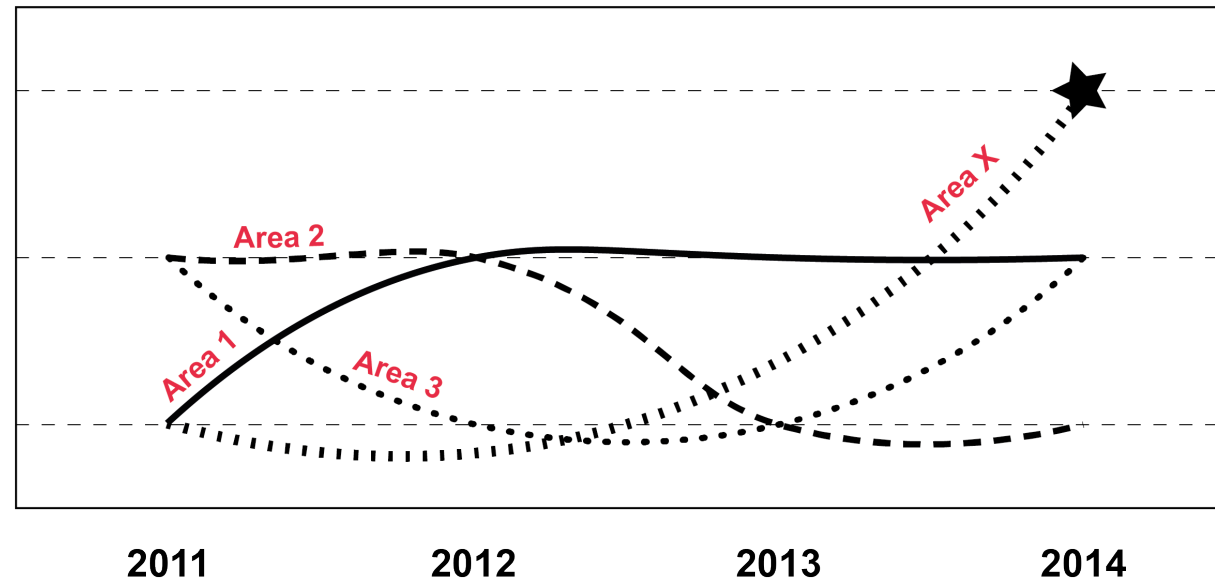
Question B3 on Base Rhythms and Beats (Zoetermeer)

Looking at the areas that have the same base rhythm as Meerzicht, area X saw the new beat first. This new beat is associated with big changes in an area's dynamic.

Beat 1
No students

Beat 2
Lots of students

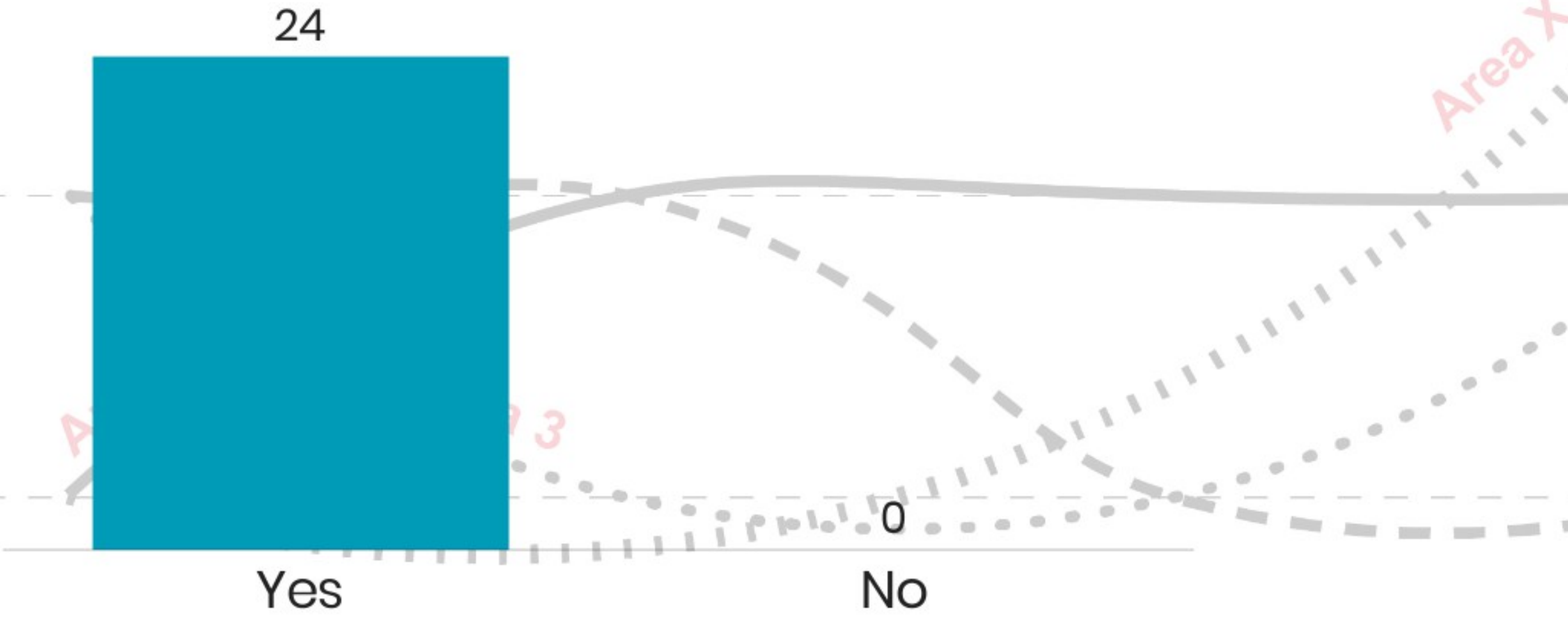
Beat 3
Little students



Would you find it useful to find out which area it is and what changed?

Yes ☐ No ☐

B3. Read the text below. Would you find it useful to know which area it is and what changed?



2011

Show image

2013

24

We have established that:

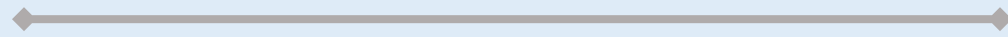
- A base rhythm consists of different beats.
- Beats emerge from the change of areas over time.
- A series of beats construct a street rhythm (een driekwart maat bijvoorbeeld).
- Beats emerge from location based data in relation to other data.
- Beats reflect what happens in an area.
- Beats do not reveal anything about individuals.

Film of Eric's visualization and Lunch

Before lunch we established that:

- A base rhythm consists of different beats.
- Beats emerge from the change of areas over time.
- A series of beats construct a street rhythm (een driekwart maat bijvoorbeeld).
- Beats emerge from location based data in relation to other data.
- Beats reflect what happens in an area.
- Beats do not reveal anything about individuals.

2nd Session – Different Beats in One Base



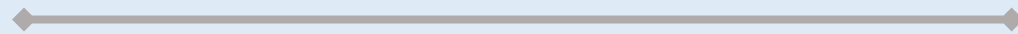
(A) Helmond Case

(B) Zoetermeer Case



(C) Zaanstad Case

(D) Rotterdam Case



(E) Amsterdam Case

(F) Den Haag Case

Base rhythm

Entire model is collection of beats

Beats

In a base, what beats are identified

Specific character of beats and bases

Combination of datasets through time result in different beats and bases

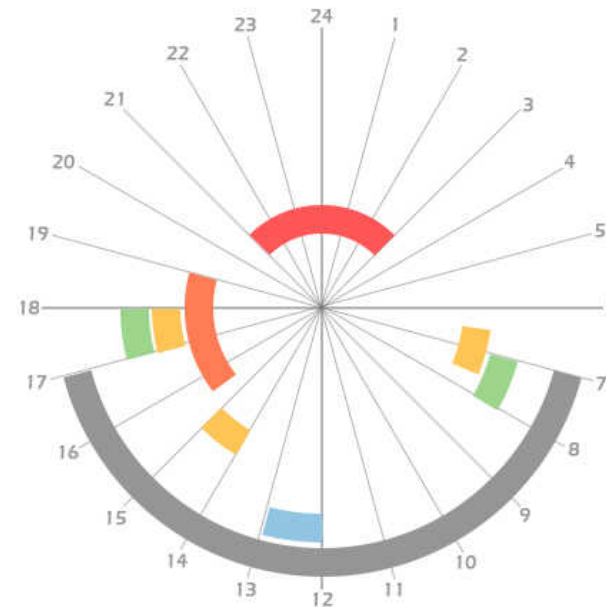
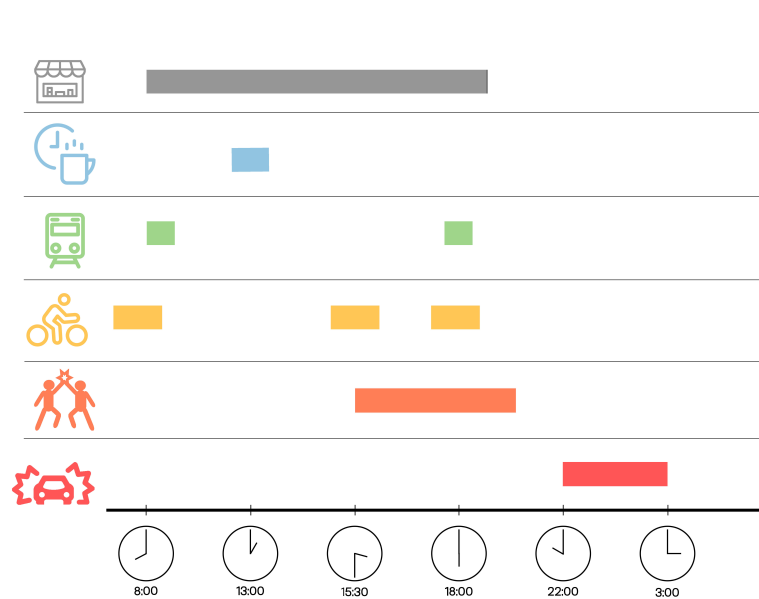
(C) Zaanstad Case

Balancing Rhythms in Wormerveer Marktpllein
and in De Saen Winkelcenturm in Assendelft

Question C1 on Rhythm Analysis (Zaanstad)

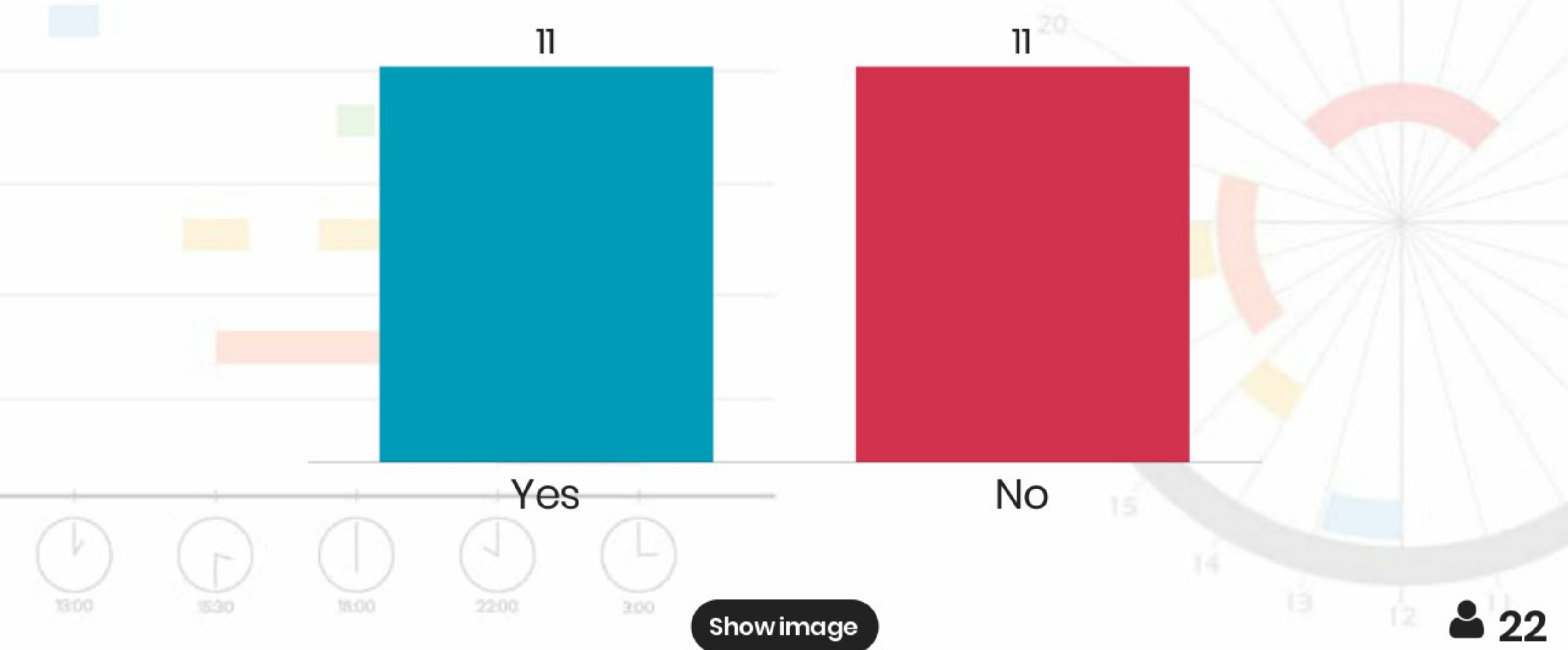
The market square in Assendelft is very busy between 4pm and 7pm. This creates a negative perception on hangjongeren, who are on the square then. Actually, many other activities are going on, such as public transport, bike traffic and shopping.

See the problem below:



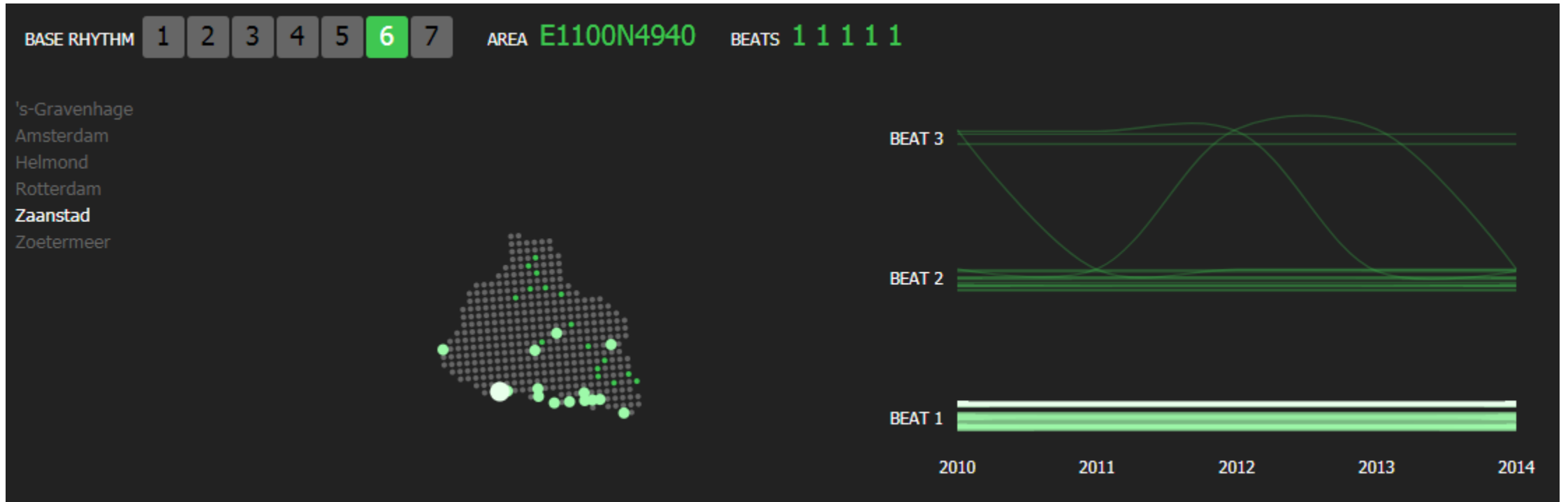
Do you think rhythm analyses can solve this problem and balance the rhythms?

C1. See the problem below. Do you think rhythm analyses can solve this and balance the rhythms?



Question C2 on Base Rhythm and Beats (Zaanstad)

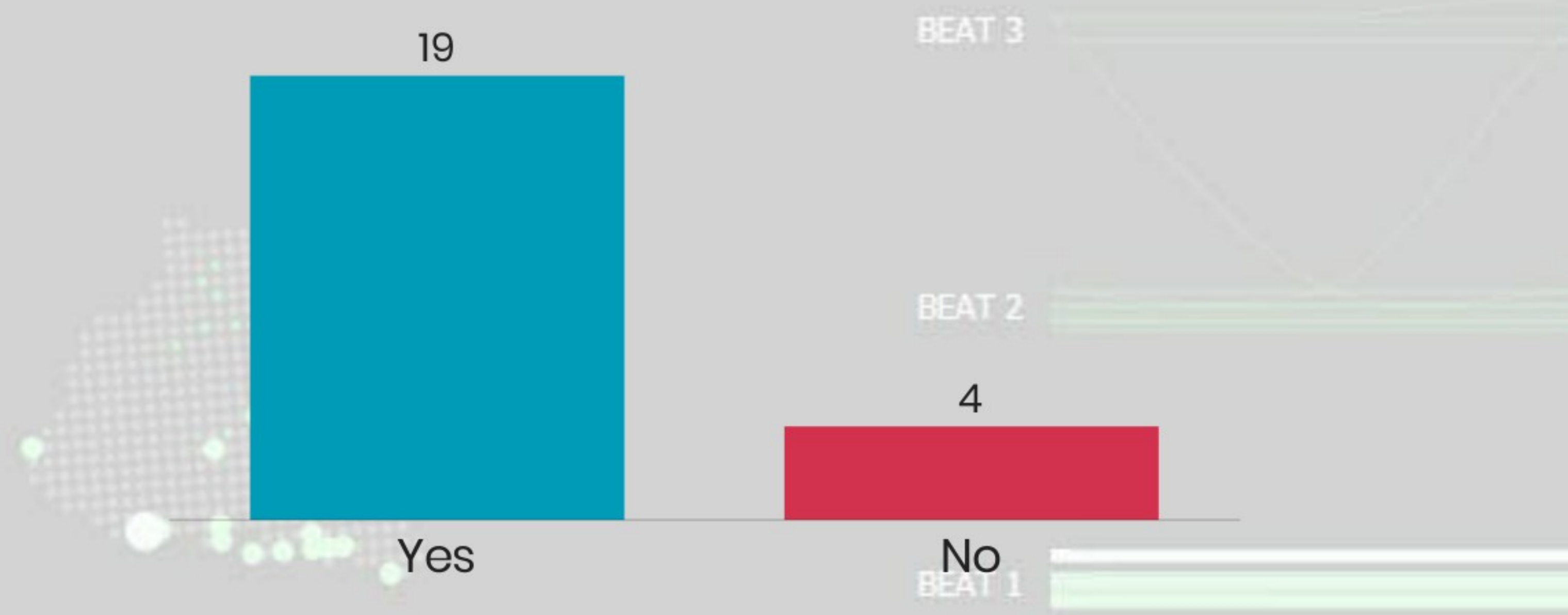
Assendelft has the green base rhythm. The green base rhythm has 3 beats.



Can you imagine that there are many street areas with the green base rhythm in Zaanstad?

Yes ☐ No ☐

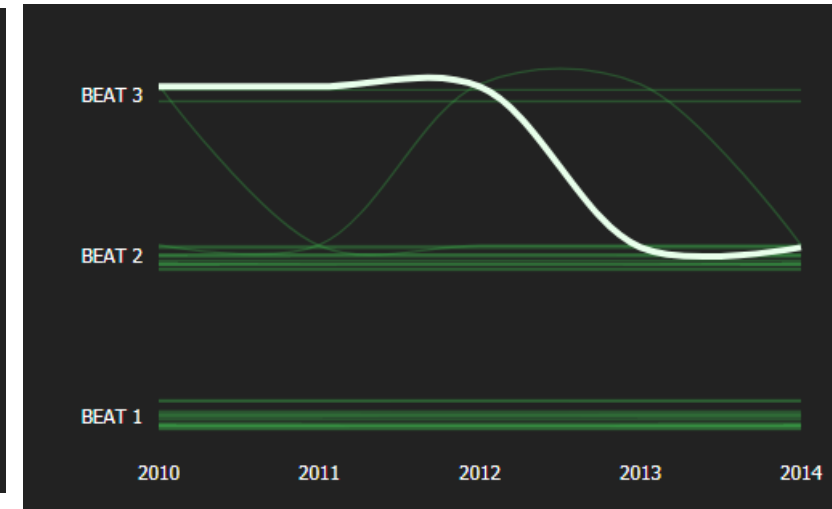
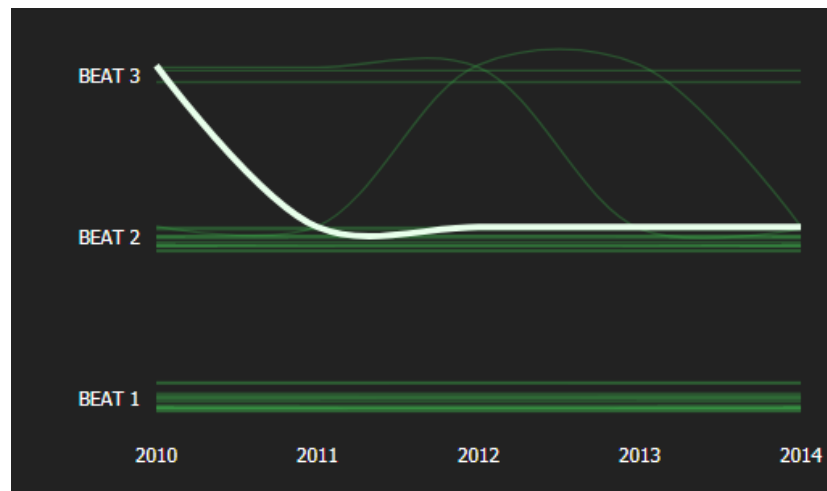
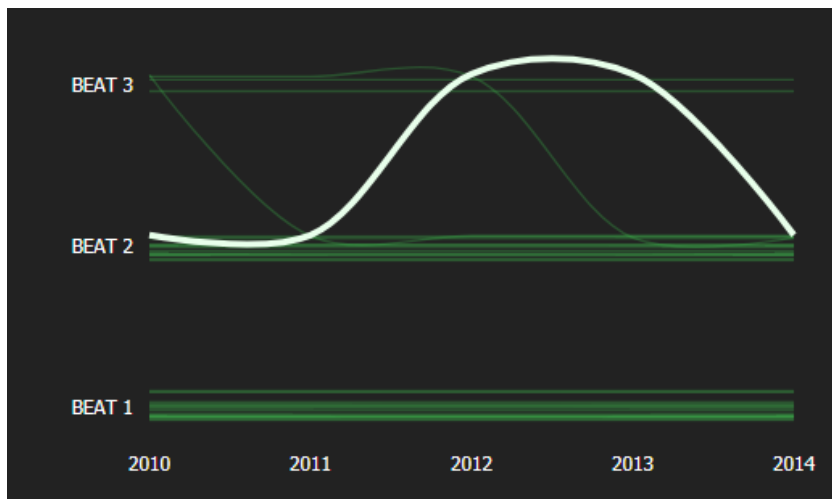
C2. Read the text below and look at the visualization. Can you imagine that there are many areas with the green base rhythm in Zaanstad?



Show image

Question C3 on Rhythms and Social Safety (Zaanstad)

Street rhythms are very different over time. Yet, it is possible that they have the same base rhythm and generate the same sense of social safety.



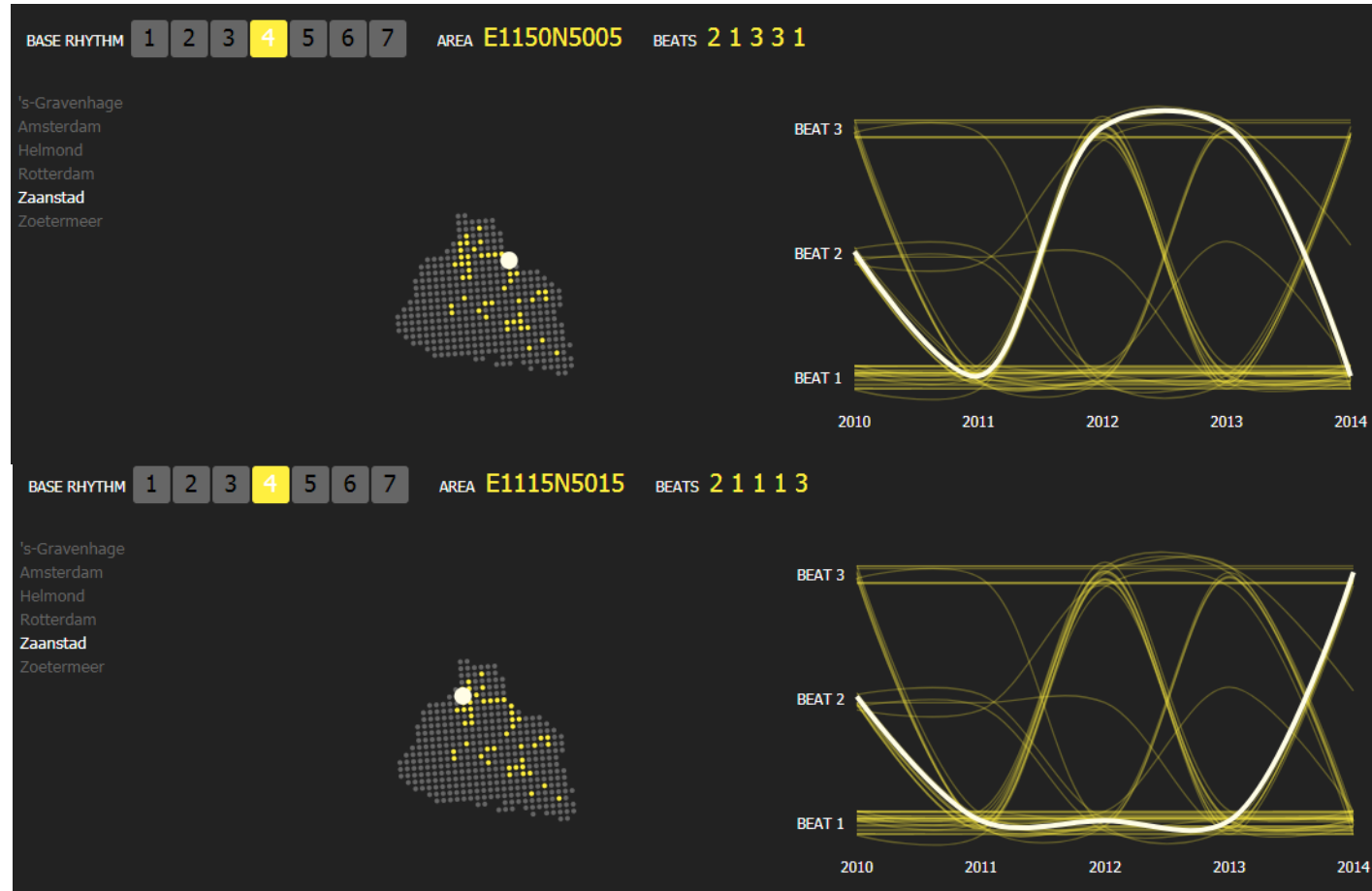
Do you find this plausible?

Yes ☐ No ☐ Maybe ☐

C3. Read the text below and look at the visualization. Do you find this plausible?



Question C4 on Beats for Unsafety (Zaanstad)

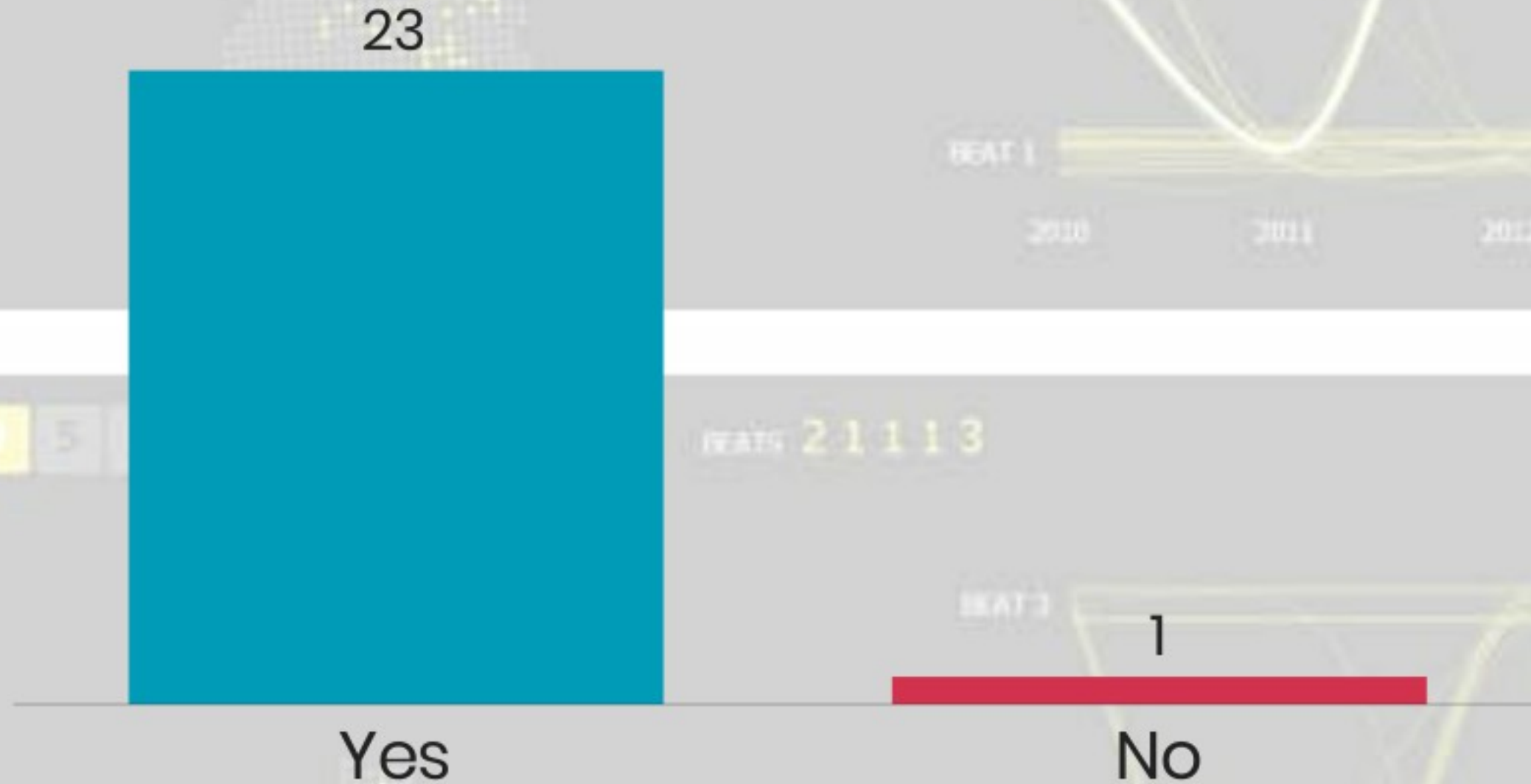


Unsuccessful street area

Successful street area

Would it be interesting for policy making to see which street areas moved away from unsafety and compare them to those that didn't? Yes ☐ No ☐

C4. Would it be interesting for policy making to see which areas moved away from unsafety and compare them to those that didn't?



Show image

(D) Rotterdam Case

Integrating Elderly in Keizerswaard

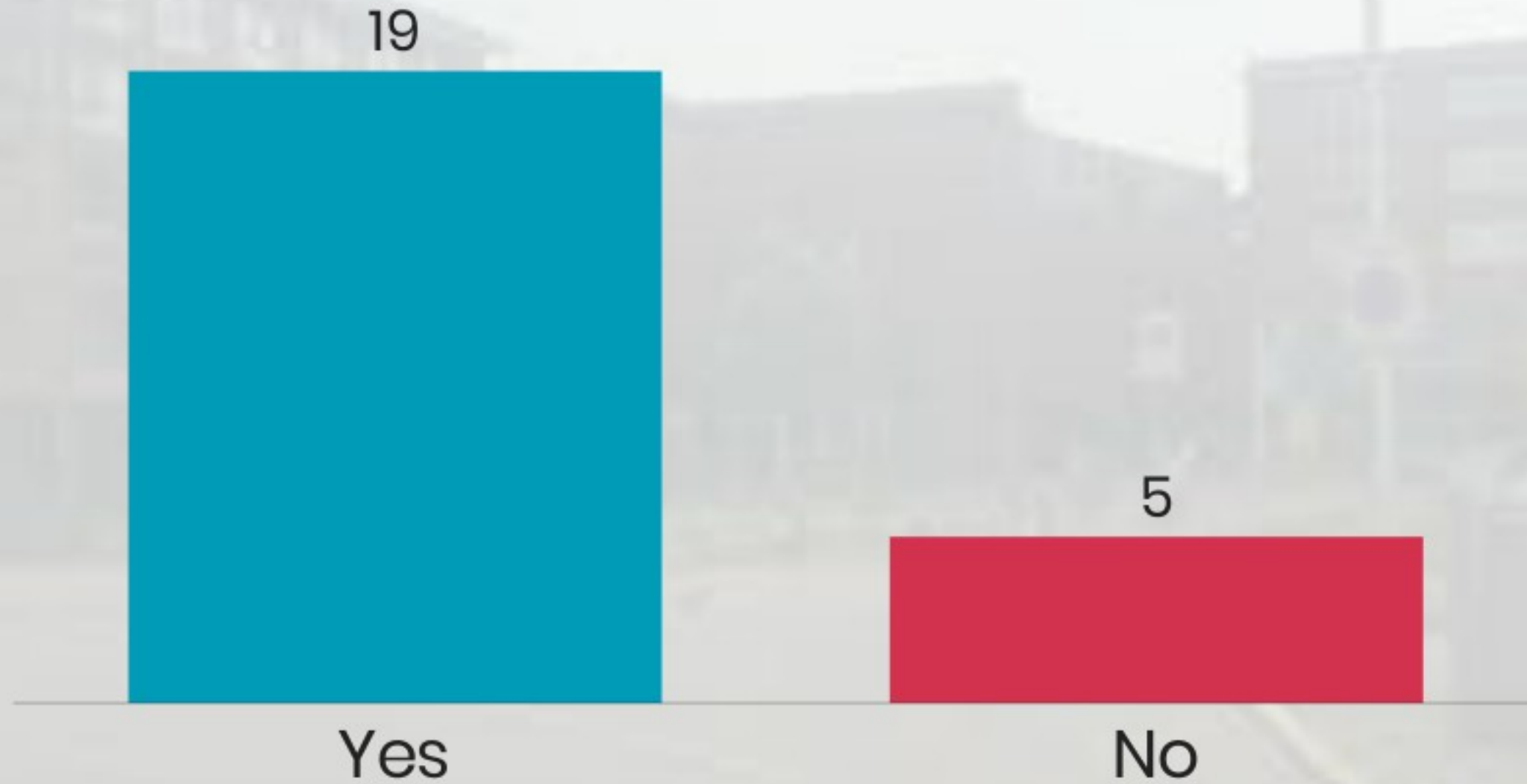
Question D1 on Introducing Keizerswaard Case (Rotterdam)



- Rhythm analyses of interviews shows that elderly cannot cross the street because the traffic light is too short on green.
- The traffic light is fast because of morning traffic.
- Elderly only leave the house after 10.
- So we can adapt the rhythm of the traffic light after 10.

Do you agree? Yes ☐ No ☐

D1. Read the problem and suggested solution below. Do you agree?



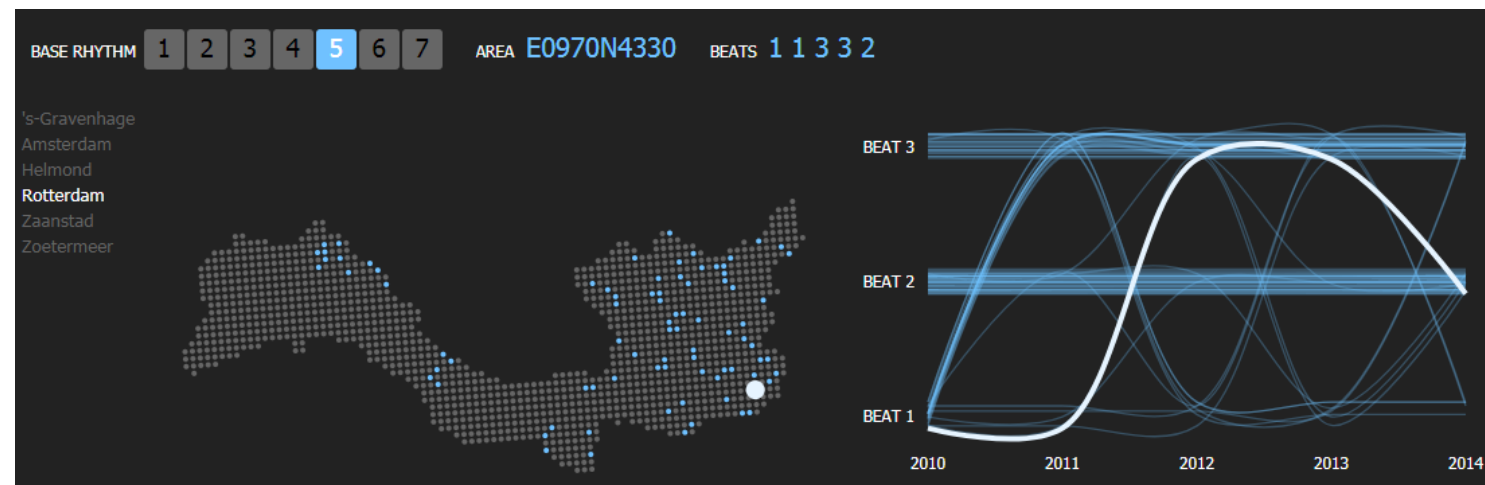
Question D2 on Tuning Rhythms (Rotterdam)

In the aerial images from 2005 and 2015 we see how the beats have changed over time because of the modification of the road. The other rhythms were adapted to this change. Such a change is a result of policymaking.

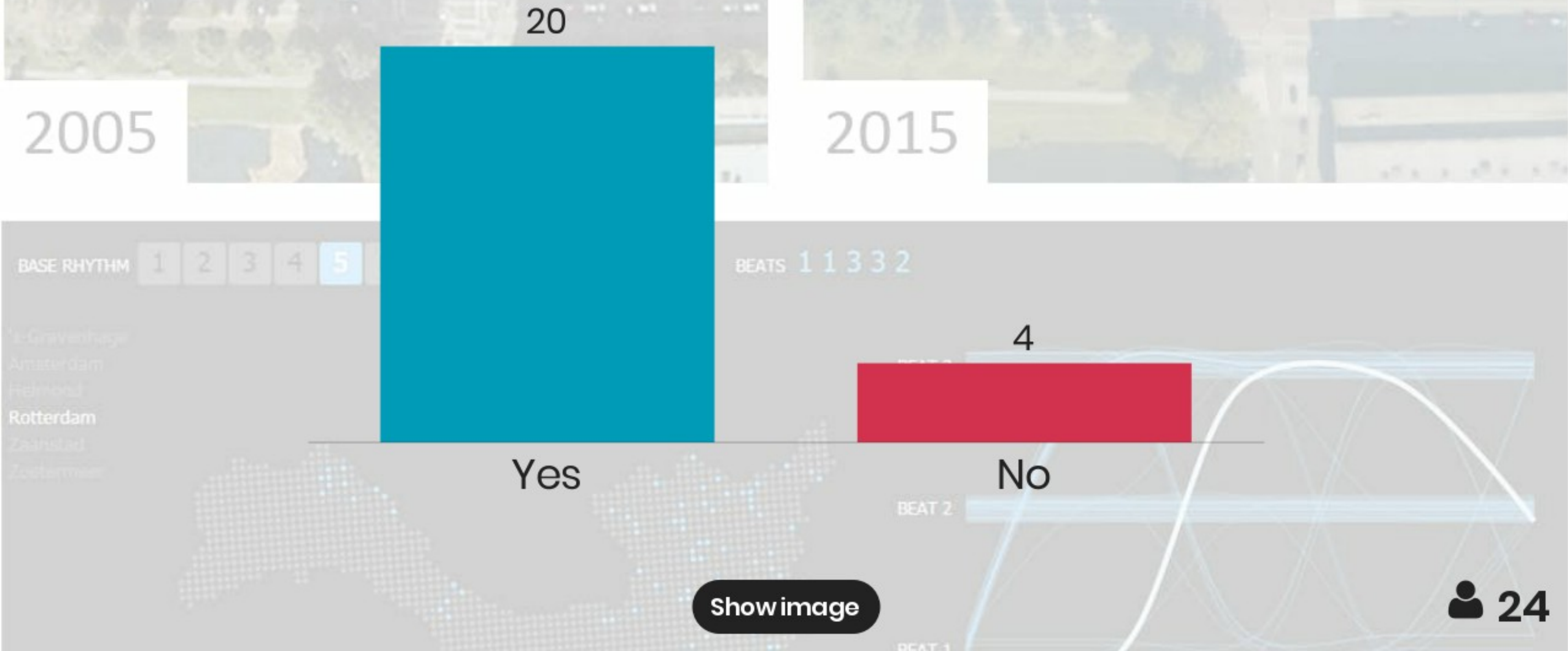


Do you find it plausible that the changing rhythm affects the movements of elderly?

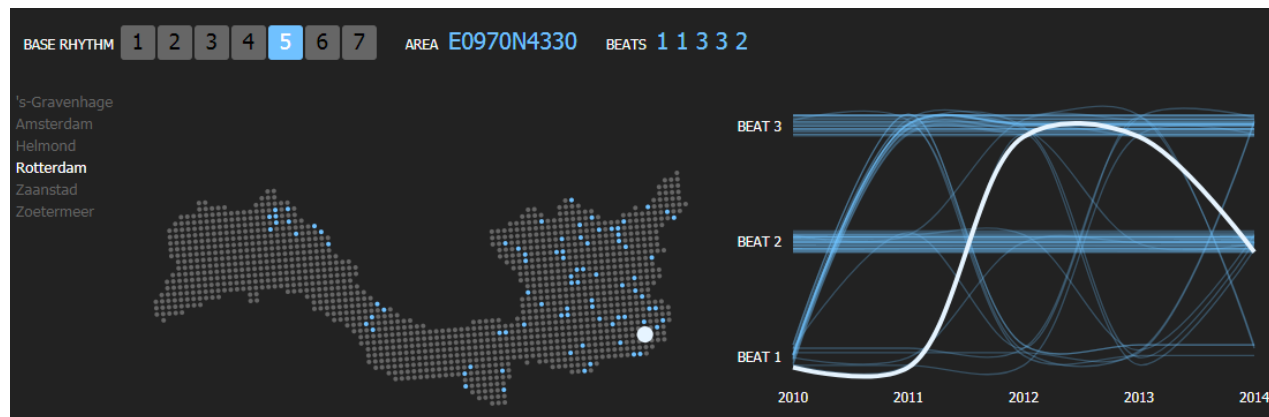
Yes ☐ No ☐



D2. Read the text below and look at the images. Do you find it plausible that the changing rhythm affects the movements of elderly?



Question D3 on Base Rhythm and Beats of Keizerswaard (Rotterdam)



Beat 1
No traffic

Beat 3
Low traffic

Beat 2
Lots of traffic

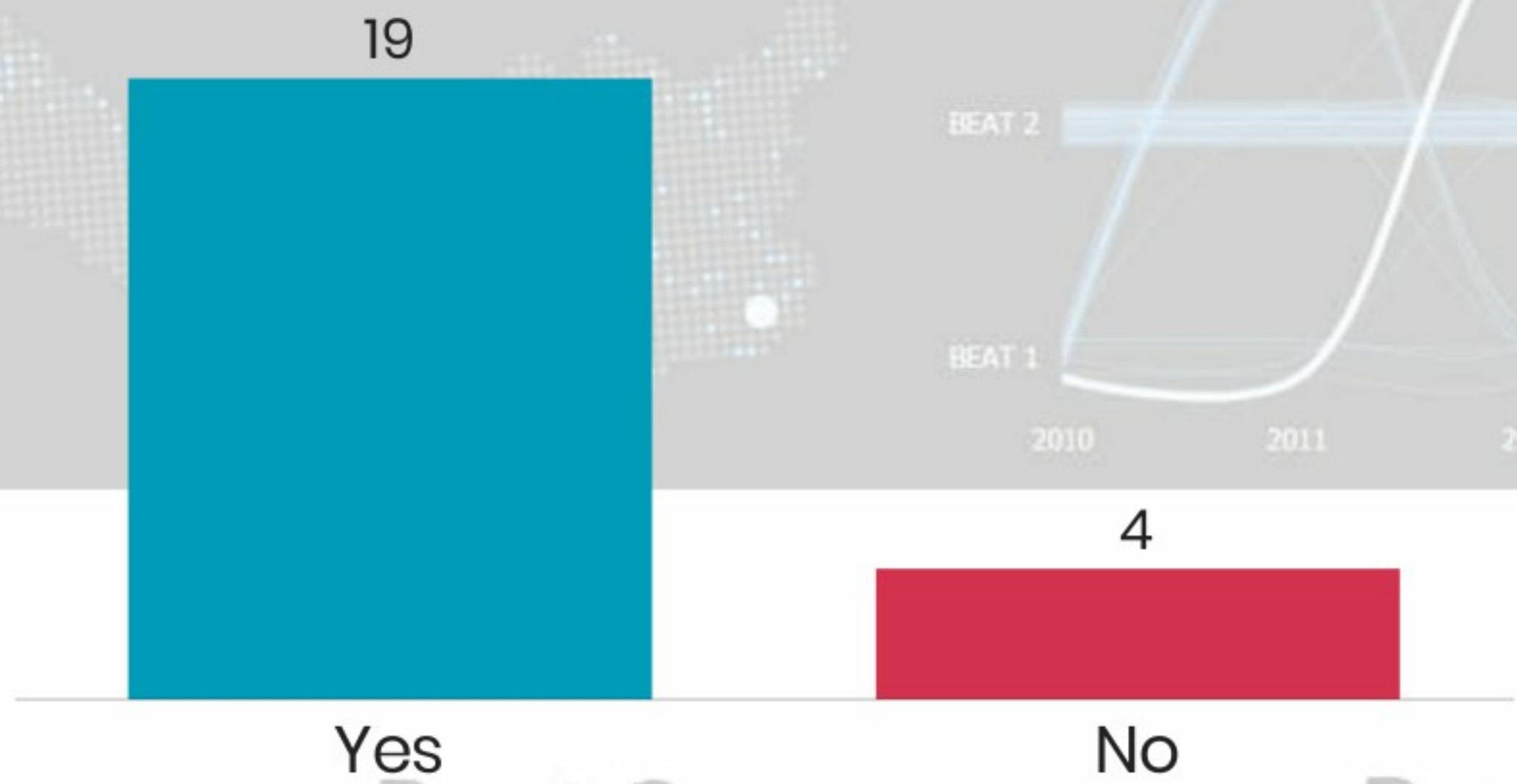
Keizerswaard is part of blue base rhythm.
There are 3 beats in this base rhythm.

The image on the left shows the transformation that Keizerswaard went through.

Do you think this rhythm affects the sense of social safety of the elderly who live in the elderly home in Keizerwaard?

Yes ☐ No ☐

D3. Read the text below. Do you think this rhythm affects the sense of social safety of the elderly who live in the elderly home in Keizerswaard?



Beat 1

Beat 2

Beat 3

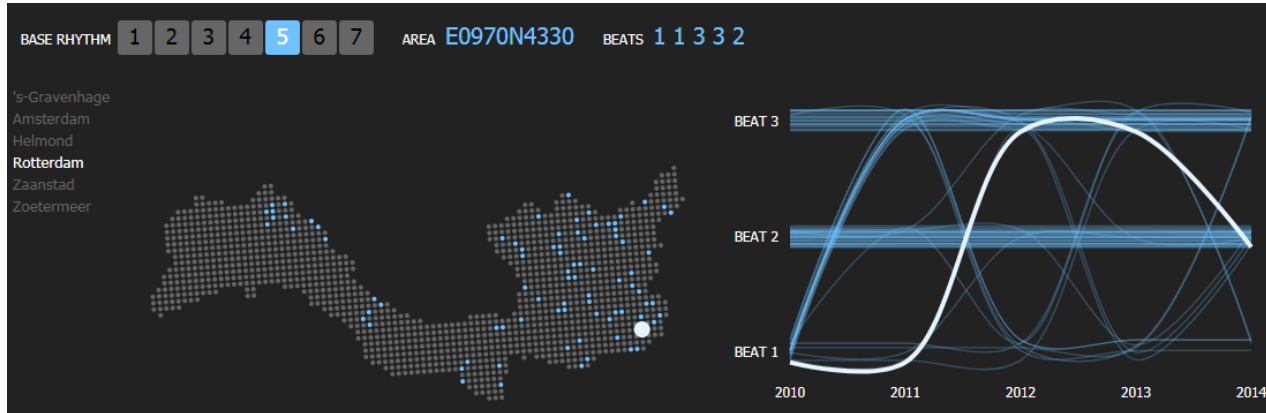
No traffic

Lots of traffic

Low traffic 23

Show image

Question D4 on Tuning Rhythms (Rotterdam)



Would you use rhythm analyses for defining a location for a new elderly home?

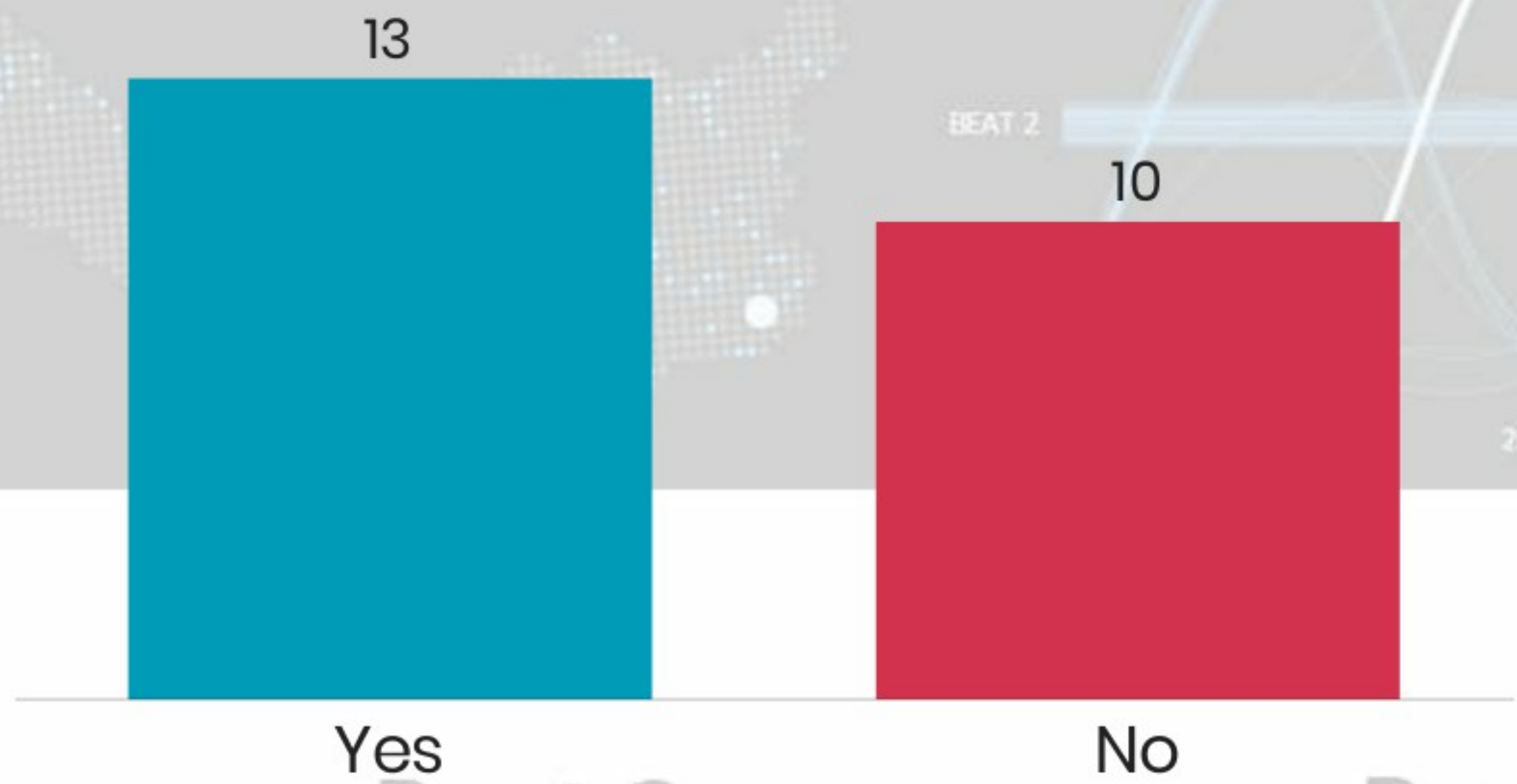
Beat 1
No traffic

Beat 3
Low traffic

Beat 2
Lots of traffic

Yes ☐ No ☐

D4. Based on the previous question, would you use rhythm analyses for defining a location for a new elderly home?



Beat 1

Beat 2

Beat 3

No traffic

Lots of traffic

Low traffic

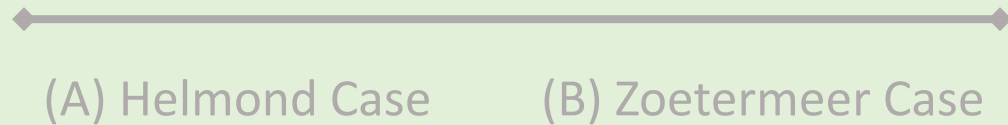
Show image

23

We have established that:

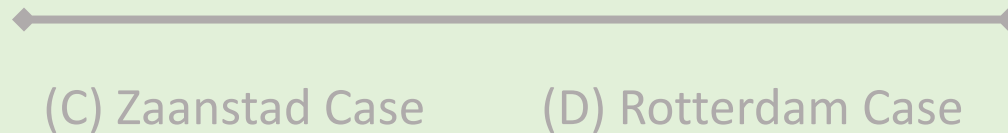
- A neighborhood can have different base rhythms. The same base rhythm is present in different areas.
- A base rhythm has different underlying street rhythms.
- A street rhythm characterizes an area.
- Comparing street rhythms in one base rhythm can show differences across areas.
- By comparing we create meaning.
- As a result, different rhythms can be tuned and balanced in the real world.

3rd Session - Matching and Sharing Rhythms for Social Safety



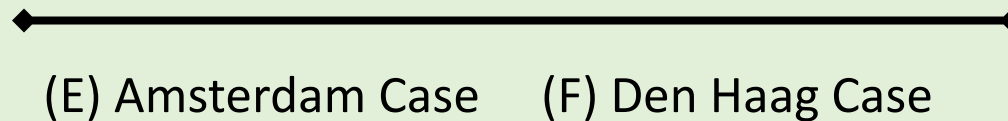
Base rhythm

Entire model is collection of beats



Beats

In a base, what beats are identified



Specific character of beats and bases

Combination of datasets through time result in different beats and bases

(E) Amsterdam Zuidoost Case
Matching Rhythms of Single Mothers in
Holendrecht and Venserpolder to
Neighbourhood Rhythms

Question E1 Imaginary case Single Mothers (Amsterdam Zuidoost)

Imagine the following: Single mothers in Venserpolder live in a orange base rhythm. In both Helmond and Zaanstad they mainly live in turquoise base rhythms. Here are the street areas where single mothers may live in your city:



Rotterdam



Den Haag



Zoetermeer



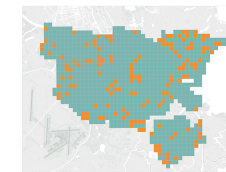
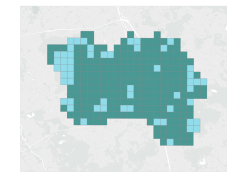
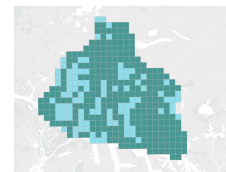
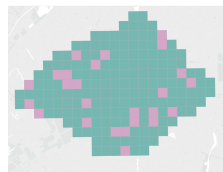
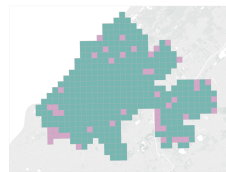
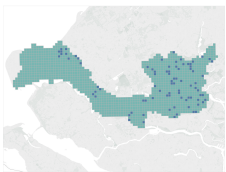
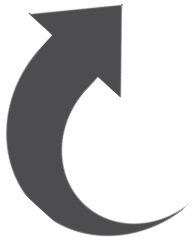
Zaanstad



Helmond



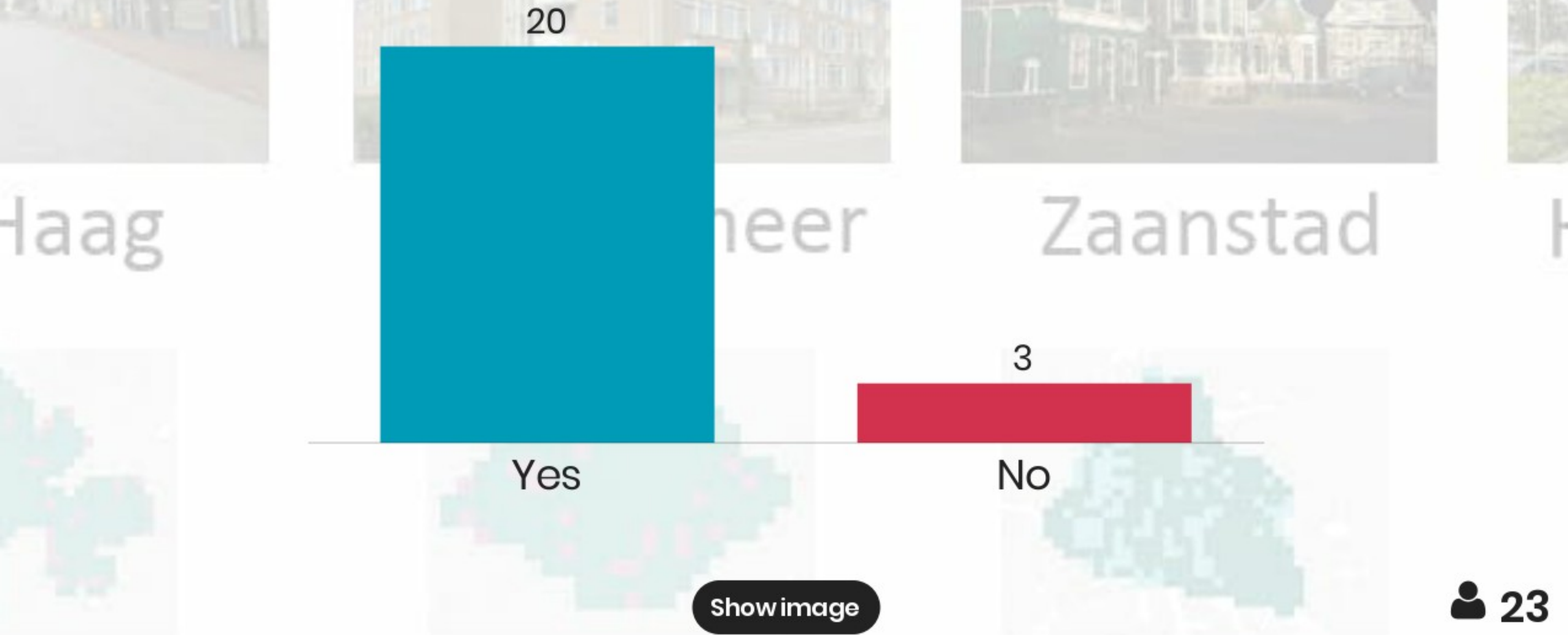
Venserpolder



Can you imagine it is good to meet with the neighborhood professionals of these street areas to discuss the situation of single mothers?

Yes ☐ No ☐

E1. Read the text below. Do you think it's good to meet with the neighborhood professionals of these areas to discuss the situation of single mothers?



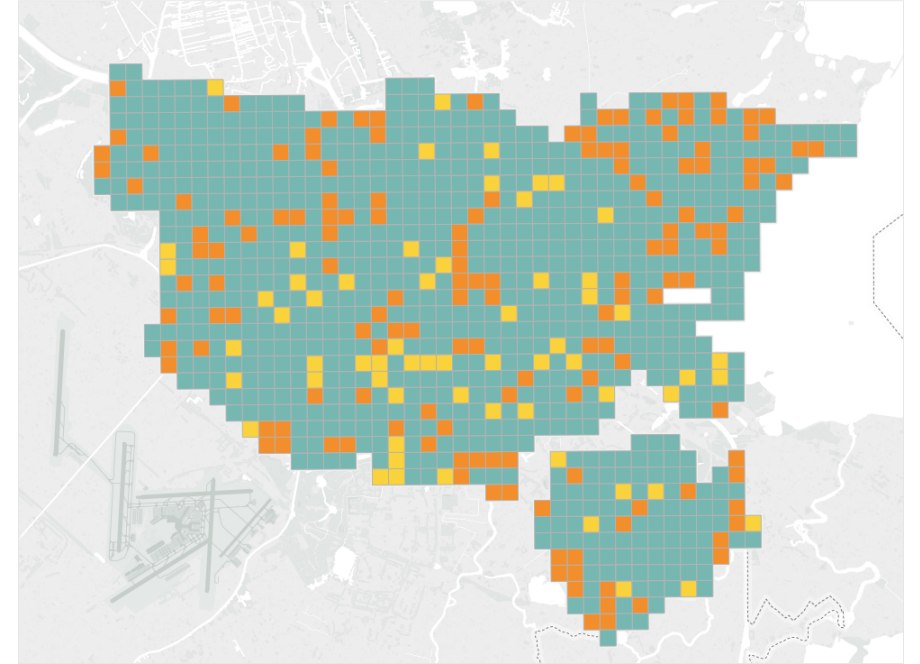
Question E2 on how proximity affects Single Mothers

- *Street areas with an **orange** base rhythm are located relatively far from schools/ shopping areas/public transport.*
- *Street areas with a **yellow** base rhythm are located close to these services.*

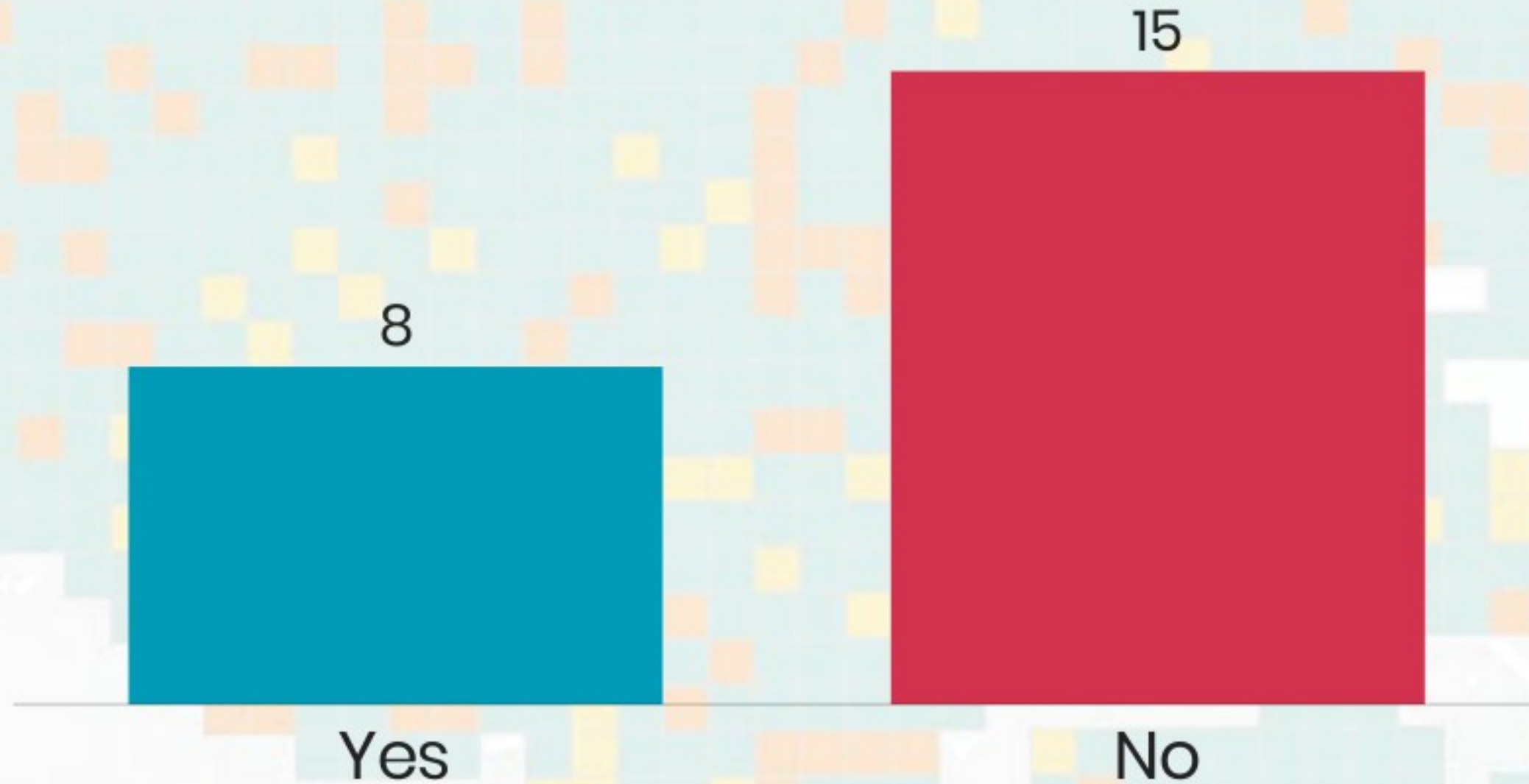
Do you expect single mothers to be better integrated in orange base rhythms than yellow base rhythms?

Yes ☐ No ☐

Amsterdam



E2. Read the text below. Do you expect single mothers to be better integrated in orange base rhythms?



Show image

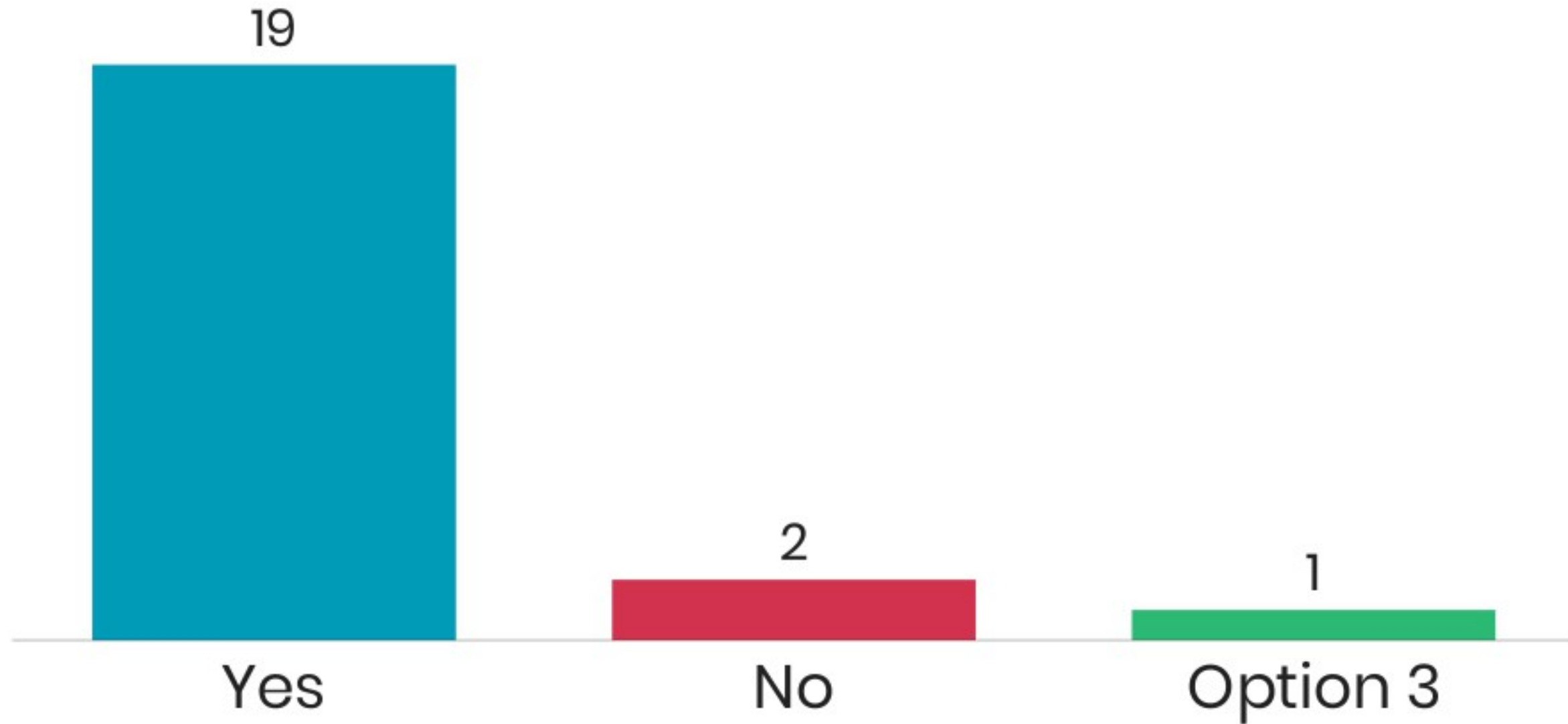
Question E3 Single Mothers in Zuidoost

Previous research in Amsterdam shows that single mothers' rhythms do not match the municipality's rhythms and therefore the single mothers do not make use of municipal services.

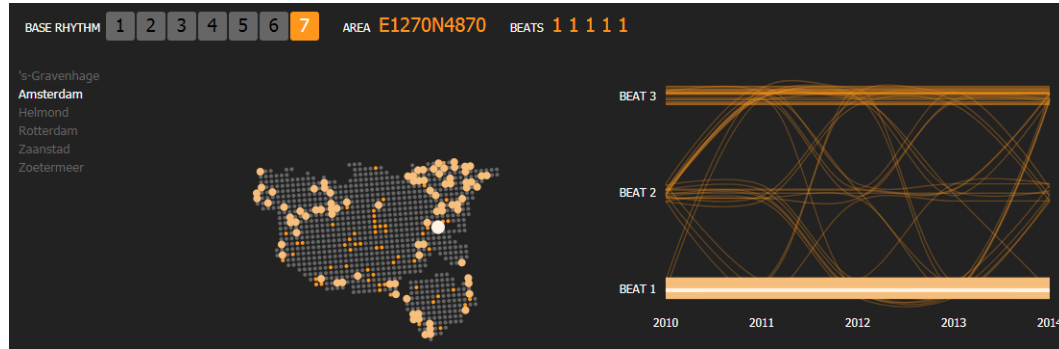
In Helmond, single mothers living in the same base rhythm, have no problem matching their rhythms with municipal services.

Do you like to discuss the local trends with a colleague from the other city? Yes ☐ No ☐

E3. Read the text below. Do you like to discuss the local trends with a colleague from the other city?

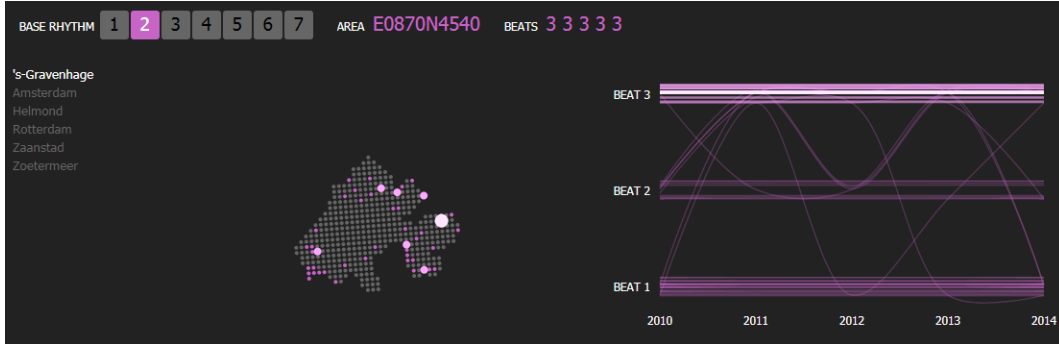


Question E4 on bases and Single Mothers



In Amsterdam single mothers have lots of poverty and low proximity (beat 3).

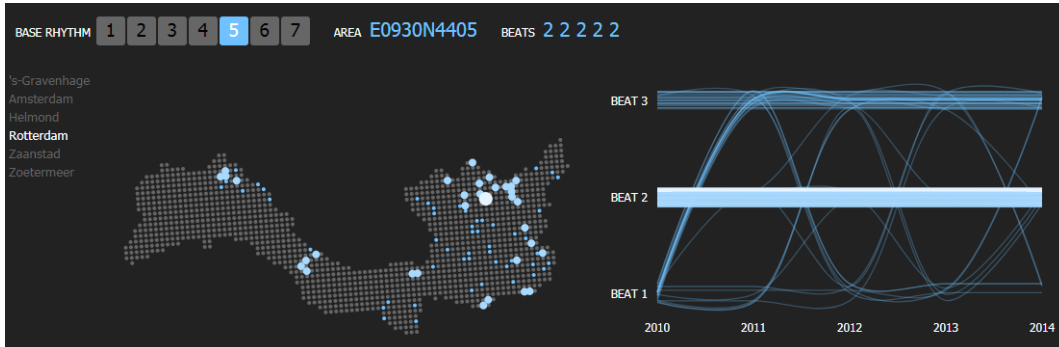
In Den Haag and Rotterdam they have less poverty and more proximity (beat 1 and 2).



Would you like to discuss this information with your colleagues?

Yes ☐

No ☐



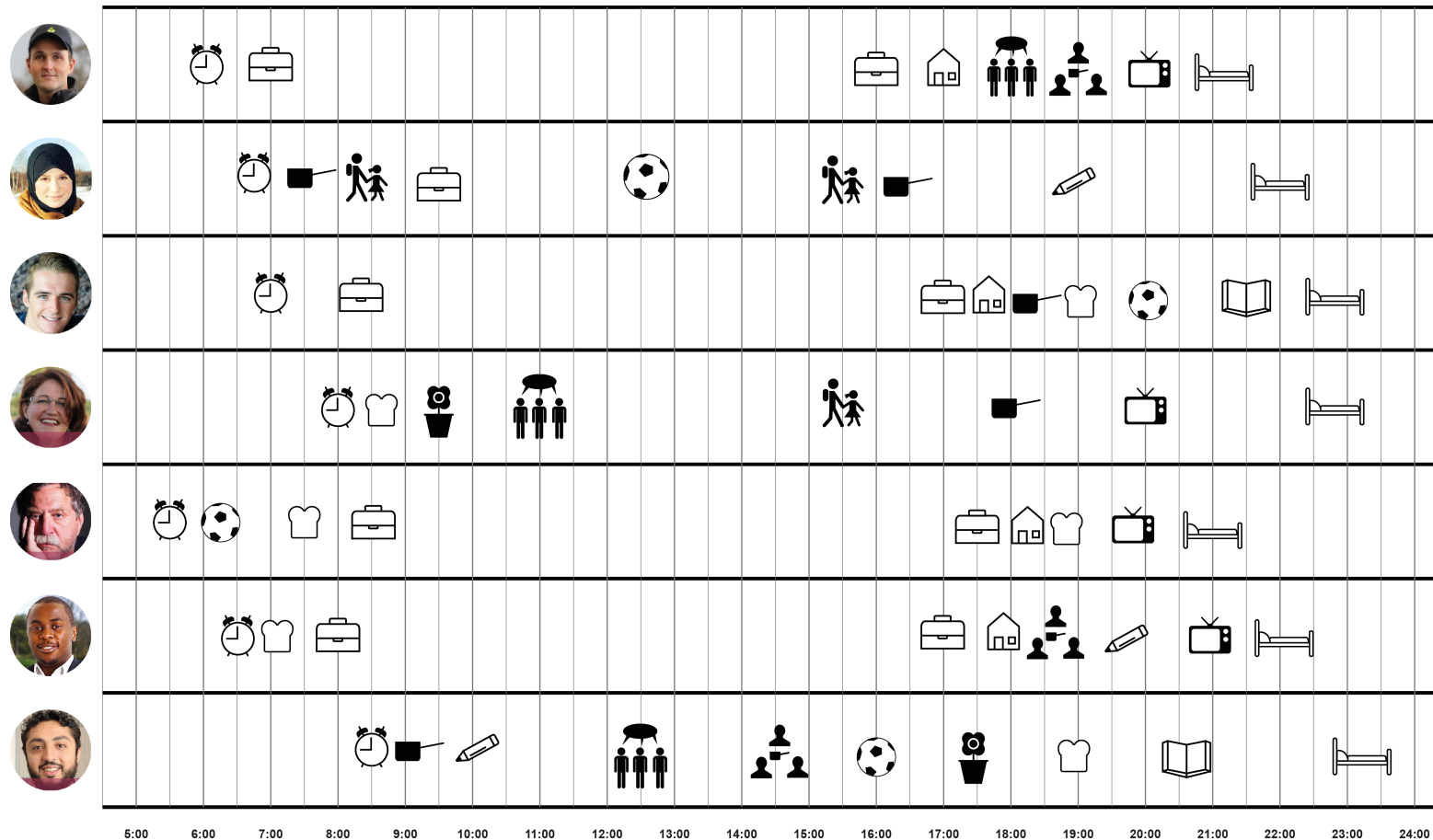
E4. Read the text below and look at the visualizations. Would you like to discuss this information with your colleagues?

[Show image](#)

(F) Den Haag Case

Sharing Rhythms between migrants and
residents in Escamp

Question F1 on migrants (Den Haag Escamp)



In Escamp, residents generally share similar daily rhythms without being aware of it. When being informed about the shared rhythms, their sense of social safety improved.

Do you think being aware of shared rhythms can affect the sense of social safety?

Yes ☐ No ☐

F1. Read the text below and look at the image. Do you think being aware of shared rhythms can affect the sense of social safety?

21

Yes

2

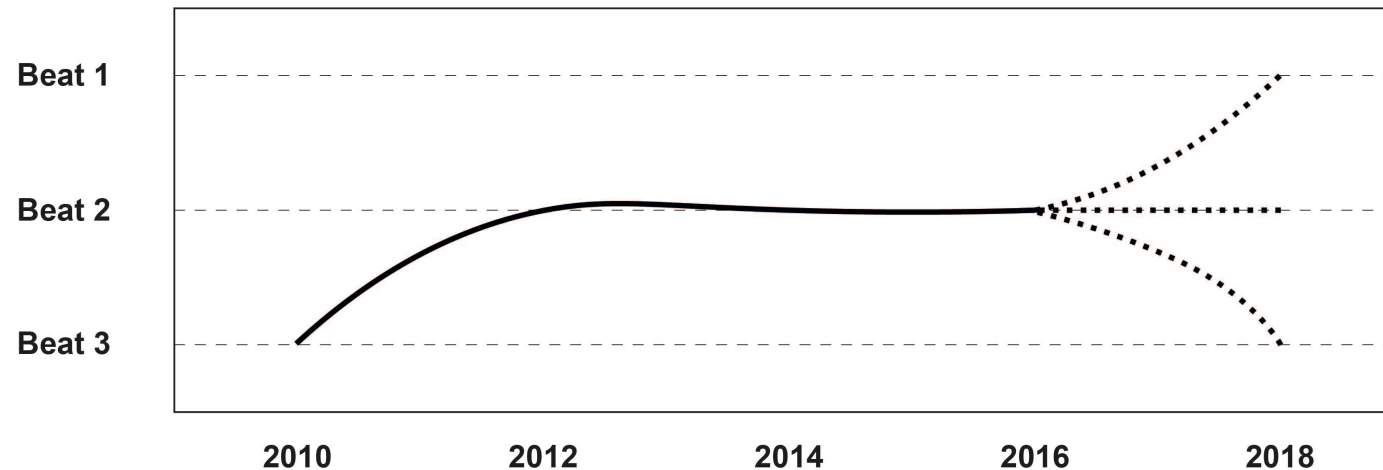
No

[Show image](#)

23

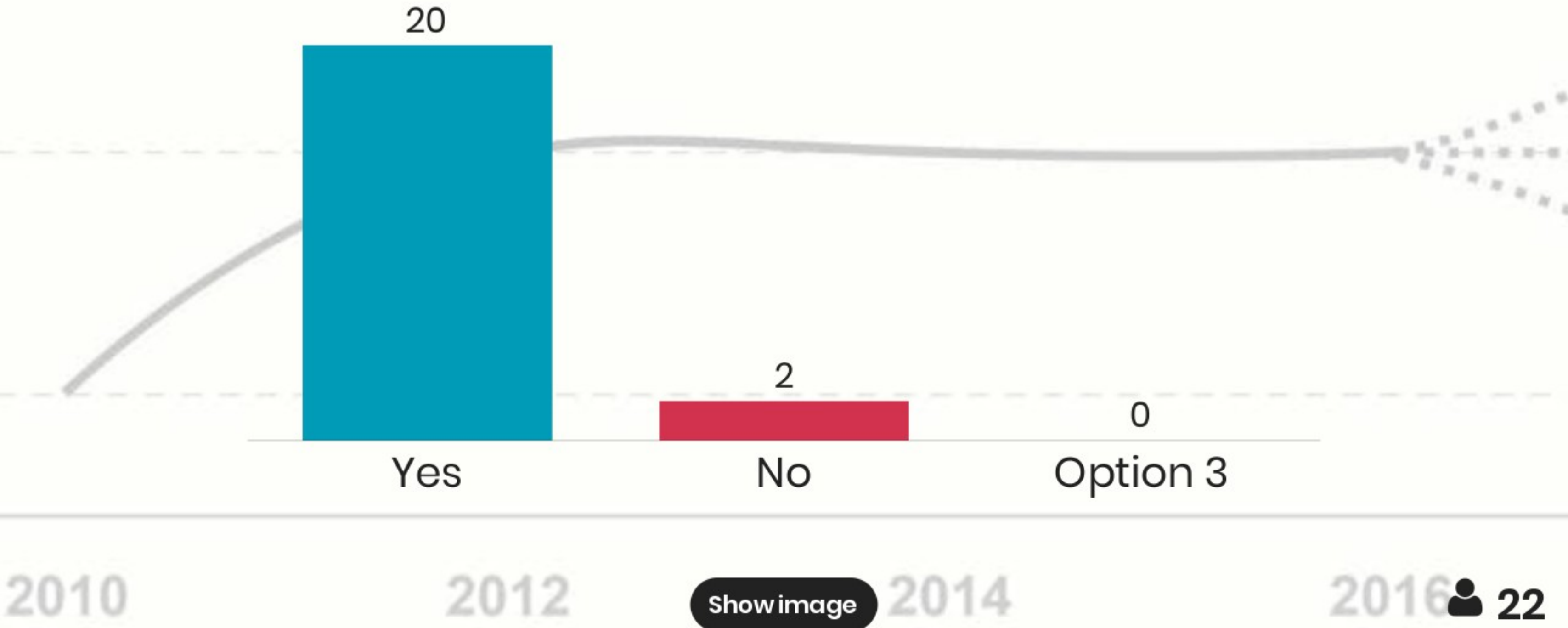
Question F2 on migrants (Den Haag Escamp)

Escamp is a neighborhood where many people move in and out. A housing project for refugees is planned for the coming year. The current residents are worried about how this will affect the future of the neighborhood. The model found several street areas in the Netherlands that went through that rhythm in the past.

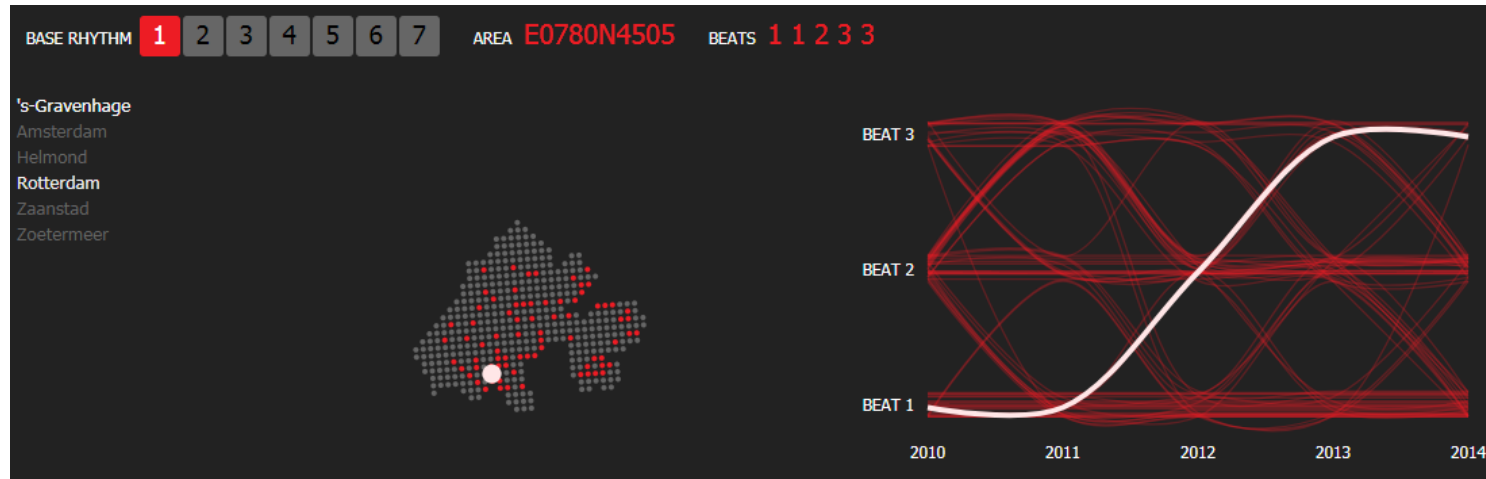


Would you talk to colleagues of those neighbourhoods which went through that rhythm in the past? Yes ☐ No ☐

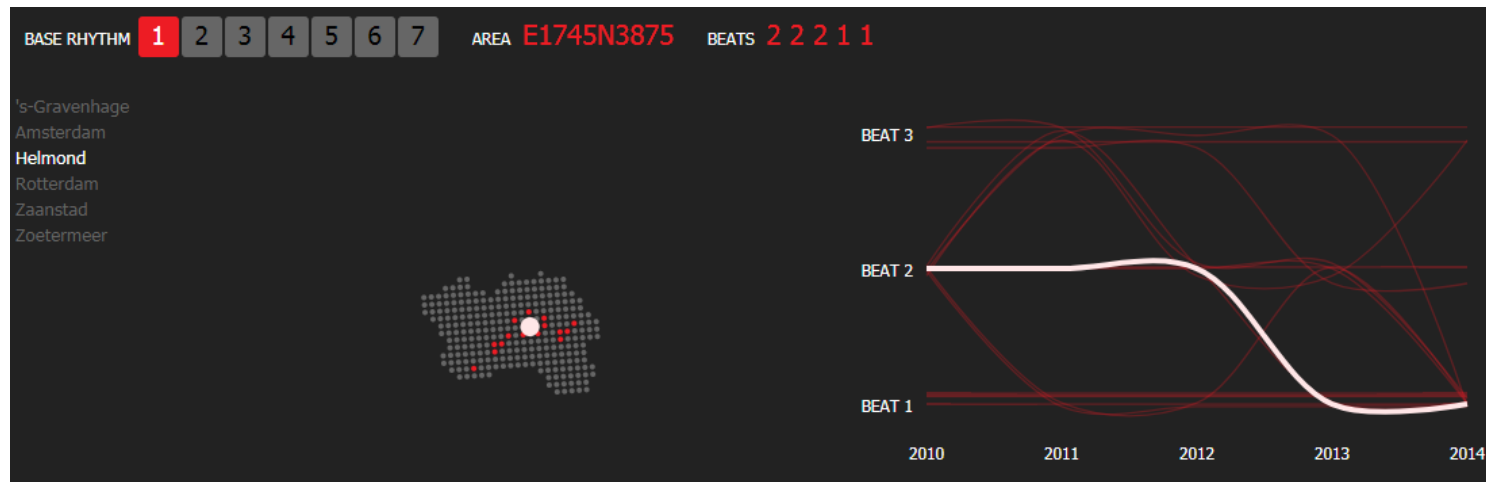
F2. Read the text below and look at the visualization. Would you talk to colleagues of those areas which went through that rhythm in the past?



Question F3 on Beats for Sharing Rhythms



Two neighbourhoods (Escamp in Den Haag and Bijsterveld in Helmond) with different histories have each managed to create a sharing of rhythms between residents.



Do you want to speak to your colleague in the other neighbourhood?

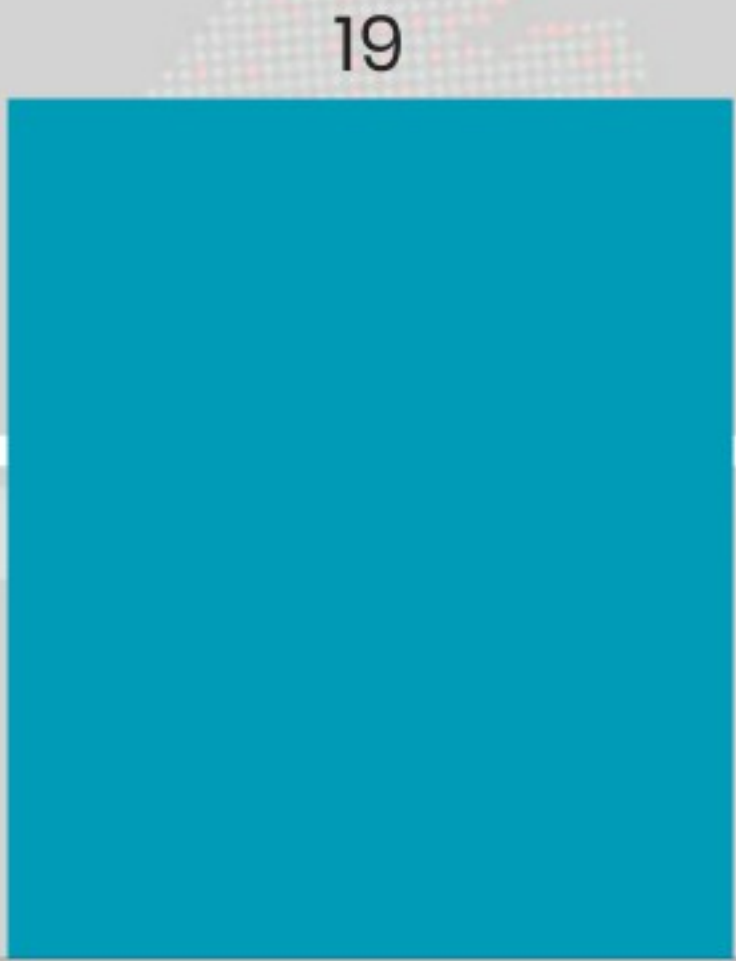
Yes ☐ No ☐

's-Gravenhage
Amsterdam
Helmond
Rotterdam

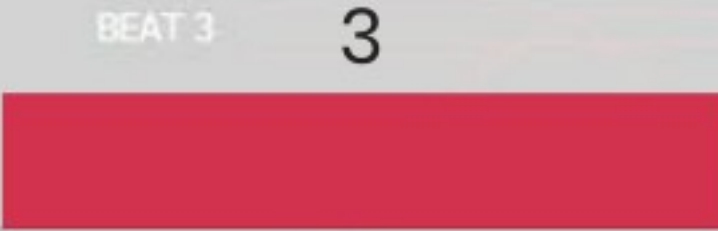
F3. Read the text below and look at the visualization. Do you want to speak to your colleague in the other neighborhood?

BASE RHYTHM 1 2 3 4 5

's-Gravenhage
Amsterdam
Helmond
Rotterdam
Zaandam
Zoetermeer



Yes



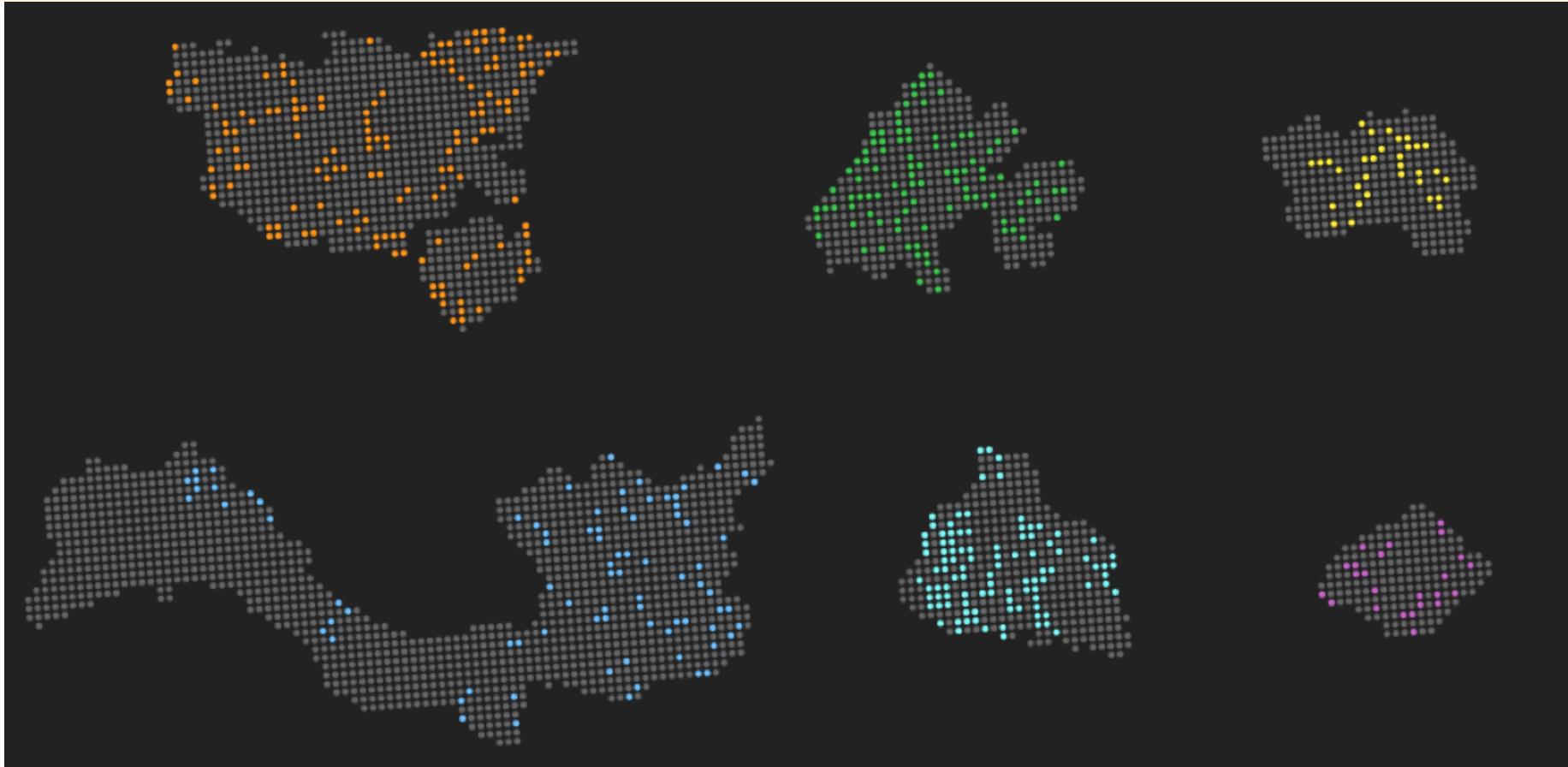
No

Show image

We have established that:

- Every street rhythm consists of different beats.
- Beats are defined by a specific configuration of datasets created by the model.
- Comparing different street rhythms in one base rhythm and linking this to specific characteristics can create input for policymaking

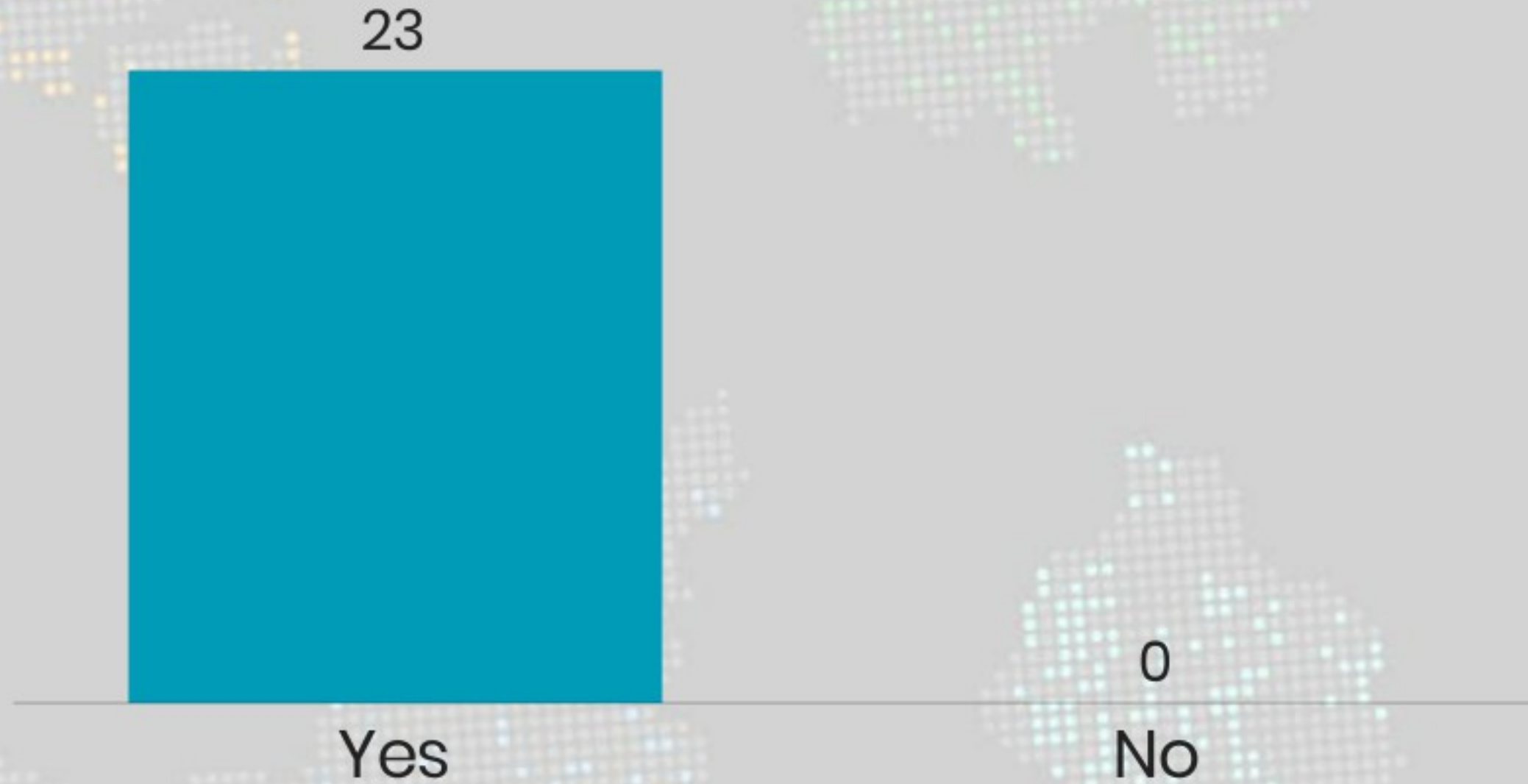
Future Question 1



In general, do you think that rhythm analysis will inspire useful conversation between colleagues?

Yes ☐ No ☐

In general, do you think that rhythm analysis will inspire useful conversation between colleagues?

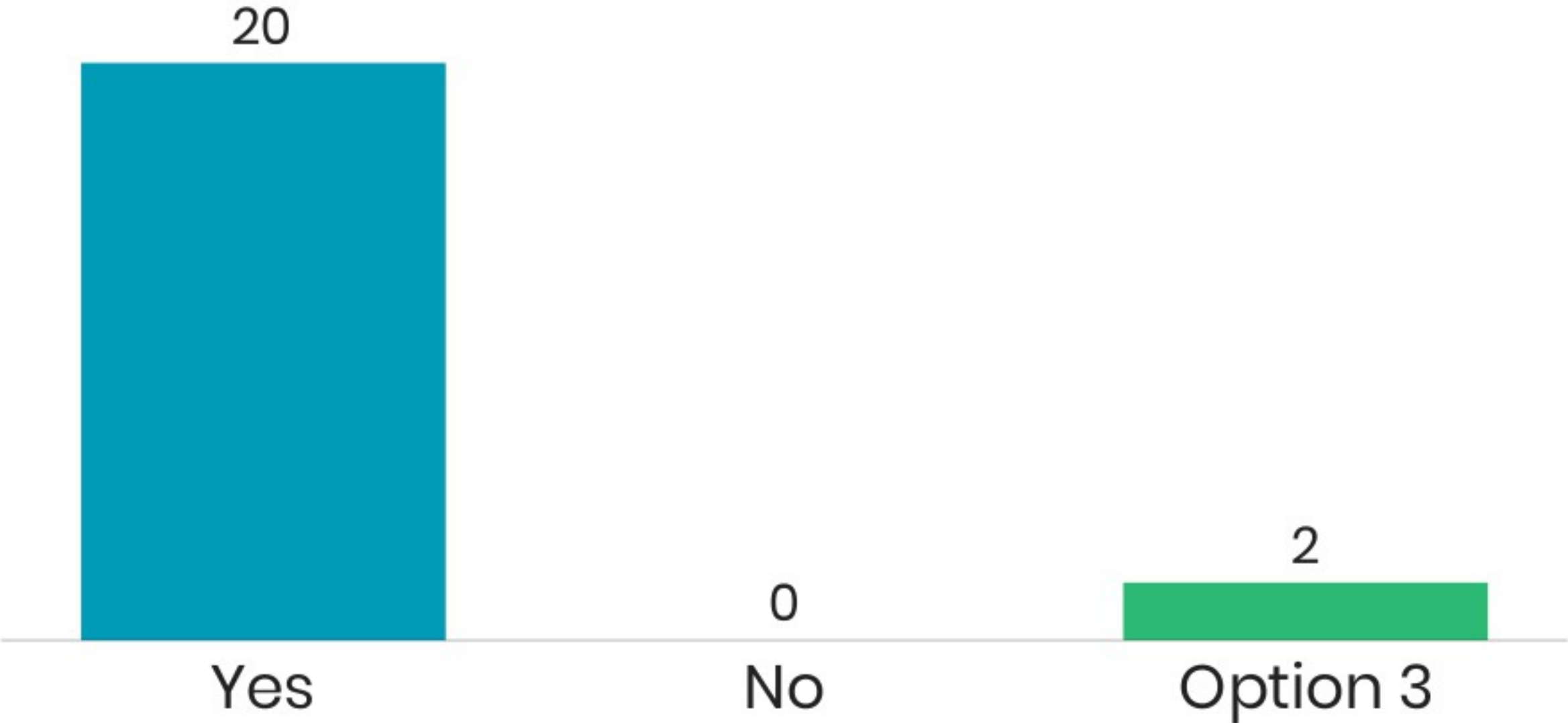
[Show image](#)

Future Question 2

Imagine if we have real-time data about neighborhoods from Google, TomTom, etc., we could track the daily rhythms of neighborhoods using this model. Would you imagine that it is an useful tool?

Yes ☐ No ☐

Read the text below. Would you imagine this to be a useful tool?

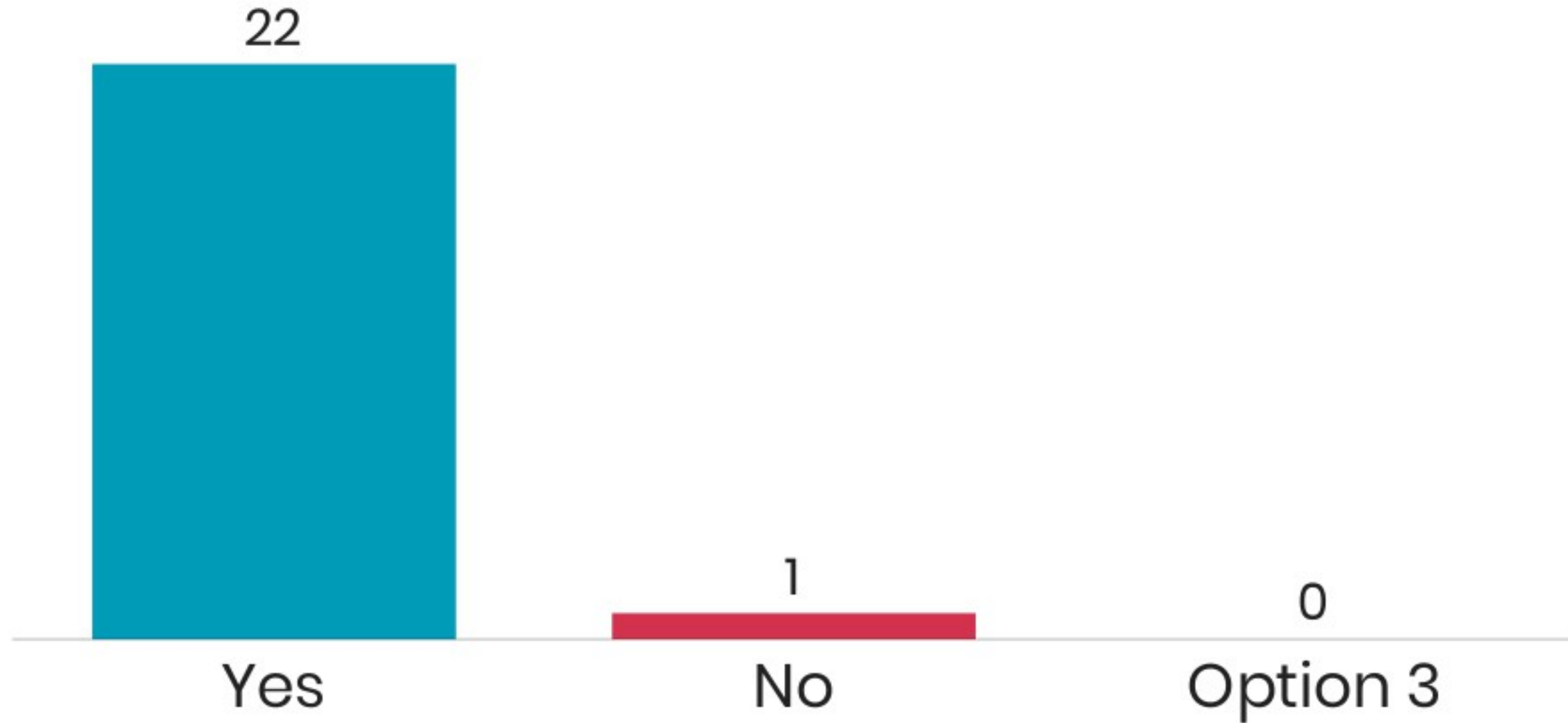


Future Question 3

If you could foresee the coming changes in your area tomorrow or next week (e.g. transport), would you incorporate that information in your policy making?

Yes ☐ No ☐

If you could foresee the coming changes in your area tomorrow or next week, would you incorporate that information in your policy making?



Open Question

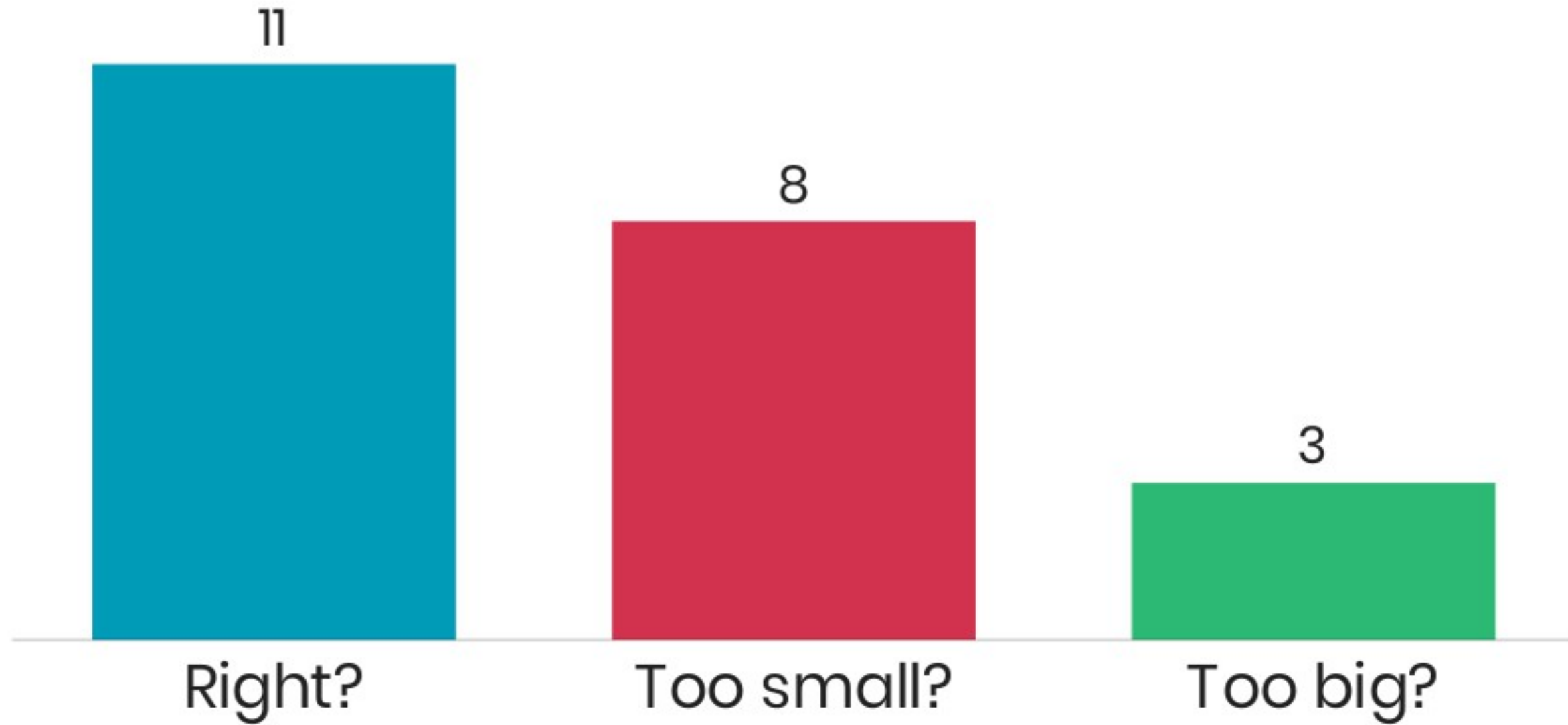
If we identify rhythm for policy making on a 100x100m street areas, is this:

Right ☐ Too small ☐ Too big ☐

If we identify rhythm for residence to experience social safety on a 100x100m street areas, is this:

Right ☐ Too small ☐ Too big ☐

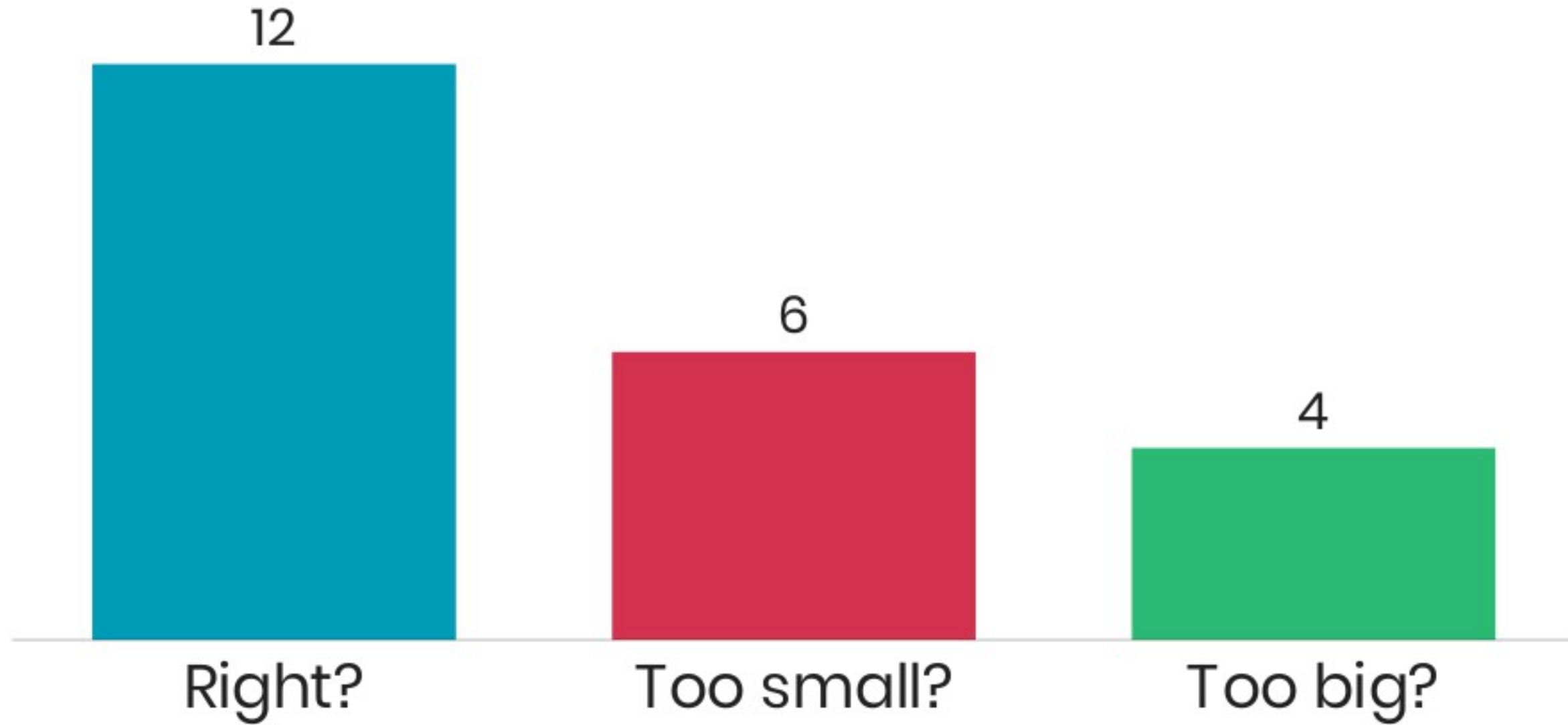
If we identify rhythm for policy making on a 100x100 area, is this..



Open Question

Please tell us what do you think about rhythm and social safety?

If we identify rhythm for residence to experience social safety on a 100x100m area, is this...



Please tell us what you think about rhythm and social safety.

Interesting

Interesting but stil a bit too fluid

Agree with the theory but it's still very abstract. Need to see concrete examples.

Intetesting

Might be useful

Complicated

Sharing rhythms creat stronger social safety.

Certainly interesting

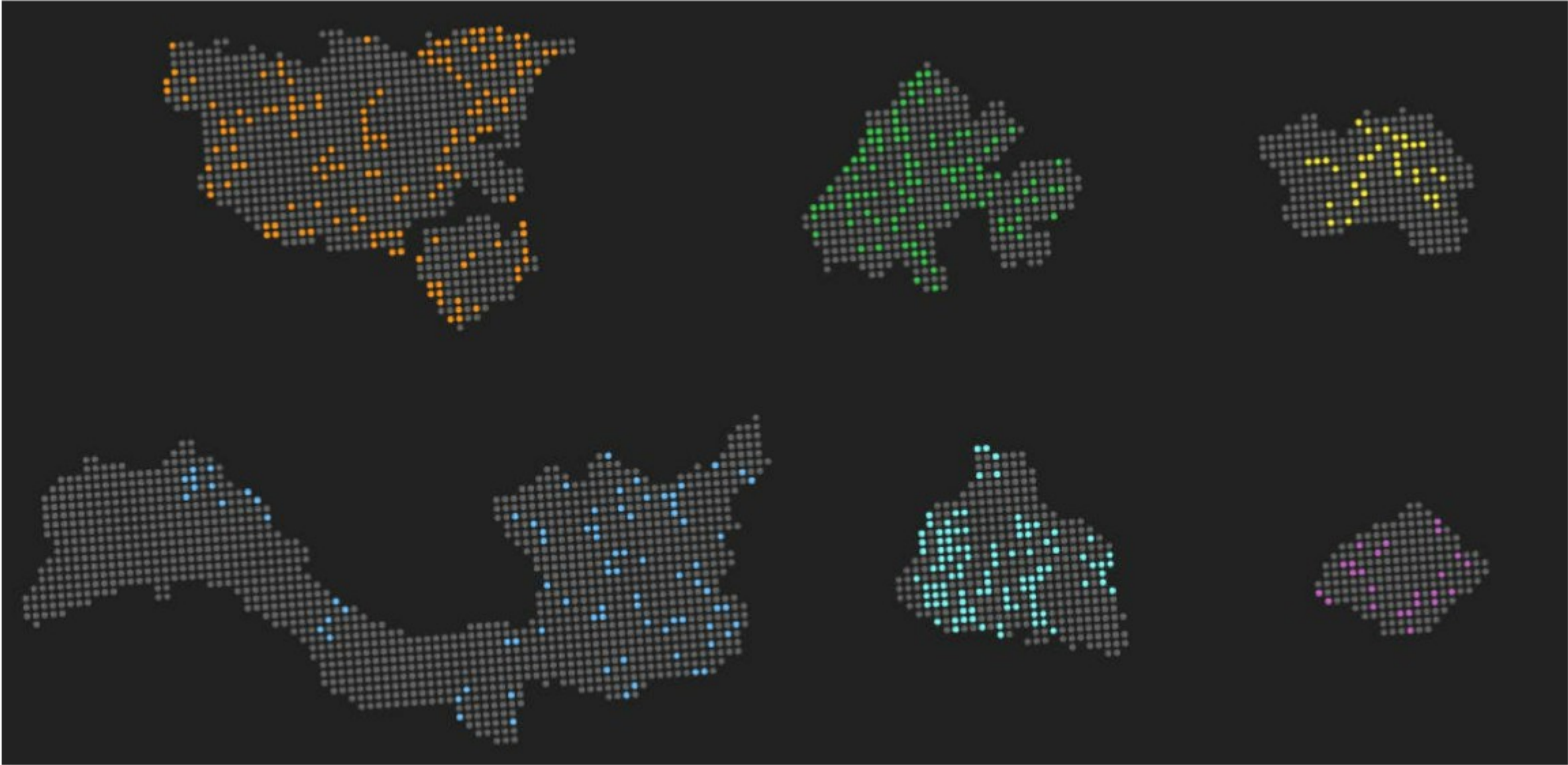
Een grote kans maar er is nog veel werk te doen

Useful approach

Connected, one might lead into the other one changing

Awesome, inspiring, great to be able to gauge changes in neighborhood.





THANK YOU!

Colophon

Research Team

TU Delft

Caroline Nevejan: Principal Investigator (PI)

Scott Cunningham: Director Data Team (DD)

Pinar Sefkatli: Research Assistant / PhD Candidate (RA)

WU

Jandirk Bulens: Researcher

Natasha de Sena: Researcher

Data Team

AHTI

Lene Boehnke

Martijn Kriens

Thu Vu

Delph

Ruben Spruit

Mark Verhagen

Leo Huberts

Blooming Data

Erik Boertjes

Support

TU Delft Finance

Ben Opdam

AMS Management

Ebru Isguzarer-Onder

Natasha de Sena

Digitale Steden Agenda

Fatiha Alitou

Lidy Steenwinkel

Municipalities Key Researchers

Den Haag

Hedwig Miessen (Key Person)

Joost Hoedjes

Isabella Tonioli (IT Person)

Antoine Gribnau (IT Person)

Erwin Rouwenhorst

Zaanstad

Mieke ten Bosch (Key Person)

Nicolette van der Slot (IT Person)

Samuel Kaspers

Rob Polhuis

Sandra Rob

Helmond

Gooitske Marsman (Key Person)

Jolanda Boss

Rotterdam

Suzanne van de Berge (Key Person)

Chris de Vries (IT Person)

Zoetermeer

Jerrel Denijn (Key Person)

Annette de Croo (Key Person)

Robert Jan Genzer (IT Person)

Yosha Kramer

Amsterdam

Merrel Hoefdraad (Key Person)

Tamas Erkelens (IT Person)

Guno Nimmermeer

Janice Milan