# Place Meanings People Attribute to Water Environment of Catchment

# -Patterns of Spatial Perception with Territoriality
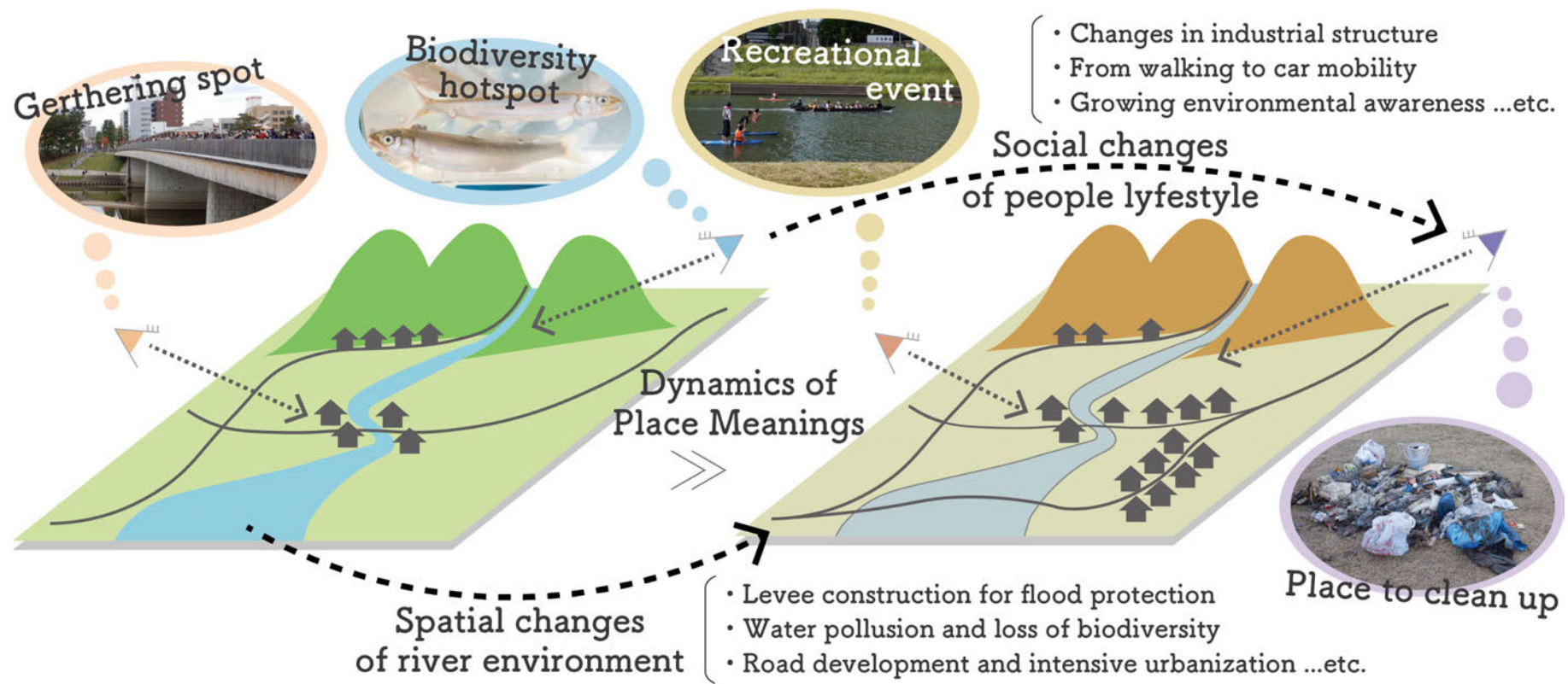
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This photo is taken in Okazaki City, with the members of local group "ONE RIVER"
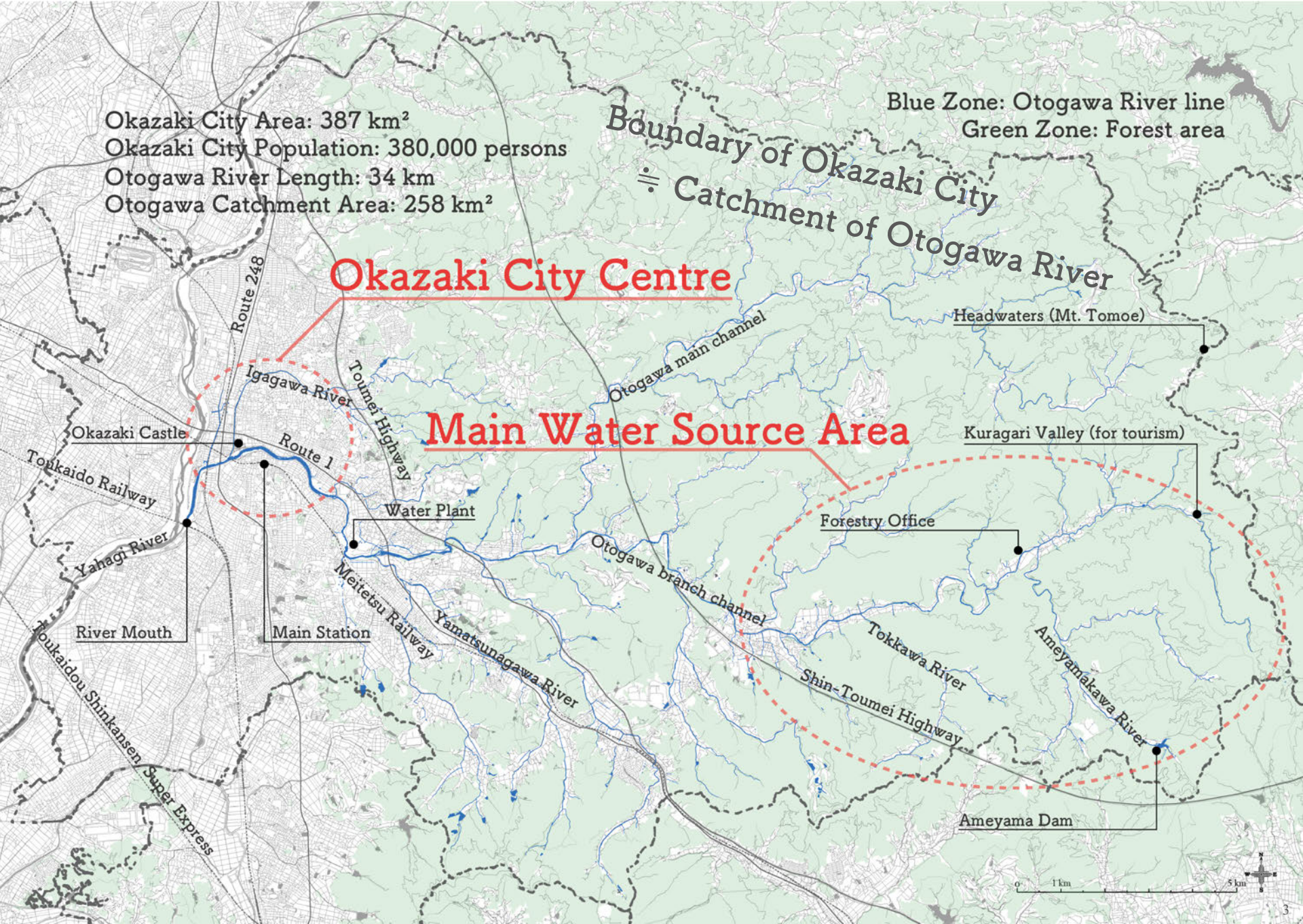
# 1-1. Introduction

## To understand the people's place perception

is essential for promoting sustainable water management through collaboration among multiple stakeholders.

Gerthering spot

Biodiversity hotspot

Recreational event

- Changes in industrial structure
- From walking to car mobility
- Growing environmental awareness ...etc.

Social changes of people lyfestyle

Dynamics of Place Meanings
≫

Place to clean up

Spatial changes of river environment
- Levee construction for flood protection
- Water pollution and loss of biodiversity
- Road development and intensive urbanization ...etc.

Indeed, characteristics of place perception is varied in each person, and it is always dynamically changing.
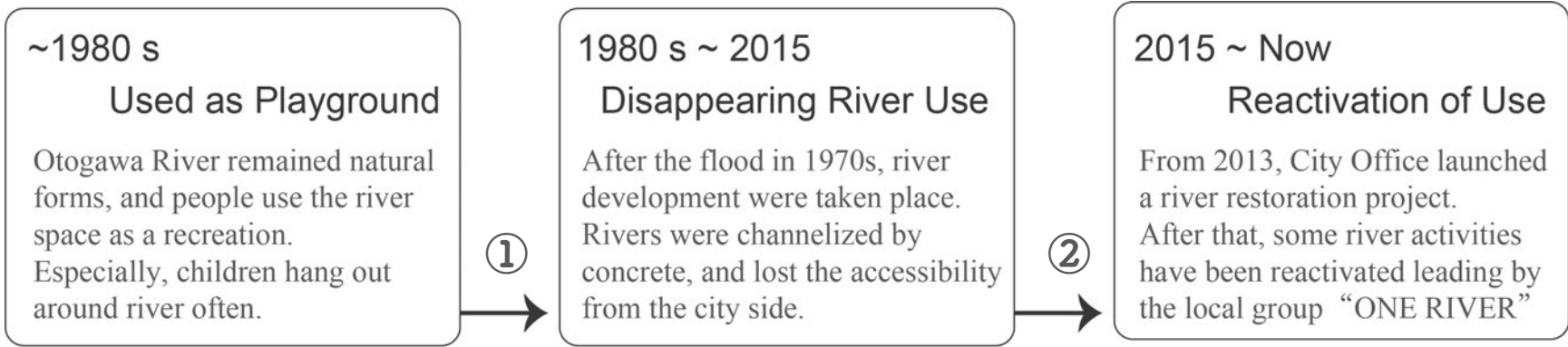
But there assumed to be some trends.

▼

## In this study, we try to show the trends in changes of spatial perception.

Okazaki City Area: 387 km²
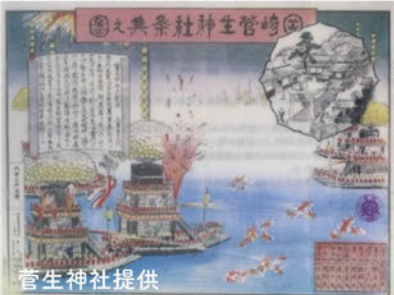Okazaki City Population: 380,000 persons
Otogawa River Length: 34 km
Otogawa Catchment Area: 258 km²

Blue Zone: Otogawa River line
Green Zone: Forest area

Boundary of Okazaki City
≒ Catchment of Otogawa River

**Okazaki City Centre**

**Main Water Source Area**

Route 248

Route 1

Igagawa River

Toumei Highway

Otogawa main channel

Headwaters (Mt. Tomoe)

Kuragari Valley (for tourism)

Okazaki Castle

Toukaido Railway

Yahagi River

River Mouth

Main Station

Water Plant

Meitetsu Railway

Yamatsunagawa River

Otogawa branch channel

Forestry Office

Tokkawa River

Ameyamakawa River

Shin-Toumei Highway

Ameyama Dam

Toukaidou Shinkansen Super Express

0    1 km                    5 km

3

# 1-3. The Situations of Otogawa River

In the target area, we can find "2 Turning Points" about river uses.

| ~1980 s | ① | 1980 s ~ 2015 | ② | 2015 ~ Now |
|---|---|---|---|---|
| **Used as Playground** Otogawa River remained natural forms, and people use the river space as a recreation. Especially, children hang out around river often. | → | **Disappearing River Use** After the flood in 1970s, river development were taken place. Rivers were channelized by concrete, and lost the accessibility from the city side. | → | **Reactivation of Use** From 2013, City Office launched a river restoration project. After that, some river activities have been reactivated leading by the local group "ONE RIVER" |

River development works                    Decline of the city center

ONE RIVER



1964
「写真アルバム岡崎市の今昔」より

1980~

2016
Photo by ONE RIVER

おとがワ！ンダーランド
2016
(1年目)
「自由と責任」
とにかく
つかってみる。
実施期間：7月19日～9月4日（27日／48日）
実施団体数：32団体
プログラム数：34プログラム
来場者数：約3,400人

Now

菅生神社提供

1930
「写真アルバム岡崎市の今昔」より

2013
Photo by ONE RIVER

Now

# 2-1. Methodology/Procedure

## Ⅰ. Questionnaires Survey

**＊Paper-based questionnaire**
- 500 questionnaires are distributed by hand-delivery via river activity group, City Office, and Forestry Office in 11.11.2022 ~ 31.1.2023.

**＊Web-based questionnaire**
- Web form were also available on the internet.
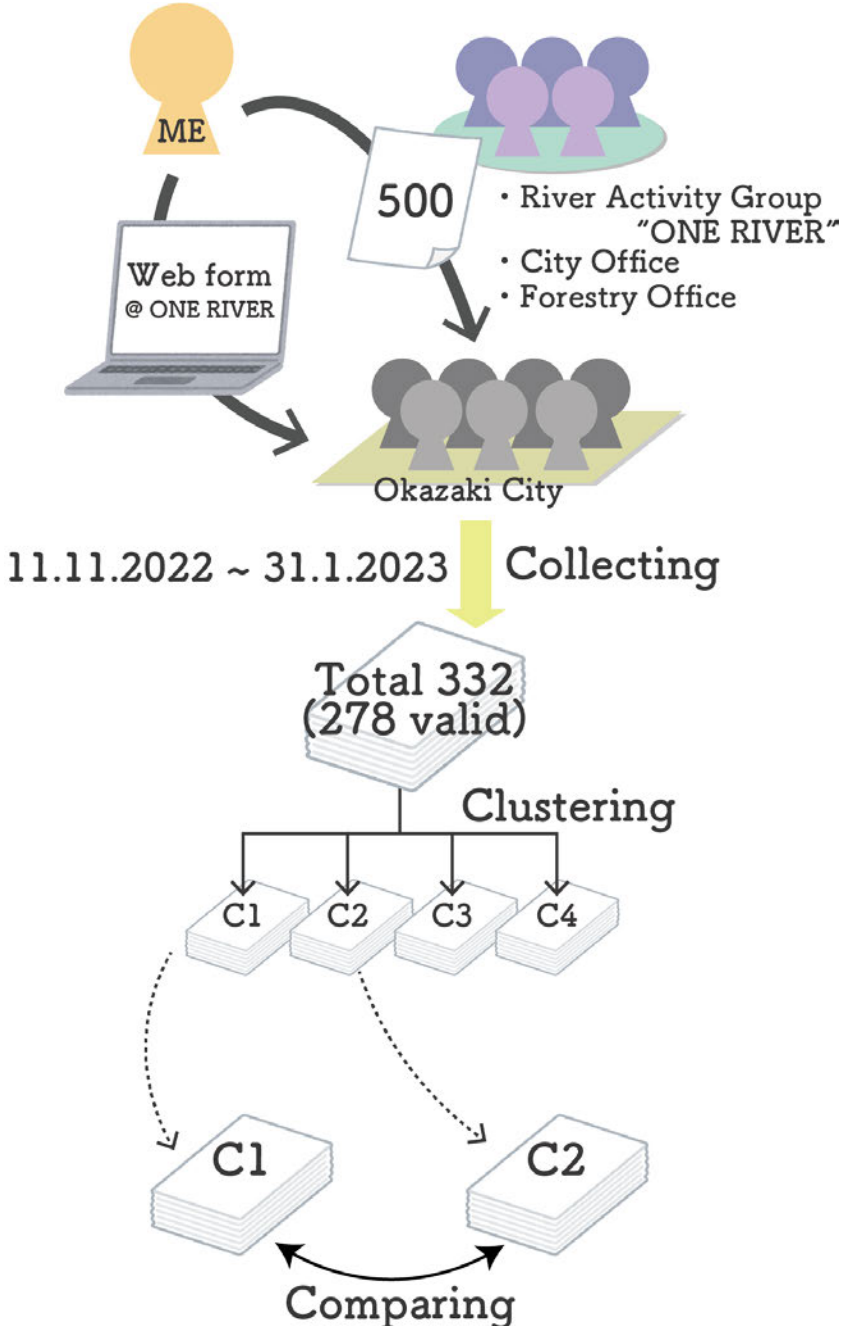
↓ Collecting data

## Ⅱ. Clustering

A. 4 clusters focusing on age (C1-4)

B. 4 clusters focusing on lifestyle (C5-8)

↓ Overlapping answers in each cluster

## Ⅲ. Comparing

To discuss the differences in each cluster

ME

Web form @ ONE RIVER

500
- River Activity Group "ONE RIVER"
- City Office
- Forestry Office

Okazaki City

11.11.2022 ~ 31.1.2023 | Collecting

Total 332 (278 valid)

Clustering

C1  C2  C3  C4

C1 ↔ C2

Comparing

# 2-2. Data Collection

■ What did I ask in the questionnaire?

  ＊Personal information

    ・Age, community of the living place

    ・Living history in the City

    ・River viewing/using frequency

    ・River activity/works experiences

    ・Enphasized functions of river （multiple responses with ranking）
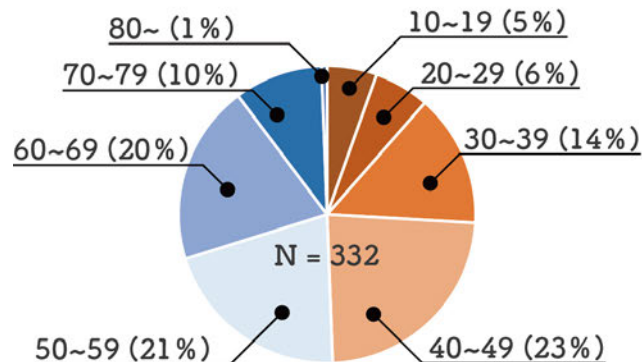
  ＊The Image of Otogawa River

    ・Q1: Where do you think *meaningful* to your lifes
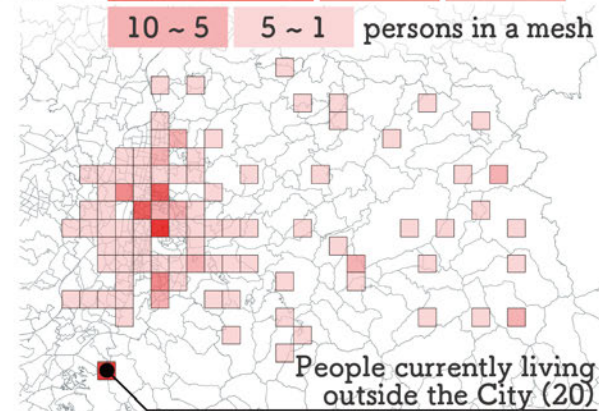
    ・Q2: Where do you think *familiar* to yourself


《回答用地図》 Sample

■ Basic information of respondents


＊ Age distribution

- 80~ (1%)
- 70~79 (10%)
- 60~69 (20%)
- 50~59 (21%)
- 40~49 (23%)
- 30~39 (14%)
- 20~29 (6%)
- 10~19 (5%)

N = 332


＊ Living place distribution

Legend: More than 20 | 20 ~ 15 | 15 ~ 10 | 10 ~ 5 | 5 ~ 1  persons in a mesh

People currently living outside the City (20)

## 2-2. Clustering of 332 Respondents

Two clustering methods were attempted.

A. Clusters divided by their *age* and *upbringing*

Hypothesis: People who have experienced "Otogawa" before the river development have different perception compared with people who have not.

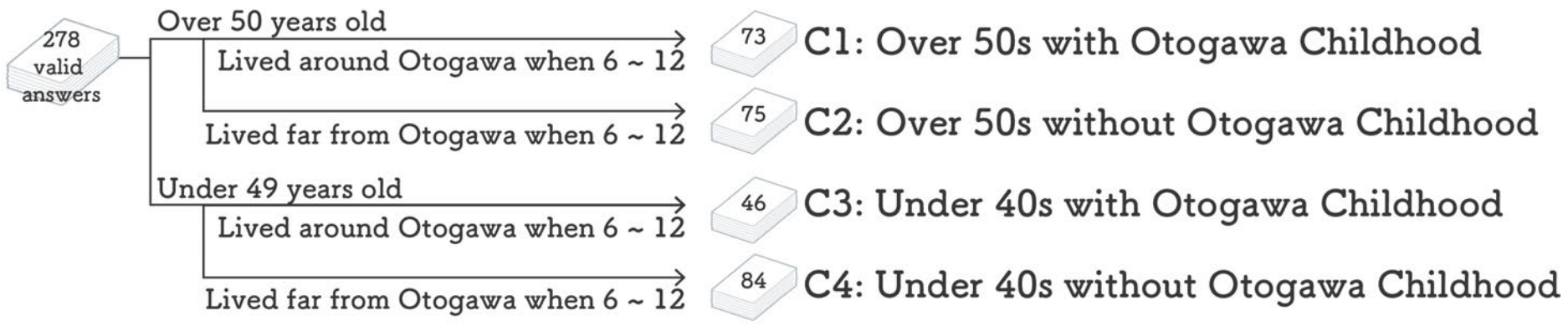→ We focus on before and after 1980s (turning point ①)

B. Clusters divided by their *lifestyle* and *interest*

Hypothesis: People who are working for or doing activities related "Otogawa" have different perception compared with who are not.
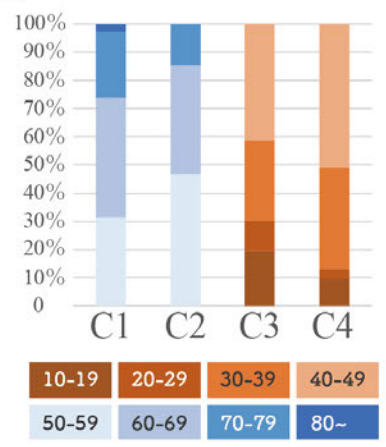
→ We try to discuss the effect of current river activities (turning point ②)

# 2-2A. Clusters divided by "age" and "childhood place"

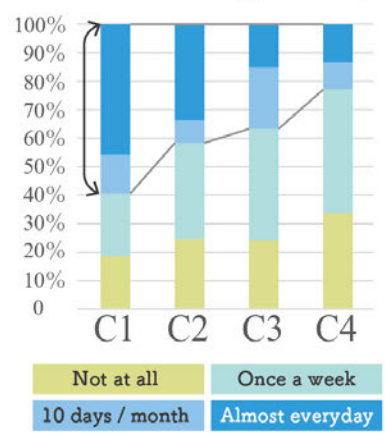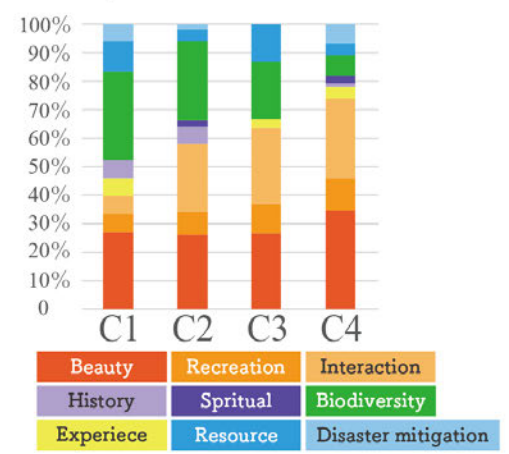Over 50s born around *Otogawa* experienced rivers before the development

278 valid answers

Over 50 years old
- Lived around Otogawa when 6 ~ 12 → 73 **C1: Over 50s with Otogawa Childhood**
- Lived far from Otogawa when 6 ~ 12 → 75 **C2: Over 50s without Otogawa Childhood**

Under 49 years old
- Lived around Otogawa when 6 ~ 12 → 46 **C3: Under 40s with Otogawa Childhood**
- Lived far from Otogawa when 6 ~ 12 → 84 **C4: Under 40s without Otogawa Childhood**

## ∗ Age distribution

| 10-19 | 20-29 | 30-39 | 40-49 |
| 50-59 | 60-69 | 70-79 | 80~ |

C1/C2 are elder, and
C3/C4 are younger.

## ∗ River viewing frequency

| Not at all | Once a week |
| 10 days / month | Almost everyday |

People in C1 see rivers more
often than who in C3 or C4.

## ∗ Emphasized function

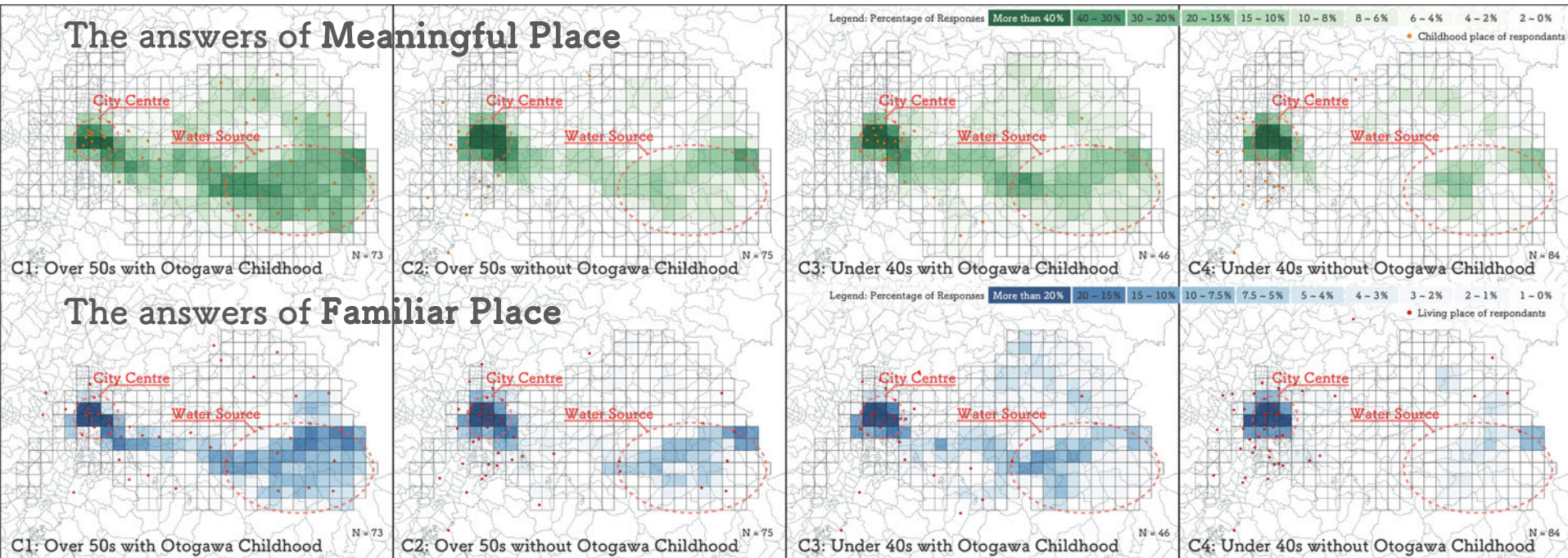| Beauty | Recreation | Interaction |
| History | Spritual | Biodiversity |
| Experiece | Resource | Disaster mitigation |

There is
no clear differences.

# 3-A. Results: the tendency of Meaningful Places in each cluster

To compare the characteristics of answers in each cluster, we traced their answers on QGIS system, then overlap and count the response rate in each mesh (1km size).



The answers of **Meaningful Place**

Legend: Percentage of Responses | More than 40% | 40 ~ 30% | 30 ~ 20% | 20 ~ 15% | 15 ~ 10% | 10 ~ 8% | 8 ~ 6% | 6 ~ 4% | 4 ~ 2% | 2 ~ 0%
• Childhood place of respondents

C1: Over 50s with Otogawa Childhood (N = 73)
C2: Over 50s without Otogawa Childhood (N = 75)
C3: Under 40s with Otogawa Childhood (N = 46)
C4: Under 40s without Otogawa Childhood (N = 84)

The answers of **Familiar Place**

Legend: Percentage of Responses | More than 20% | 20 ~ 15% | 15 ~ 10% | 10 ~ 7.5% | 7.5 ~ 5% | 5 ~ 4% | 4 ~ 3% | 3 ~ 2% | 2 ~ 1% | 1 ~ 0%
• Living place of respondents

C1: Over 50s with Otogawa Childhood (N = 73)
C2: Over 50s without Otogawa Childhood (N = 75)
C3: Under 40s with Otogawa Childhood (N = 46)
C4: Under 40s without Otogawa Childhood (N = 84)

### Findings

・River around City Center is meaningful for most people, and no difference among clusters.

・The distribution of meaningful place and familiar place looks similar in each cluster.

・In C1 (over 50s and born around Otogawa), answers were distributed wider than the others.

# 4-A. Distance between

To understand the reasons of the difference among clusters,
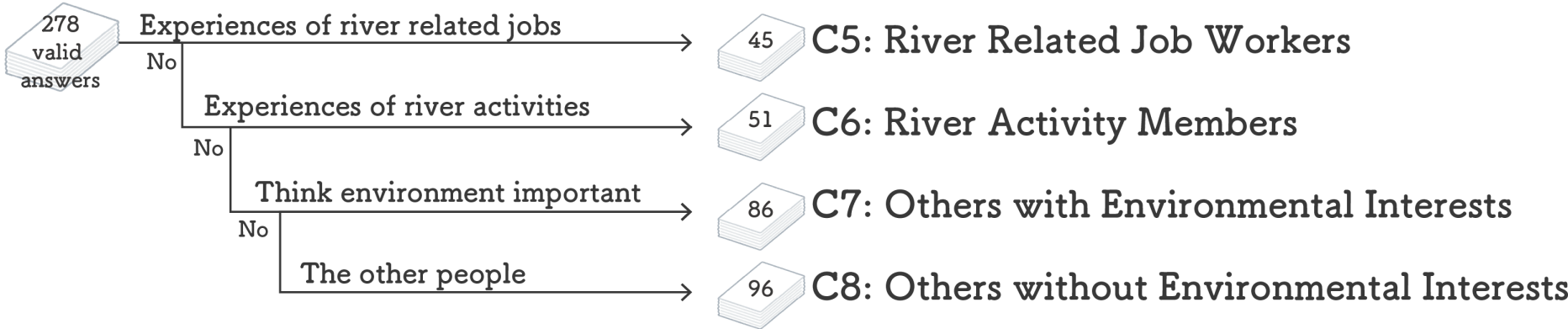we calculated the distance between living place and meaningful places.

Minimum distance

Maximum distance

Living Place

Answering Places
(Meaningful/Familiar)
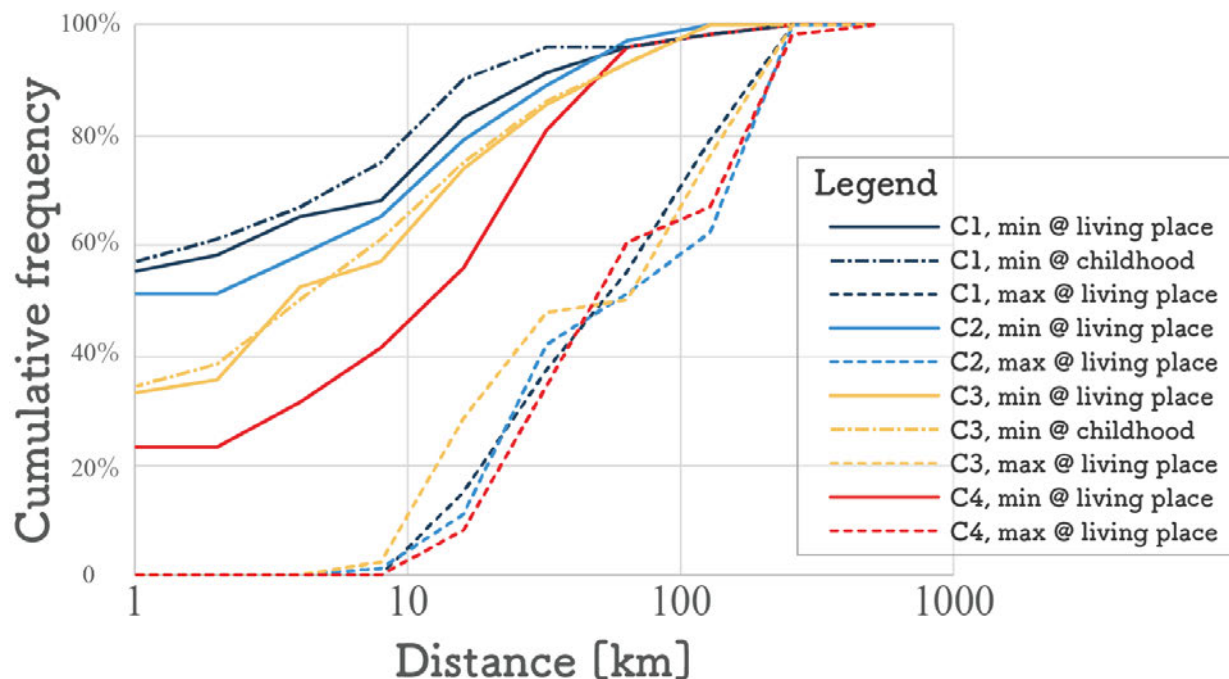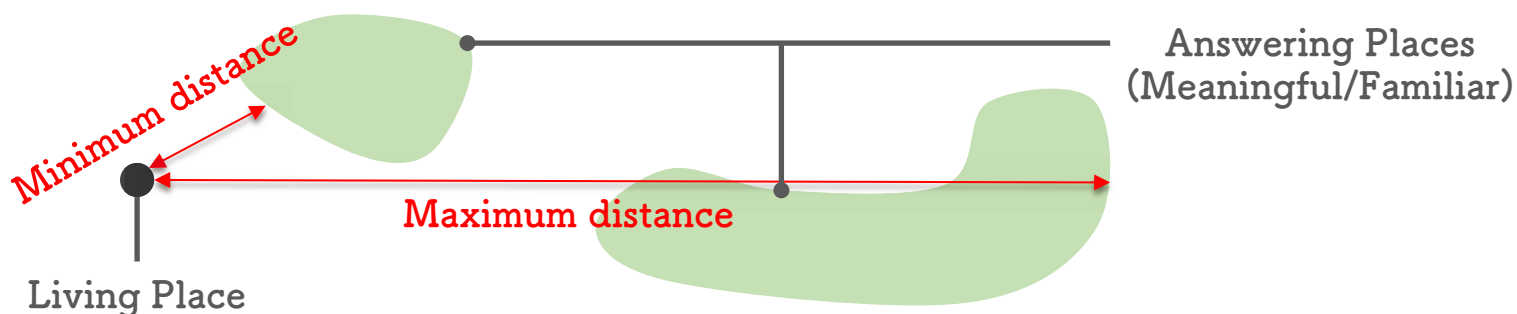
*Findings

Minimum distance are varied;
people in C1 tended to answer
the spatially close area, but
people in C3 or C4 answered
more far areas.

In 1980s, the accessibility of
rivers declined, and people
lost their images of rivers
around living areas, using
specific accessible places.

Cumulative frequency

100%

80%

60%

40%

20%

0

Distance [km]

1   10   100   1000

Legend
— C1, min @ living place
—·— C1, min @ childhood
---- C1, max @ living place
— C2, min @ living place
---- C2, max @ living place
— C3, min @ living place
—·— C3, min @ childhood
---- C3, max @ living place
— C4, min @ living place
---- C4, max @ living place

# 2-2B. Clusters divided by "lifestyle" and "interest"

The trends of people's interest about rivers are different between workers and activity members, so we divided other people by their interests.
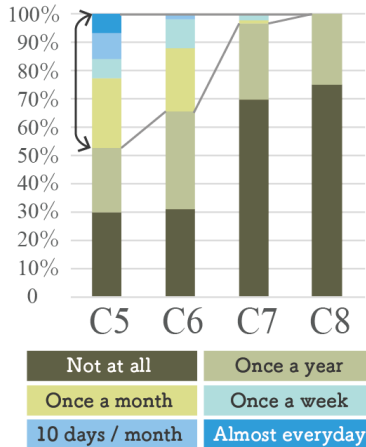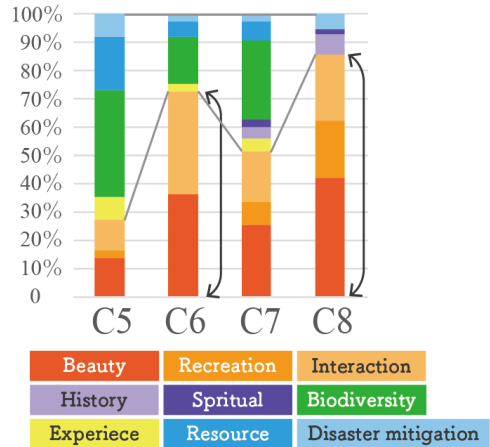
278 valid answers

Experiences of river related jobs → 45 **C5: River Related Job Workers**

No → Experiences of river activities → 51 **C6: River Activity Members**

No → Think environment important → 86 **C7: Others with Environmental Interests**

No → The other people → 96 **C8: Others without Environmental Interests**

## * Age distribution

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0

C5 C6 C7 C8

| 10-19 | 20-29 | 30-39 | 40-49 |
| 50-59 | 60-69 | 70-79 | 80~ |
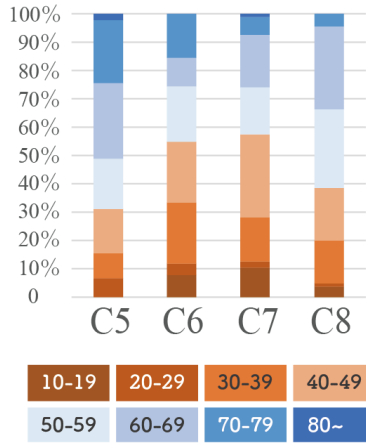
There is no clear differences.

## * River using frequency

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0

C5 C6 C7 C8

| Not at all | Once a year |
| Once a month | Once a week |
| 10 days / month | Almost everyday |

People in C5 or C6 use rivers much more often.

## * Emphasized function

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0

C5 C6 C7 C8

| Beauty | Recreation | Interaction |
| History | Spritual | Biodiversity |
| Experiece | Resource | Disaster mitigation |

C8 and also C6 tend to think beauty/interaction important.

# 3-B. Results and Findings



The answers of **Meaningful Place**

Legend: Percentage of Responses | More than 40% | 40 ~ 30% | 30 ~ 20% | 20 ~ 15% | 15 ~ 10% | 10 ~ 8% | 8 ~ 6% | 6 ~ 4% | 4 ~ 2% | 2 ~ 0%
• Childhood place of respondants

City Centre | Water Source

C5: River Related Job Workers — N = 45
C6: River Activity Members — N = 51
C7: Others with Environmental Interests — N = 86
C8: Others without Environmental Interests — N = 96

The answers of **Familiar Place**

Legend: Percentage of Responses | More than 20% | 20 ~ 15% | 15 ~ 10% | 10 ~ 7.5% | 7.5 ~ 5% | 5 ~ 4% | 4 ~ 3% | 3 ~ 2% | 2 ~ 1% | 1 ~ 0%
• Living place of respondents

Not familiar, but Meaningful

C5: River Related Job Workers — N = 45
C6: River Activity Members — N = 51
C7: Others with Environmental Interests — N = 86
C8: Others without Environmental Interests — N = 96

Legend
- C5, min @ living place
- C5, max @ living place
- C6, min @ living place
- C6, max @ living place
- C7, min @ living place
- C7, max @ living place
- C8, min @ living place
- C8, max @ living place

Cumulative frequency vs Distance [km]

＊Findings

The tendency of minimum distances are similar, but maximum distances are differed; people in C8 tend to answer only around their living areas, and others answered wider.

Recently, some people grow their environmental awareness through river activities, and percept wider areas in the catchment meaningful.

# 5. Conclusion: Hypothesis on the Trends of people's perception
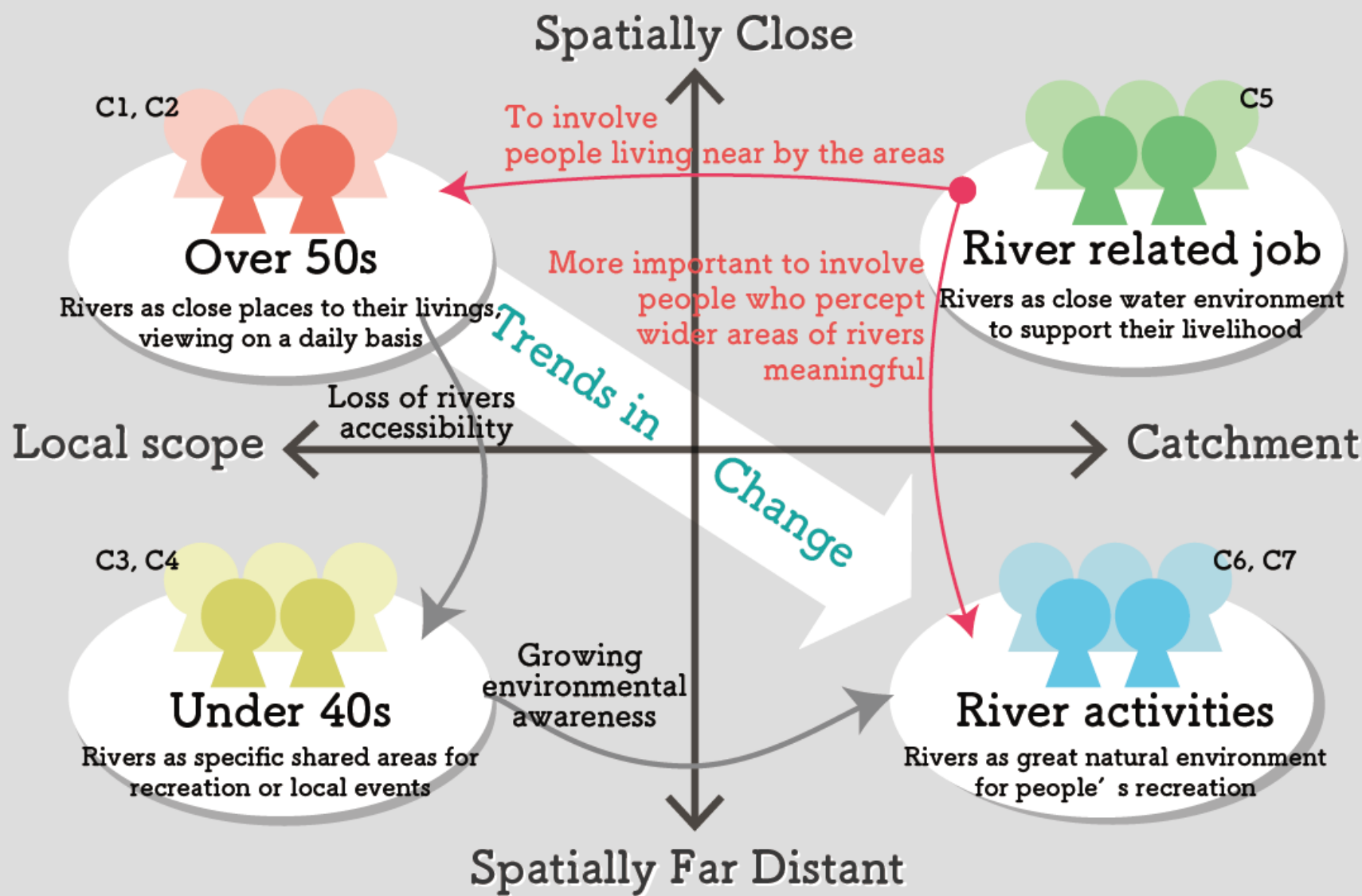
Next step: do some interviews to understand the background of perception.