

July 30, 2024

## Replication instructions

“Optimal multi-action treatment allocation:  
A two-phase field experiment to boost immigrant naturalization”  
by Achim Ahrens, Alessandra Stampi-Bombelli,  
Selina Kurer, Dominik Hangartner

### How to apply for data access

The data is owned by the City of Zurich and the Canton of Zurich. For confidentiality reasons, it is not publicly available. Data access requests should be directed to the City of Zurich's population office and the Canton of Zurich's municipal office.

Canton of Zurich:

Kanton Zürich  
Gemeindeamt  
Wilhelmstrasse 10  
8090 Zürich  
kontakt@gaz@ji.zh.ch

City of Zurich:

Stadt Zürich  
Bevölkerungsamt  
Personenmeldeamt  
Stadthaus  
Stadthausquai 17  
8001 Zürich  
personenmeldeamt@zuerich.ch

### Original data files and variables

1. File “Datenbekanntgabe Einbürgerungsversand 2021.xls”

Data description: Initial sample of immigrants

Number of rows: 6207

Variable names and descriptions:

Anrede	Salutation
Nachname	Surname
Amtlicher.Rufname	Legal first name

Vornamen	First name
Adresszusatz	Additional address field
Strasse	Street
Hausnummer	Apartment number
Postleitzahl	Postcode of residence
Ort	City of residence
Geschlecht	Gender
Geburtsjahr	Year of birth
Geburtsdatum	Date of birth
Einreisedatum	Date of entry in Switzerland
Zuzugsdatum	Date of entry in Zurich
Nationalität	Nationality

## 2. File "Gesuchseingäng SKZ 01.01.2020-05.08.2021.xls"

Data description: *Pre*-study naturalization applications between Jan 1, 2020 and Aug 5, 2021

Number of rows: 5499

Variable names and descriptions:

Aktenzeichen	File number
Status	Status of application
Rolle	Role of applicant
Geschlecht	Gender
Nachname	Surname
Lediger.Name	Surname
Rufname	Legal first name
Alle.Vornamen	All first names
Zusatz1	Address supplement
Strasse	Street
Postfach	Mailbox
PLZ	Postcode
Ort	City
Land	Country
Adress-Sperre	Blocked address (no information provided)
Geburtsdatum	Date of birth
Geburtsland.(Ausland)	Country of birth
Geburtsort.(CH)	Place of birth
Staatsangehörigkeit	Nationality
2..Staatsangehörigkeit	Second nationality
Weitere.Staatsangehörigkeiten	Additional nationalities
Bürgerort.(CH)	Place of origin
Zivilstand	Marriage status
Bemerkung.Zivilstand	Note marriage status
Trauungs-./Eintragungsdatum	Date of marriage
Wohnsitzfrist:.CH.seit	Residence period in Switzerland
Wohnsitzfrist:.ZH.seit	Residence period in Zurich

3. File "Gesuchseingänge SKZ 06.08.2021-21.09.2021.xls"

Data description: *Pre*-study naturalization applications between Aug 6, 2020 and Sep 21, 2021

Number of rows: 433

Variables: same as in 2.

4. File "01-Gesuchseingaenge\_09.10.2021\_31.01.2022 Zuerich.xlsx"<sup>1</sup>

Data description: Naturalization applications between October 11, 2021 and March 31, 2022 (wave 1 outcome part 1/2)

Number of rows: 1711

Variable names and descriptions:

GESCH_JAHR	Application year
GESCH_NR	Application number
EINGANG	Application date
NAME	Last name
VORNAME	First name
GEBURTSDATUM	Date of birth
GESCHLECHT	Gender
ZIVILSTAND	Marital status
PARTEIART	Applicant type
STRASSE	Street address
ZUSATZ	Additional address field
PLZ	Postcode
ORT	City
LAND_CODE	Country code
NATION	Nationality

5. Files "Brief 2. Versand\_versandbereit April 2022.xlsx", "Flyer rot 2. Versand\_versandbereit April 2022.xlsx", "Flyer blau 2. Versand\_versandbereit April 2022.xlsx, control\_group\_überprüft.xlsx"

Data description: Cleaned list of individuals who have not moved by treatment status; sent by the City of Zurich

Variable names and descriptions:

last_name	last name
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<sup>1</sup> Note that the file name was mislabelled as "31.01.2022" instead of "31.03.2022" and "09.10.2021" instead of "11.10.2021".

given_name	given name
first_name	first name
name_supplement	name additional
street	street address
house_number	house number
PLZ	postcode
city	city
gender	gender
dob	date of birth
nat	nationality
arrive_CH	arrival in Switzerland
arrive_ZH	arrival in Zurich

6. File "Gesuchseingänge\_01.04.2022\_09.05.2022 Zürich.xlsx"

Description: Naturalization applications between April 1, 2022 and May 9, 2022 (wave 1 outcome part 2/2)

Number of rows: 369

7. File "Gesuchseingänge\_09.05.2022\_09.12.2022 Zürich.xlsx"

Description: Naturalization applications between May 9, 2022 and December 9, 2022 (wave 2 outcome)

Number of rows: 2027

**Intermediary data files and variables**

1. FullSample\_withRandom\_applied\_movers.csv

Description: Wave 1 data with applications recorded by March 31, 2022

Number of rows: 5145

Variable names and descriptions:

treatment_1	Complexity treatment
treatment_2	Requirements treatment
treatment_3	Welcome treatment
see above for other variables	

**Replication code**

The shell script “run\_all.sh” calls each of the scripts below and keeps log files as records.

1. Code file “1\_randomization.R”

Description: This file prepares the randomization of all recent naturalization-eligible immigrants in the City of Zurich into different treatments (Complexity 20%, Requirements 20%, Welcome 20%, and Control 40%). Those allocated to treatment groups are part of Wave 1, whereas those allocated to the control group will receive treatments in Wave 2. Individuals who were exposed to earlier interventions, who do not meet the eligibility requirements, or who are currently in the application process are dropped.

Exports: FullSample\_withRandom.csv, dropped\_2019.csv, randomized\_allocation\_\*.csv (one file per treatment)

2. Code file “2\_data\_preparation.R”

Description: This file processes the outcomes for Wave 1 of the study. The outcome is whether or not an individual submitted an application between October 11, 2021, and March 31, 2022.

Exports: FullSample\_withRandom\_applied\_movers.csv

3. Code file “3a\_optimal\_treatment.R”

Description: Estimates heterogeneous treatment effects and assigns optimal treatments.

Imports: FullSample\_withRandom\_applied\_movers.csv

Exports: hetero\_both.png (Figure 2); descriptives\_wave1.tex (Table 1); policy\_tree\_R.svg (Figure 3); Treatment\_allocation\_April2022.csv

4. Code file “3b\_sim.R”

Description: Perform the validation exercise in Section 3.5.

Exports: comparison\_table.tex (Table 2)

5. Code file “4\_data\_preparation\_Dec22.R”

Description: Processes second wave (exploitation phase) data

Imports: Treatment\_allocation\_April2022.csv

Exports: FullSample\_withRandom\_applied\_full\_wave2.csv,

6. Code files “5\_prep\_final\_analysis.R”, “5\_prep\_final\_analysis\_robust.R”

Description: Export data in CSV format for analysis in Stata.

Exports: Final\_for\_analysis.csv, Final\_for\_analysis\_robustness.csv

7. Code files "6\_final\_analysis.do", "6\_final\_analysis\_logit.do",  
"6\_final\_analysis\_robust.do"

Description: Perform main analysis, and robustness checks for the appendix.

Exports: main\_output.tex (Table 3), main\_output\_robustness.tex (Table A.4),  
main\_output\_logit.tex (Table A.5)