



Online Behavioral Experiments in the LISS panel

using the **oTree** open source software tool

Joris Mulder
LISS coordinator
Senior researcher



Centerdata's core activities



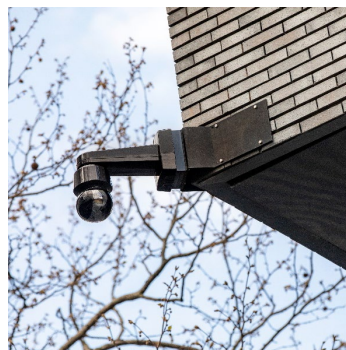
Policy Research & Analytics

Forecast Labour Market (Education)



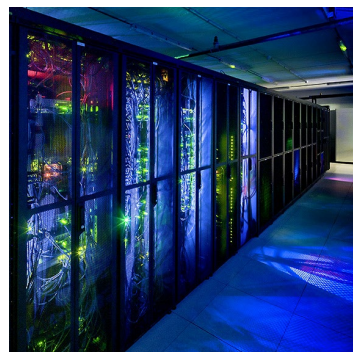
Survey Research

Online (panel) surveys
Target groups
Experiments
Data dissemination



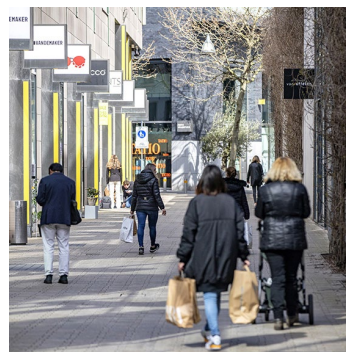
Data Science

Machine learning
Deep learning
Text analytics
Data maturity
Data visualisation



IT

Software Development



Consumer Research

Behavioural Research

non-profit institute,
~ 50 colleagues &
student assistants

works for and with

- academic community
- policy makers
- government
- European Commission
- ESS, SHARE, EVS, CRONOS





What is the LISS panel?

- Online **longitudinal** household panel
- **7,500 panel members** (16+) from 5,000 households
- Operational since 2007

Online surveys and experiments

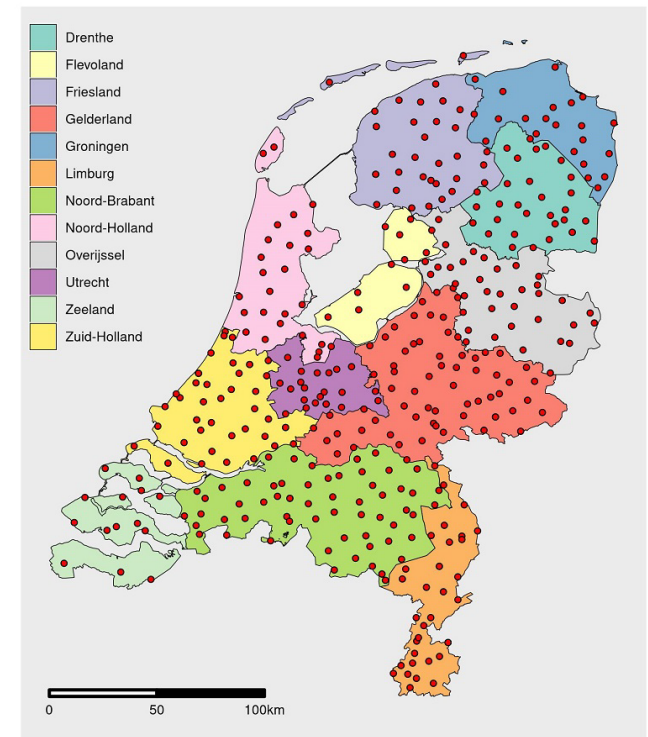
- Panel members complete **surveys every month**
- Incentive of **€ 2.50 for 10 minutes** completion time
- Scientific, policy or socially relevant research: **non-commercial**

Representative

- **Probability based** samples, drawn by Statistics Netherlands (CBS)
- Loyal panel members: **high response (70-80%)**
- Low attrition (10% yearly), bi-annual refreshment P2W, F2F
- **Non-internet households** included → simPC

Additional unique features

- Panel management department: **help and technical support**
- All collected data in the **LISS Data Archive**
- LISS data can be **merged with CBS microdata**



The logo consists of a yellow speech bubble with a white outline. Inside the bubble, the word "LISS" is written in a bold, black, sans-serif font, and the word "panel" is written in a smaller, black, sans-serif font directly below it.

LISS
panel

Research in the LISS panel

Research in the LISS panel



Longitudinal annual LISS Core Study

Under Centerdata management

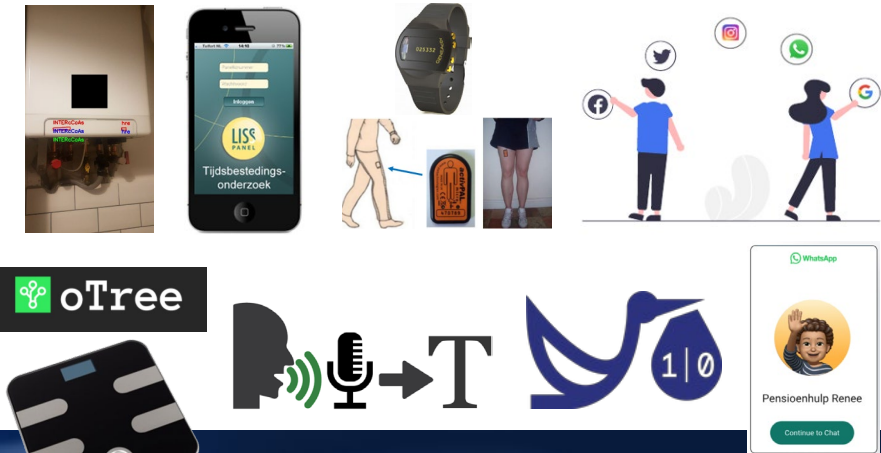
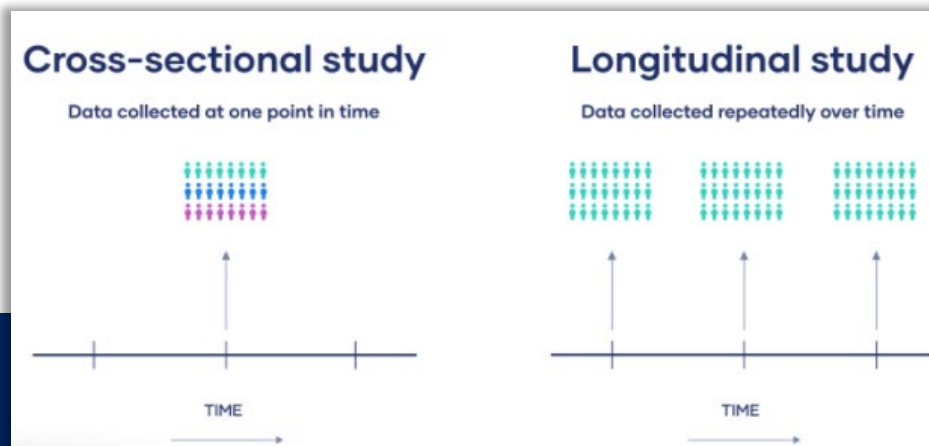
LISS Core Study

- 2 Health
- 3 Religion and Ethnicity
- 4 Social Integration and Leisure
- 5 Family and Household
- 6 Work and Schooling
- 7 Personality
- 8 Politics and Values
- 9 Economic Situation: Assets
- 10 Economic Situation: Income
- 11 Economic Situation: Housing

Open for researchers collecting new data

Budget required
ODISSEI LISS annual Call for Proposals

Innovative and sensory studies



Research in the LISS panel



Longitudinal annual
LISS Core Study

Under Centerdata
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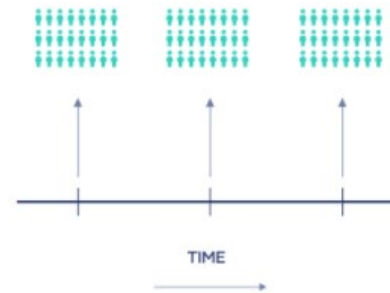
Cross-sectional study

Data collected at one point in time



Longitudinal study

Data collected repeatedly over time



Innovative and sensory
studies



Research in the LISS panel



**Longitudinal annual
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**Under Centerdata
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**Innovative and sensory
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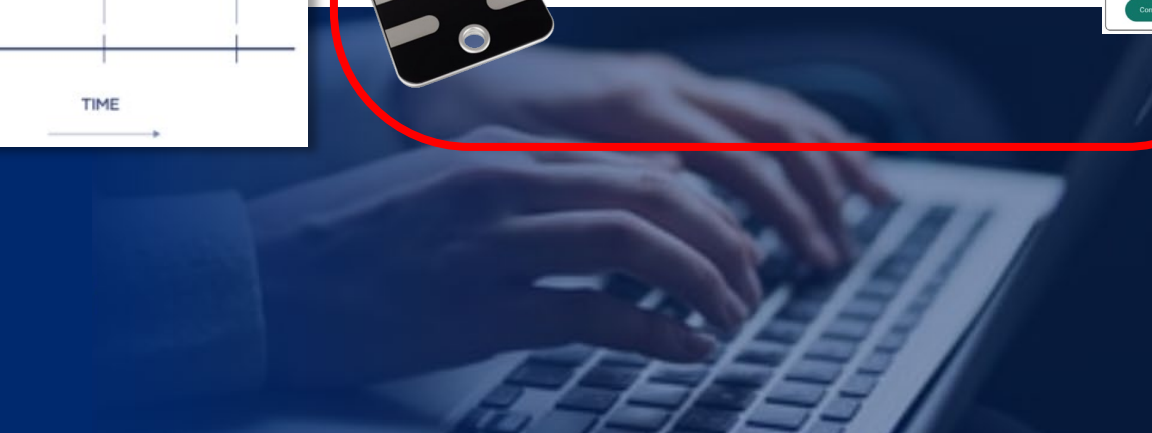
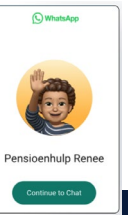
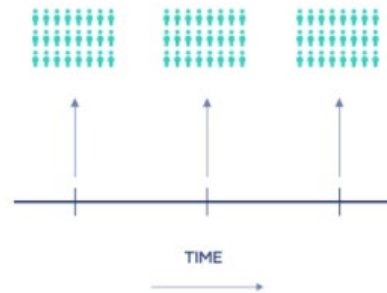
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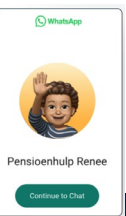
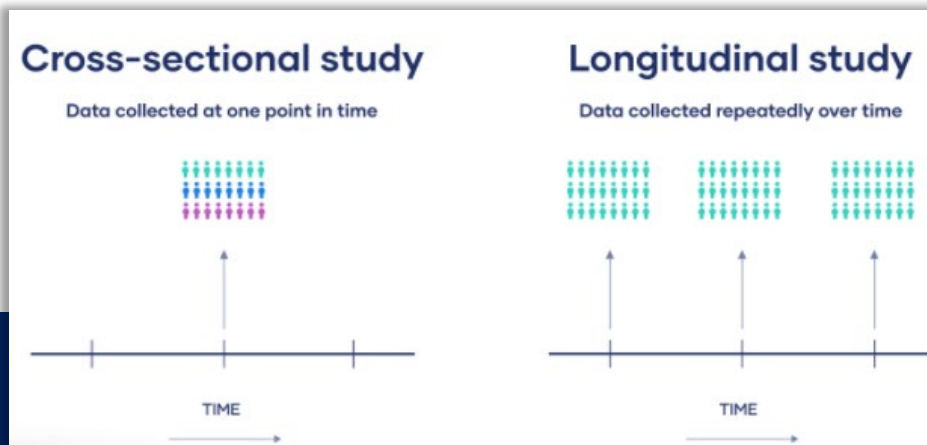
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What is oTree?

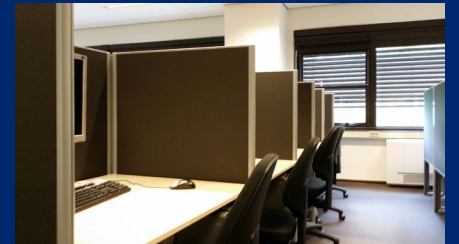
Platform for behavioral research and interactive tasks and experiments

- Python based
- Open source software tool
- Multiplayer strategy games
 - Prisoner's dilemma
 - Public goods game
 - Coalition game
 - Auctions
- Interactive behavioral experiments
 - Economics, psychology, sociology, communication & politics, etc.

		B	
		 B stays silent	 B testifies
A	 A stays silent	 R=1  R=1	 S=3  T=0
	 A testifies	 T=0  S=3	 P=2  P=2



Controlled lab setting



Online crowdsourcing



Lab setting versus online crowd platforms



High control
Low scaling

Student samples
Low diversity
Low representativity



oTree



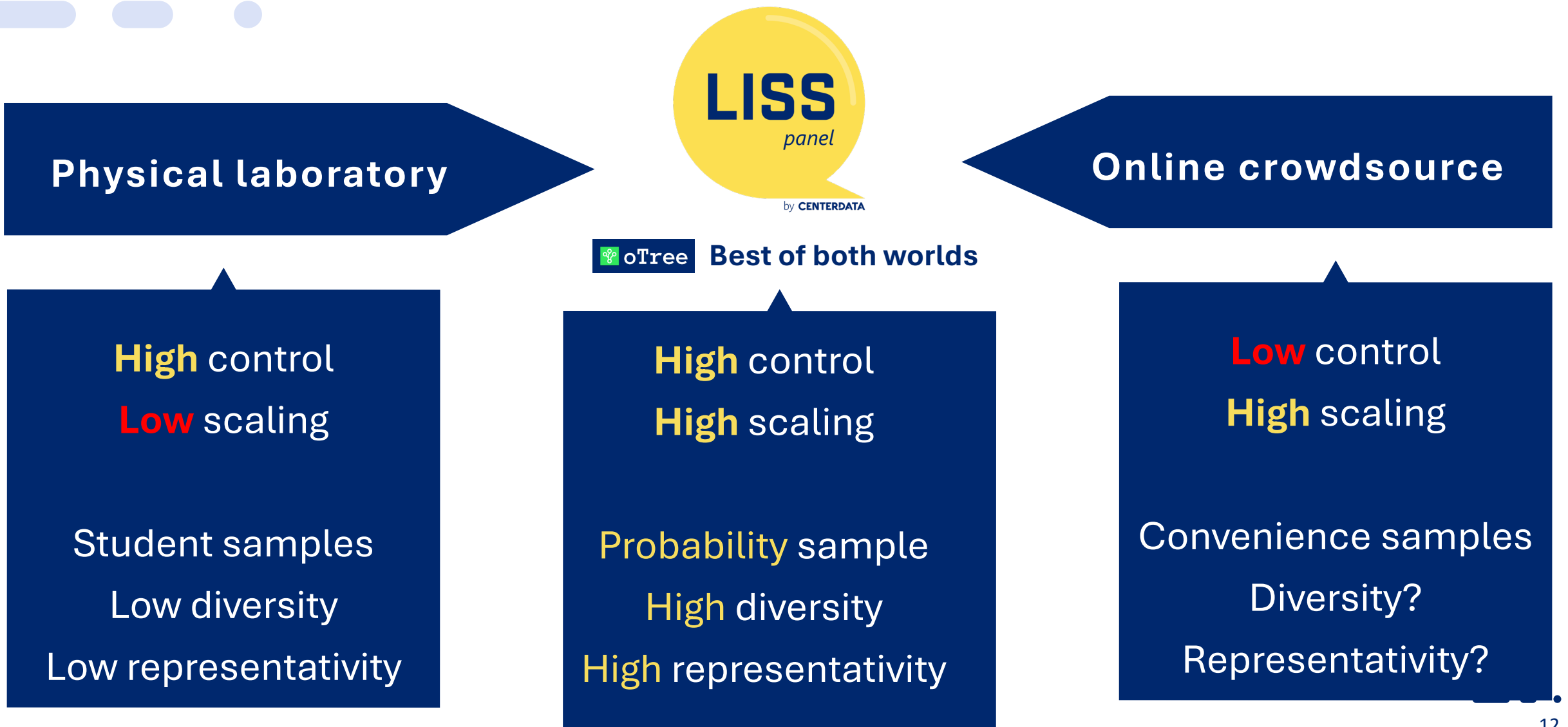
amazon
mechanical turk
 Prolific

Low control
High scaling

Convenience samples
Diversity?
Representativity?

Solution: OBELISS

Online Behavioral Experiments in the LISS panel



Physical laboratory



Online crowdsource

 Best of both worlds

High control
Low scaling

Student samples
Low diversity
Low representativity

High control
High scaling

Probability sample
High diversity
High representativity

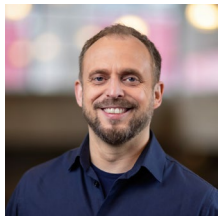
Low control
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Convenience samples
Diversity?
Representativity?

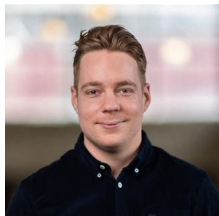
Goal, team and funding of OBELISS



- Building an **infrastructure** facilitating
 - **interactive behavioral experiments** in the LISS panel
 - based on **oTree interfaces**
- Partners and funders



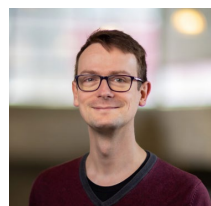
Joris Mulder
Centerdata



Stein Jongerius
Centerdata



Nick Wondergem
Centerdata



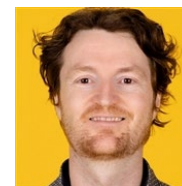
Luuk vd Vleuten
Centerdata



Marije Oudejans
Centerdata



Reggie Cushing
eScience Center



Rense Corten
Utrecht University



Rob Franken
Utrecht University

OBELISS advantages

Online Behavioral Experiments in the LISS panel



- Use of high-quality **probability samples, representative and diverse** on relevant characteristics
- Potential to run experiments with **large groups**
- **Experimental data** can be **enriched with survey data** from the LISS panel (before, during, and after experiments) and even **microdata** (Statistics Netherlands)
- **Panel data** can be used as part of **experimental designs** (e.g., composition of groups based on SES)
- Potential for **longitudinal** experiments

The logo for the LISS panel, featuring the text "LISS" in a bold, sans-serif font above the word "panel" in a smaller, lowercase font. The text is contained within a yellow speech bubble shape with a white outline and a small tail pointing towards the bottom right. The background of the slide is dark blue with a pattern of white dots and thick white curved lines forming a large, abstract shape on the left side.

LISS
panel

Coalitions in transportation game



Showcase: transportation game

- International supply chain optimisation (Evofenedex)
- **Collaboration** between businesses
 - CO² reduction, less traffic, share personnel and transport
- **Compose**: platform for matching business profiles
- **Limitation**: not enough registrations
 - oTree experiments to study coalition behavior and get more registrations



evofenedex

Cantiani, A., van Beest, I., Cruijssen, F., Kant, G., & Erle, T. M. (2024). Perspective-taking predicts success in coalition formation. *European Journal of Social Psychology*, 54, 1364–1377. <https://doi.org/10.1002/ejsp.3091>

Coalition formation

(Wissink et al., 2022)

$$N = 200 \times 3 = 600$$

THE TRANSPORT GAME



From
Amsterdam

Company A
(4 tons)



Company B
(3 tons)



Company C
(2 tons)



Big truck (9 tons - 5 tons minimum)



€ 9000



To Paris

PHASE I. PROPOSAL

Players make a coalition proposal. In this example, company B proposes an BC-coalition where B receives €4800 and C €4200.



PHASE II. PROPOSAL SELECTION

Players see the three proposals made in phase I and select one. In this example, companies B and C select B's proposal, and A their own proposal.



PHASE III. RESULTS

Lastly, players see the results. In this example, an BC-coalition is formed, hence company A is excluded.



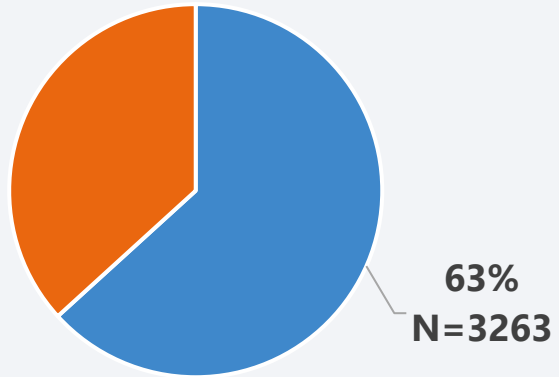
FIGURE 1 Experimental set-up of the Transport Game.



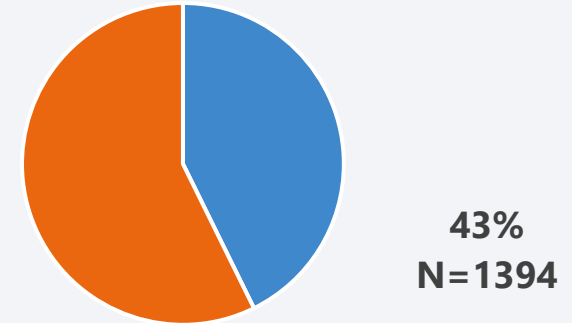
Response overview



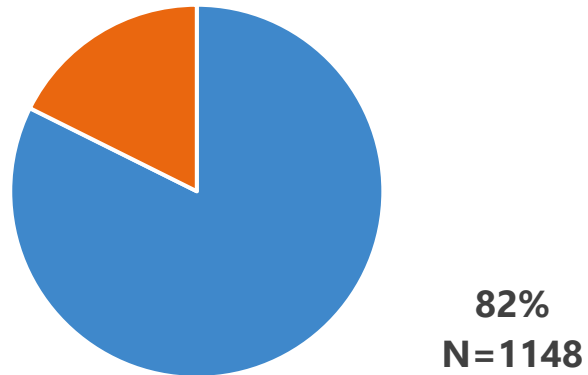
1. Responded to invitation



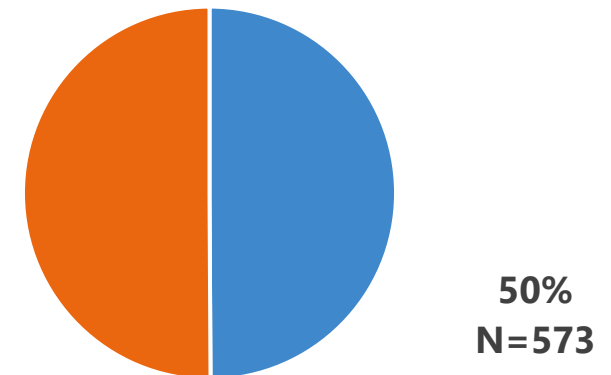
2. Agreed to take part in oTree experiment



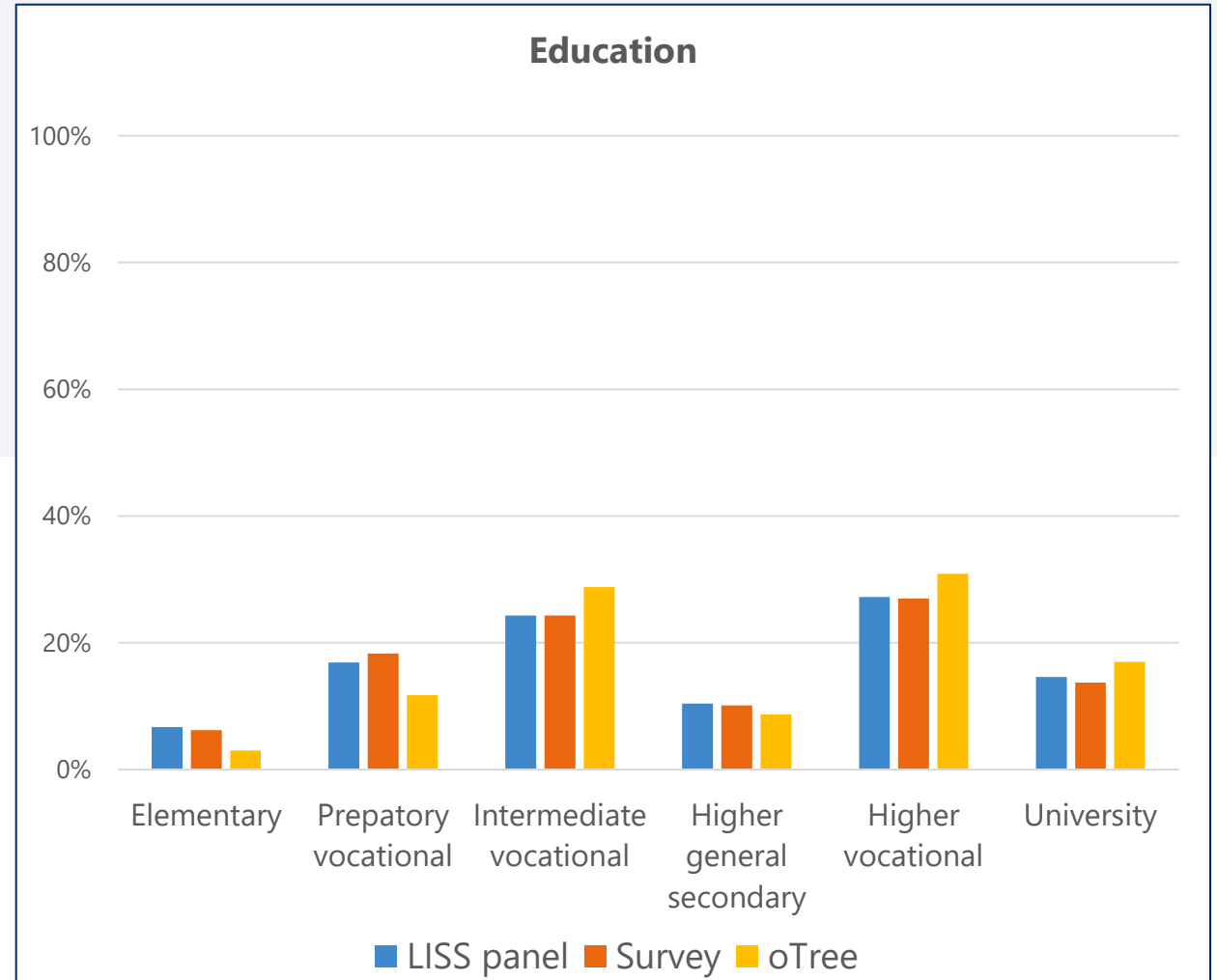
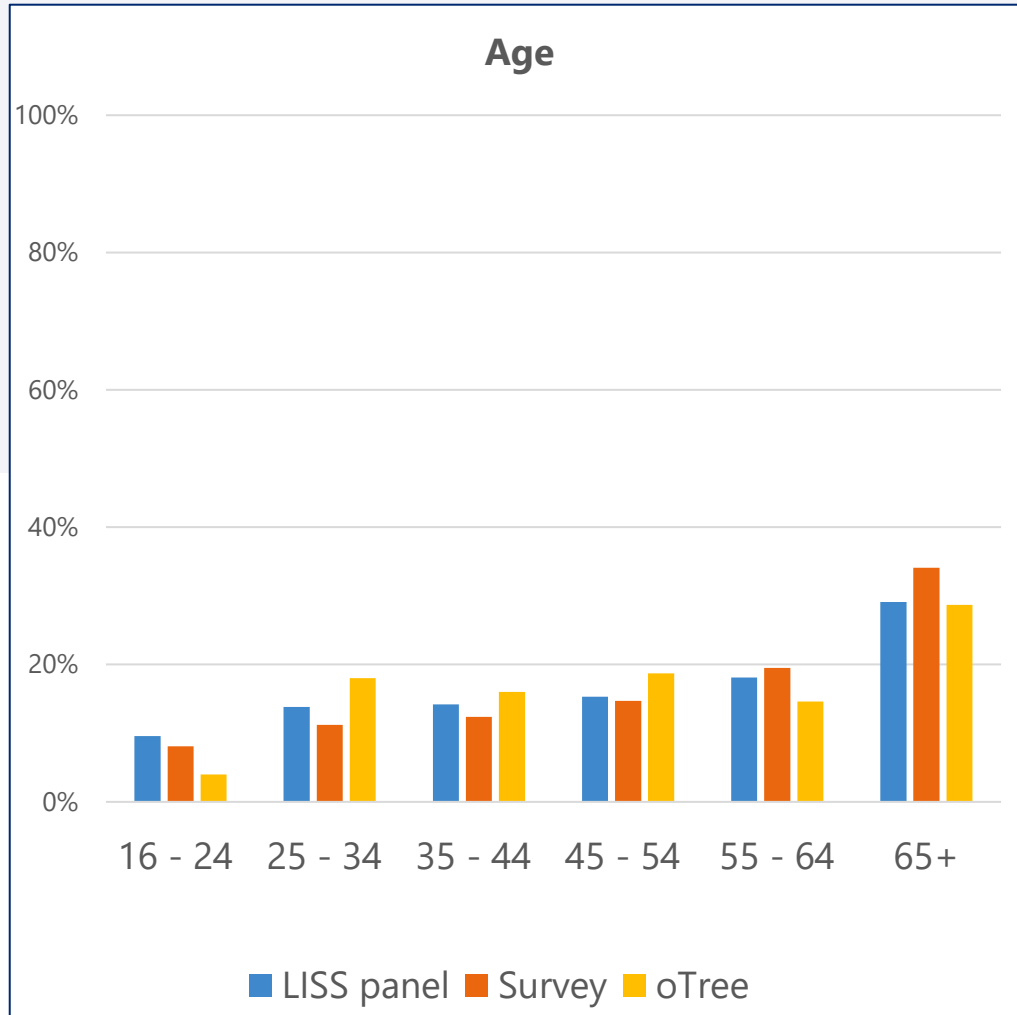
3. Visited the game



4. Completed



Response composition similar to surveys





OBELISS

Automated virtual waiting room

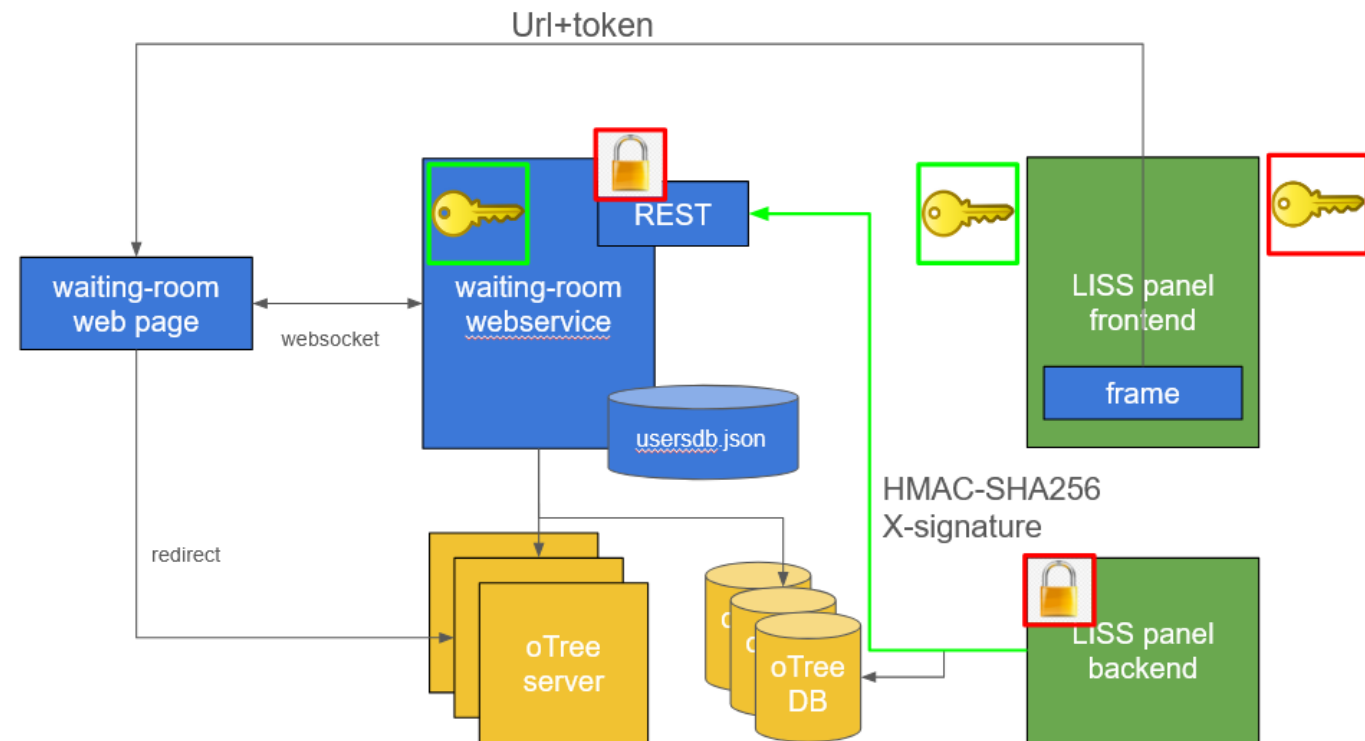
Virtual waiting room (lobby)



Key desirables

- Build a **virtual waiting room** (lobby)
- **Routing** respondents from LISS portal to the oTree environment (and back)
- **Grouping** respondents in groups as determined by the **experimental design**
- Handling **dropout**
- **Securely transfer respondent data** back and forth between the LISS database and oTree
- Host oTree experiments in a **robust** way

Architecture



Current status

- Facility fully developed
- Setup stress-tested using bots

<https://github.com/oTree-org/oTree/>

<https://github.com/obeliss-nlesc>



LISS PANEL

Vragenlijsten

Berichten

Vergoedingen

Verhinderd

Uw gegevens

Uitloggen

Beschikbare interactieve spellen

Hier vindt u alle interactieve spellen die voor uw klaar staan. Tijdens de geplande sessies is de wachttijd het kortst, maar u kunt altijd een spel starten als er genoeg spelers zijn. Klik op het spel wat u wil spelen om aan te sluiten in de wachtrij.

	Eerst volgende sessie	Einddatum
> Het verdeel spel (ca. 15 min.) [3/5 wachtend]	29-09-2023 19:00	02-10-2023 11:59
> Het gevangen dillema (ca. 9 min.) [1/5 wachtend]	29-09-2023 19:00	02-10-2023 11:59

In het gevangen dillema spel speelt u samen met 1 ander panellid. U wordt steeds gevraagd om een keuze te maken tussen samenwerken of tegenwerken. In totaal speelt u 10 rondes. Tijdens deze rondes veranderen er soms dingen, dit krijgt u steeds aan het begin van de ronde te zien.

Beloningen

Meedoen	€0,25
Afronden	€2
Bonus	€0 - €2

START

Druk op start om in de wachtkamer plaats te nemen

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Er zijn genoeg spelers om het spel te starten. Klik op "Gereed" om het spel te starten. Als alle spelers gereed zijn zal het spel starten!

GEREED

4/5 spelers zijn gereed

A public goods experiment



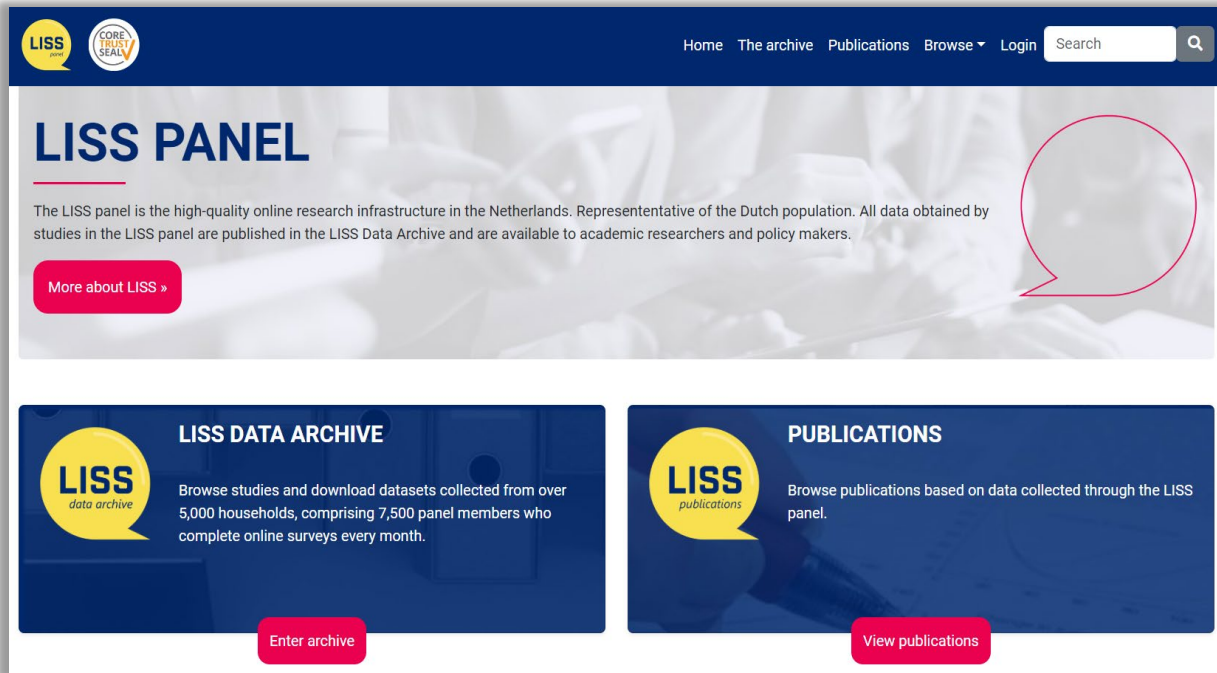
Next: Public Goods Game

N > 1200 at once

Condition	Group size*	Punishment	Number of groups	Players per group	Total number of players
1/2	Large	No/Yes	48	20	960
3/4	Small	No/Yes	48	5	240
Total					1,200

* Here, small group = 5 players; large groups = 20 players. Naturally, the sample size requirements changes when using different group sizes.

LISS Data Archive



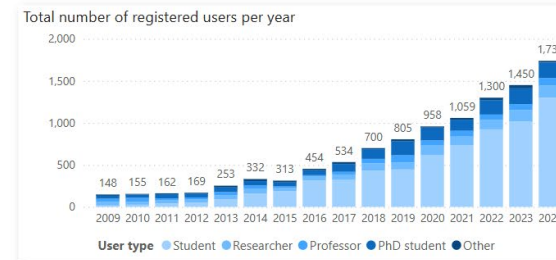
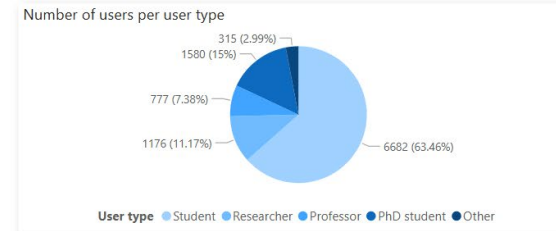
All data are easily available at no cost through the LISS Data Archive: <https://lissdata.nl>

- More than **10,000** researchers
- Over **1,200** publications based on LISS data
- Including about **800** articles in peer-reviewed journals and over **70** Ph.D. theses

LISS data archive - user statistics

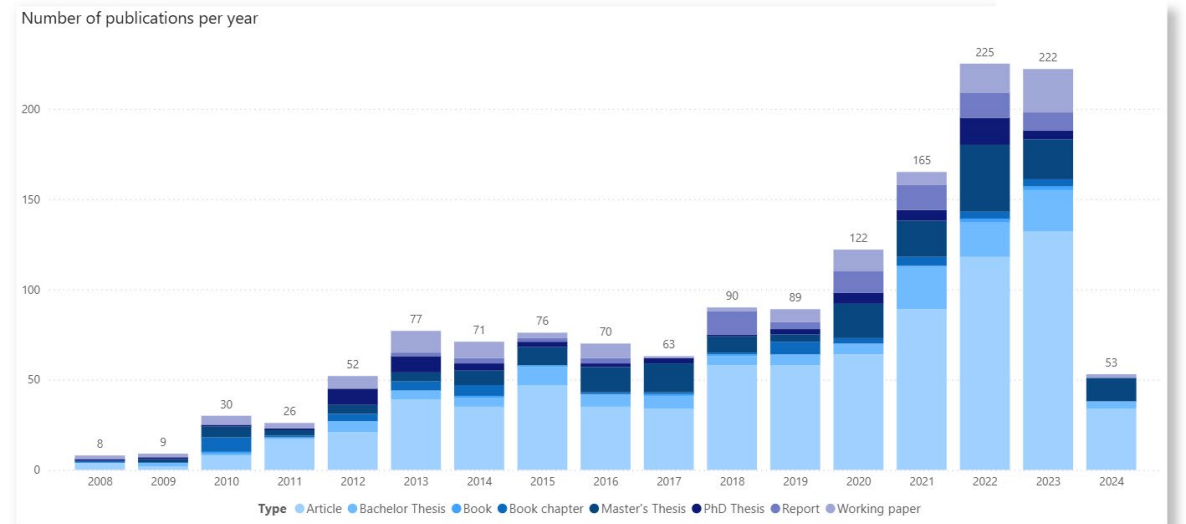
 **10,530**
Number of users

 **8,859**
Number of active users



LISS data archive - publication statistics

 **1,448**
Number of publications



Questions?

More information:

Centerdata:
www.centerdata.nl

LISS data archive (non commercial use):
www.lissdata.nl



CENTERDATA

research institute

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