

Academy  
of Applied Arts +

# Open Data

2026  
Exhibition



UNIRI



Academy of Applied Arts  
University of Rijeka  
March, 2026

# About Exhibition

The works in this exhibition were made by first- and second-year students of the graduate programme of Visual Communication and Graphic Design at the Academy of Applied Arts in Rijeka, during the winter semester of 2025/2026. They were produced as coursework in two newly introduced courses, Data Visualization A and Data-Grounded Design.

The exhibition opened on 11 March 2026, as part of International Open Data Day, an annual global event held each March that promotes the use and availability of freely accessible public data. This is the first time the Academy has participated. Every project in this exhibition uses data as its primary material, whether publicly available or personally collected. Open data is no longer just a concern for developers and policymakers. At the Academy, five new courses now treat it as a primary material for design.

# About Courses

The works in this exhibition come from the first and third course in the sequence. Together, all five form a vertically integrated, data-centered stack across the four semesters of the graduate programme.

- SEMESTER I**    **Data Visualization A (4 ECTS)**  
Foundations of data visualization: how to collect, clean, and structure data from diverse sources, and how to turn it into clear, well-designed visual forms. From perception and cognition to color, composition, and data storytelling.
- SEMESTER II**    **Data Visualization B (4 ECTS)**  
Builds on the first course by expanding into network diagrams, cartography, and interactive web-based visualizations. Students learn to work with spatial data, build animated and interactive visualizations, and construct scrollytelling narratives driven by data.
- SEMESTER III**    **Data-Grounded Design (5 ECTS)**  
Experimental and research-driven design with data at its core. Students explore physical visualizations, 3D data environments, immersive experiences, and transmedia performances — while critically examining the ethical, social, and cultural dimensions of a data-driven civilization.
- SEMESTER IV**    **Gamification Design (4 ECTS)**  
Creative coding, game mechanics, and interactive narrative design. Students build playable experiences that integrate data, sound, and autonomous agents, exploring how game mechanics shape behavior and how procedural rhetoric turns play into argument.
- Artificial Intelligence Tools B (3 ECTS)**  
A critical and practical exploration of AI in the designer's workflow. Students learn to use advanced AI tools while examining their limitations, biases, and the irreplaceable role of human judgment in creative work.

Courses lead: Marko Bralić, nasl. umj. sur

Michael corners Archbishop in hall outside of meeting.

ARCHBISHOP  
Please, a little patience.  
This is a brief delay, nothing more.

MICHAEL  
(very coldly)  
I have always run my businesses on a very personal level. I regard my most important business dealings as personal relationships. I say this to you very clearly. You have betrayed me on a very personal level. Do you understand what I am saying?

Michael regards him with his cold eye and the Archbish very nervous.

MOVING VIEW  
Michael and his group are shown out. They walk without speaking, the MUSIC building.

```
# Lines to remove
REMOVE_MESSY = ['1B', '2A', '3A', '5A', '5B'] # >25% non-dominant
REMOVE_SMALL = ['4A', '13', '8'] # <20 trips per line
REMOVE = REMOVE_MESSY + REMOVE_SMALL
```

MICHAEL  
We are back with the Borgias.

```
df = df[~df['BrojLinije'].isin(REMOVE)].copy()
print(f'After removing {REMOVE} we kept {df["BrojLinije"].nunique()} lines')
df.to_csv('vozni_red2.csv', index=False)
```

Michael and his group walk for a while. BELLS are TOL People are gathering, crying over the death of the Pop VIEW on newspaper headlines, proclaiming the death.

```
# Now keep only trips that match the dominant route per Line+direction
keep_pids = set()
```

FADE OUT

```
for (b1, smjer), grp in df.groupby(['BrojLinije', 'Smjer']):
    trips = {}
    for pid, tgrp in grp.groupby('PolazakId'):
        ordered = tgrp.sort_values('RedniBrojStanice')
        route_str = '-'.join(ordered['RedniBrojStanice'].values)
        trips[pid] = route_str
    dominant_route = Counter(trips.items()).most_common(1)[0][0]
    for pid, rs in trips.items():
        if rs == dominant_route:
            keep_pids.add(pid)
```

```
df = df[df['PolazakId'].isin(keep_pids)].copy()
print(f'Kept {df["PolazakId"].nunique()} trips, {len(df)} rows')
df.to_csv('vozni_red2.csv', index=False)
print('Saved → vozni_red2.csv')
```

Line	PolazakId	Carb	Domaće	Procesiran	Count
	Foccacia Paprika	Carb	Domaće	Procesiran	30
	Paprika	Povrće	Italija	Neprocisii	20
	Luk	Povrće	Domaće	Neprocisii	5
	Tikvica	Povrće	Italija	Neprocisii	15
	Jaja	Protein	Lokalno	Neprocisii	20
	Šalša	Povrće	Domaće	Procesiran	10
V	Jabuka	Voće	Italija	Neprocisii	50
	Naranča	Voće	Španjolska	Neprocisii	50
9.1 D	Kiflice	Carb	Domaće	Procesiran	40
	Tvrđi sir	Protein	Hrvatska	Procesiran	20
	Jaja	Protein	Domaće	Neprocisii	40
R	Kiflice	Carb	Domaće	Procesiran	30
	Paprika	Povrće	Italija	Neprocisii	20

# Applied Arts for 21st century

The entire history of applied art rests on a single verb: to apply. It is natural that the verb became associated with its objects — materials, products, surfaces — because that is where the work was visible. But the verb was never really about the object. It was about the operation itself.

What does to apply actually mean? It means: to take something raw and make it legible to human beings.

That's it. That's what applied art has always been, from its very first day:

- Raw iron → a gate you can read  
(here is a boundary, here is an invitation)
- Raw fabric → a theatrical curtain that communicates  
(here grandeur begins)
- Raw pigment on paper → a poster that makes you understand an event at a glance
- Raw industrial form → a Bauhaus chair that makes function visible

The applied artist was never a lesser fine artist. The applied artist was the person who stood between the raw substrate of the world and human comprehension, and made the former accessible to the latter. The craftsman of legibility.

Now ask: what is the raw substrate of the world today?

It is no longer primarily iron, wood, and fabric. It is data, signals, feeds, metrics, algorithms, and vast accumulations of information that no human being can process unaided. The 21st century's fundamental crisis is not a shortage of information — it is a crisis of legibility. We are drowning in a world we cannot read.

And so the reinterpretation clicks:

Applied has always meant: making the raw world legible. When the world was made of materials, applied artists made materials legible. Now the world is made of data, and the need for the same operation — the same applying — is more urgent than it has ever been.



Date/time, "Feb 28, 2026 (Sat 09:54 AM UTC)"



Who Was the sheriff?  
— Sebastijan Žamarija

Data source  
Ruggles, S., et al. (2025).  
IPUMS USA, Version 16.0.  
IPUMS, Minneapolis. DOI:  
10.18128/DO10.V16.0

Row variable, countyicp, "County (ICPSR code, identified counties only)"  
Column variable, urban, Urban/rural status  
Control variable, stateicp, State (ICPSR code)  
Weight variable, perwt, Person weight  
Filter, "stateicp(32,49,35-37,61-68,71-73)", State (ICPSR code)  
Filter, pernum(1), Person number in sample unit

Statistics for stateicp = 32(Kansas)

,,1 Rural 2 Urban,ROW TOTAL  
Column percent,50,1.3,15.1,2.8  
Column percent,76,0.3,0.9  
Column percent,99,1.3,4.4  
Column percent,110,1.3,5.6,1.8  
Column percent,130,1.4,0.0,1.2  
Column percent,140,0.0,0.0  
Column percent,150,0.0,0.0  
Column percent,170,0.6,0.0,0.5  
Column percent,190,1.2,0.0,1.1  
Column percent,210,2.3,0.0,2.1  
Column percent,270,1.3,0.0,1.2  
Column percent,290,1.7,0.0,1.5  
Column percent,310,1.3,0.0,1.1  
Column percent,330,0.1,0.0,0.1  
Column percent,350,2.0,2.2,2.0  
Column percent,370,1.8,0.0,1.6  
Column percent,390,0.6,0.0,0.5  
Column percent,410,1.6,0.0,1.4  
Column percent,430,1.5,0.0,1.3  
Column percent,450,1.4,8.3,2.2  
Column percent,470,0.3,0.0,0.3  
Column percent,490,1.0,0.0,0.9  
Column percent,510,0.8,0.0,0.7  
Column percent,530,0.9,0.0,0.8  
Column percent,550,0.1,0.0,0.0  
Column percent,555,0.0,0.0,0.0  
Column percent,570,0.5,0.0,0.5  
Column percent,590,1.3,3.0,1.0  
Column percent,610,0.5,2.5,0.7  
Column percent,630,0.0,0.0,0.2  
Column percent,650,0.6,0.0,0.5  
Column percent,670,0.0,0.0,0.0  
Column percent,730,1.2,0.0,1.0  
Column percent,770,0.6,0.0,0.5  
Column percent,790,1.0,1.0,0.5  
Column percent,830,0.0,0.0,0.0  
Column percent,850,1.9,0.0,1.6  
Column percent,870,0.0,0.0,0.0  
Column percent,890,0.0,0.0,0.0  
Column percent,1010,0.1,0.0,0.1  
Column percent,1010,0.1,0.0,0.1

# Beneath the Surface: Questioning the Structures We Inherit

We live inside narratives we did not choose. The myths of the frontier, the grammar of cinema, the habits of a genre — these are not natural facts but built things, shaped by codes, conventions, and historical circumstance. The projects in this group approach culture as a dataset: something that can be opened, parsed, and read against itself. They ask what happens when we stop consuming narratives and begin interrogating the systems that produce them.

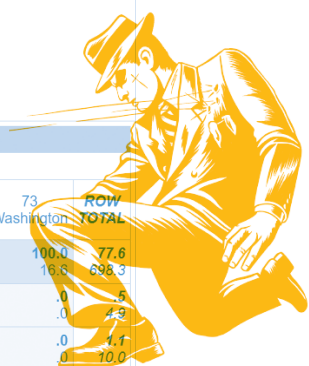
## SDA 4.1.4: Tables

Mar 08, 2026 (Sun 03:38 PM UTC)

Variables					
Role	Name	Label	Range	MD	Dataset
Row	nativity	Foreign birthplace or parentage	1-5		1
Column	stateicp	State (ICPSR code)	1-98		1
Weight	perwt	Person weight	.01-12.67		1
Filter	stateicp(32,49,35-37,61-68,71-73)	State (ICPSR code)	1-98		1
Filter	urban(1,9)	Urban/rural status	1-2		1
Filter	occ1950(782)	Occupation, 1950 basis(=Sheriffs and bailiffs)	0-999		1

## Frequency Distribution

Cells contain: -Column percent -Row percent	stateicp												ROW TOTAL
	32 Kansas	35 Nebraska	37 South Dakota	49 Texas	62 Colorado	63 Idaho	64 Montana	65 Nevada	66 New Mexico	68 Wyoming	71 California	73 Washington	
1: Native born, and both parents native born	100.0	75.2	23.9	89.6	77.8	44.6	.0	.0	66.7	100.0	82.5	100.0	77.6
2: Native born, and father foreign, mother native	.0	.0	.0	.0	.0	.0	.0	.0	10.9	.0	.0	.0	.5
3: Native born, and mother foreign, father native	.0	.0	.0	.0	.0	.0	.0	100.0	.0	.0	.0	.0	4.1
4: Native born, and both parents foreign	.0	.0	30.4	8.7	7.4	10.8	100.0	.0	22.3	.0	8.6	.0	9.3
5: Foreign born	.0	.0	19.6	25.1	10.2	4.2	5.1	.0	9.9	.0	9.8	.0	84.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ANAHEIM	87.8	100.0	100.0	289.2	337.7	39.1	5.1	10.0	44.4	9.3	114.1	16.6	899.6



Gangsters in Hollywood  
— Amra Levak

Data source  
Scripts: scripts.com, imsdub.com  
Subtitles: opensubtitles.org

Failed to parse JSON response: Unterminated string starting at: line 73 column 19 (char 2717)

Raw response: {  
"tropes\_found": [  
{

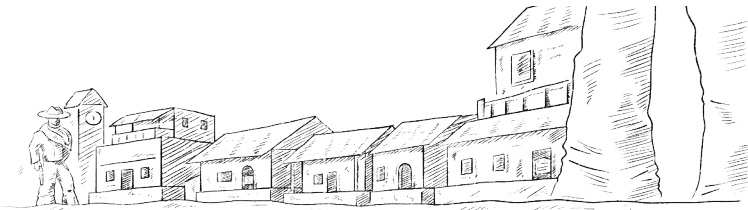
"id": 1,  
"name": "RESTAURANT ASSASSINATION",  
"confidence": 0.95,  
"evidence": "WE SEE TOMMY smash the gun into the side of BATTS's head. WE SEE TOMMY hit BATTS again and again as JIMMY continues to speak."  
},  
{  
"id": 6,  
"name": "HIT GONE WRONG",  
"confidence": 0.85,  
"evidence": "In the trunk light WE SEE the mattress cover squirming around. TOMMY suddenly smashes the shovel into th..."

Analyzing: The Freshman

Type: TRANS

Extracting text...

Text length: 49,300 characters

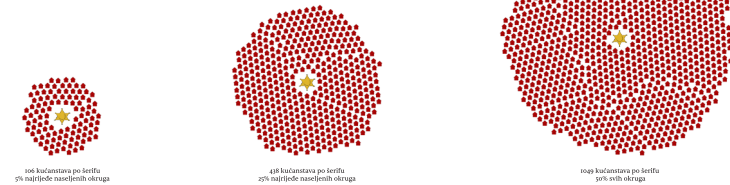


# Who Was the Sheriff?

Sebastijan Žamarija

## Omjer zakona i stanovnika

Nije u svim slučajevima bilo moguće da šerif posmatra svako kućarstvo u svom okrugu, kao što to često bude u Western filmovima. Ali povremeno podizao omjere se namati u kojima je okruga bilo moguće da šerif sa informacijama može zapamtiti, od okruga u manje kućarstava pa do onog u sredini, ispod kojeg se nalazi još polovica svih okruga.



## Tko je nosio značku?

Najviše osoba bili muškarci u dobi između 17 i 39 godina. Ako bi uveli deset prosječnih šerifa, troje od njih bili bi mlađi od 30, a troje bi ih bilo starije od 40.



Šerifi rođeni u SAD-u ( ● - jedan roditelj rođen u inozemstvu | ●● - oba roditelja rođena u inozemstvu)

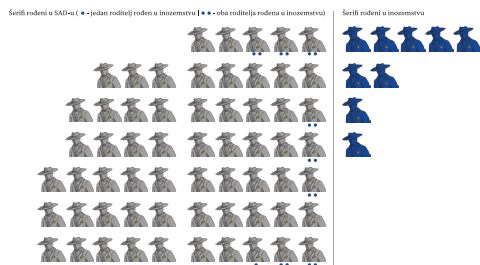
Šerifi rođeni u inozemstvu

## Njihovo podrijetlo

'No-American frontier' ovako je u državi. Podaci su pokazali da je mnogo šerifa bilo rođeno izvan SAD-a, primjerice u Japanu, Indiji, gdje je pada njih bilo rođeno izvan SAD-a, a većina ovih koji jesu imali su roditelje rođene u inozemstvu.

### Šerifi po podrijetlu

South Dakota	65
Nebraska	82
Colorado	138
California	114
Texas	233
Kansas	88
New Mexico	44



### Stanovnici po podrijetlu

South Dakota	96,698
Nebraska	391,106
Colorado	194,710
California	50,608,7
Texas	14,558,333
Kansas	893,156
New Mexico	119,818



## Njihova obitelj

Da li je šerif bio čovek izvan? U polu-obilasni, šerifa? Podaci su pokazali da je od deset prosječnih šerifa njih pet bilo rođeno u idu su imali djecu, jedan od njih je bio oženjen bez djece, troje ih nije bilo oženjeno, a jedan od njih je živio u prevoznici i salona.



The sheriff is one of the most recognizable figures in American myth — but myth is not a census record. The 1880 US data available through IP-UMS USA offers individual-level records unrestricted by modern privacy law, where variables can be freely combined and definitions built from scratch. This project constructs its own operationalization of the Wild West and the sheriff, then checks the legend against the data. How many households fell under his jurisdiction? Was he all-American, or did foreign-born men wear the badge? Did he rent a room above a saloon, or go home to a wife and children? Some of the myth holds. Some doesn't. But now you know which parts.





# My Data, My Agency: Reclaiming What We Already Produce

Ime	Datum	Obrok	Hrana	Tip hrane	Porijeklo	Procesiran	Udio
Stefani	8.1	D	Foccacia	Carb	Domaće	Procesiran	70
			Tvrđi sir	Protein	Hrvatska	Procesiran	15
			Salama Mi	Protein	Italija	Ultraproce	10
			Kis. Krasta	Povrće	Domaće	Procesiran	5
R			Foccacia	Carb	Domaće	Procesiran	30
			Paprika	Povrće	Italija	Neprociesi	20
			Luk	Povrće	Domaće	Neprociesi	5
			Šalša	Povrće	Italija	Neprociesi	15
			Jaja	Protein	Lokalno	Neprociesi	20
			Šalša	Povrće	Domaće	Procesiran	10
V			Jabuka	Voće	Italija	Neprociesi	50
			Naranča	Voće	Španjolska	Neprociesi	50
9.1	D		Kiflice	Carb	Domaće	Procesiran	40
			Tvrđi sir	Protein	Hrvatska	Procesiran	20
			Jaja	Protein	Domaće	Neprociesi	40
R			Kiflice	Carb	Domaće	Procesiran	30
			Paprika	Povrće	Italija	Neprociesi	20
			Luk	Povrće	Domaće	Neprociesi	5
			Tikvica	Povrće	Italija	Neprociesi	15
			Jaja	Protein	Lokalno	Neprociesi	20
			Šalša	Povrće	Domaće	Procesiran	10
V			Jabuka	Voće	Italija	Neprociesi	100
10.1	D		Foccacia	Carb	Domaće	Procesiran	70
			Tvrđi sir	Protein	Hrvatska	Procesiran	15
			Salama Mi	Protein	Italija	Ultraproce	10
			Kis. Krasta	Povrće	Domaće	Procesiran	5
R			Noodles	Carb	Italija	Procesiran	30
			Govedina	Protein	Lokalno	Neprociesi	20
			Mahune	Povrće	Hrvatska	Neprociesi	20
			Luk	Povrće	Domaće	Neprociesi	10

We generate data constantly — with every transaction, every meal, every commute. Corporations harvest it; governments aggregate it; algorithms learn from it. But rarely do we turn that same infrastructure of measurement toward ourselves, on our own terms. The projects in this group reclaim data as a personal and communal tool. They ask: if we already live in a data-driven civilization, what would it look like to actually use this fact — not for extraction, but for understanding, for connection, for agency?



PIVO  
 175  
 791  
 1549  
 1343  
 1446  
 1100  
 6229  
 292  
 226  
 308  
 252  
 1253

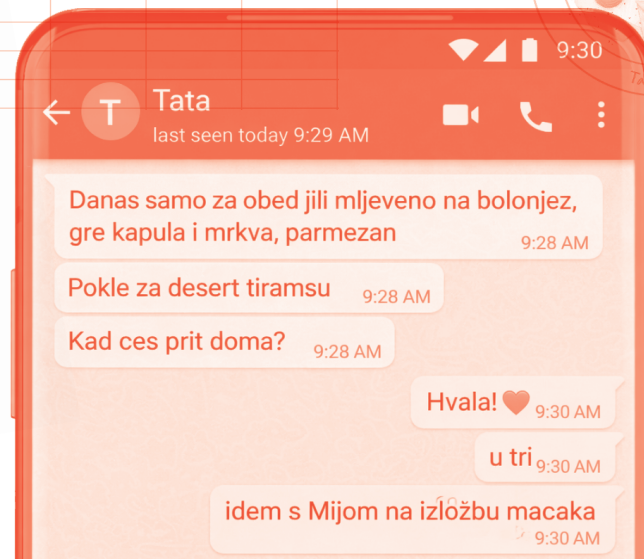
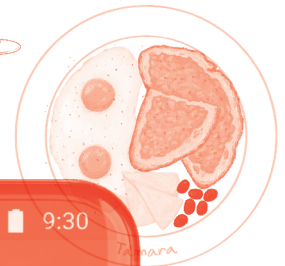
MINERALNA  
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 336  
 2227

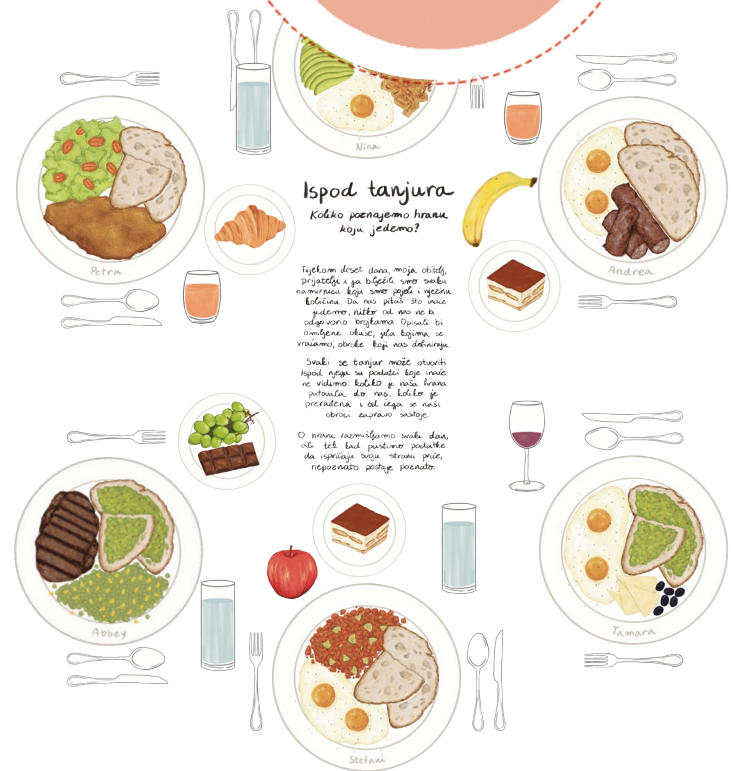
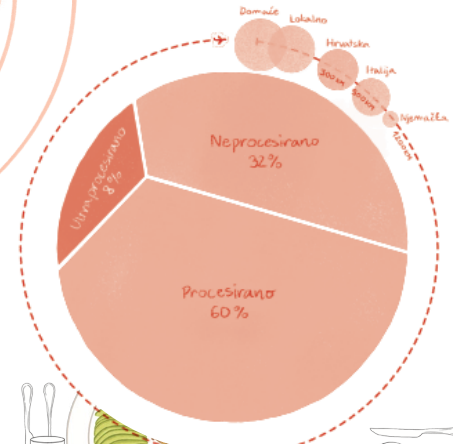
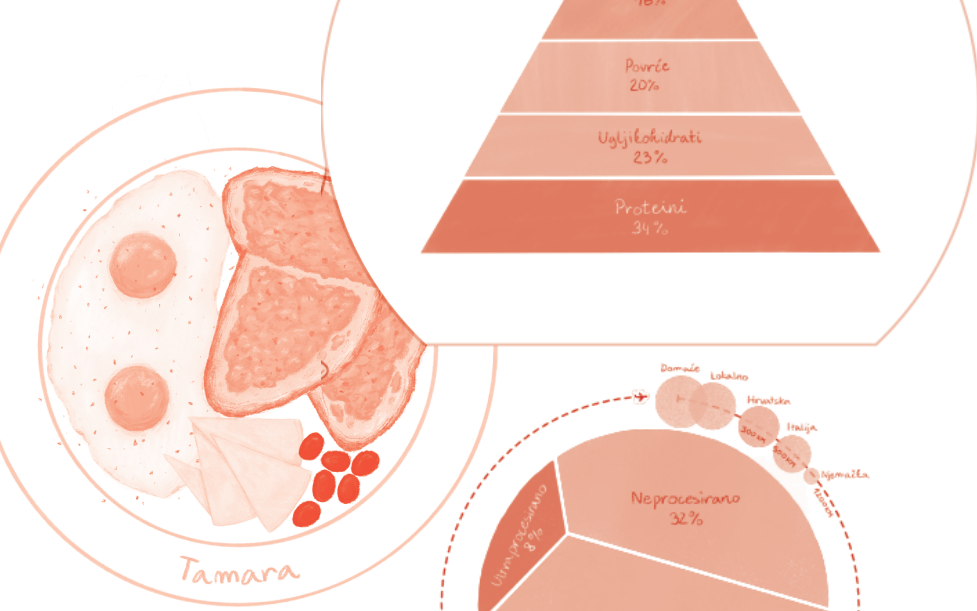
The 2024/2025  
Tourist Season  
— Antonio Petrovski

Data source  
Internal data, catering  
establishment "Puntica",  
Poreč.



Beneath the Plate  
— Stefani Darrer

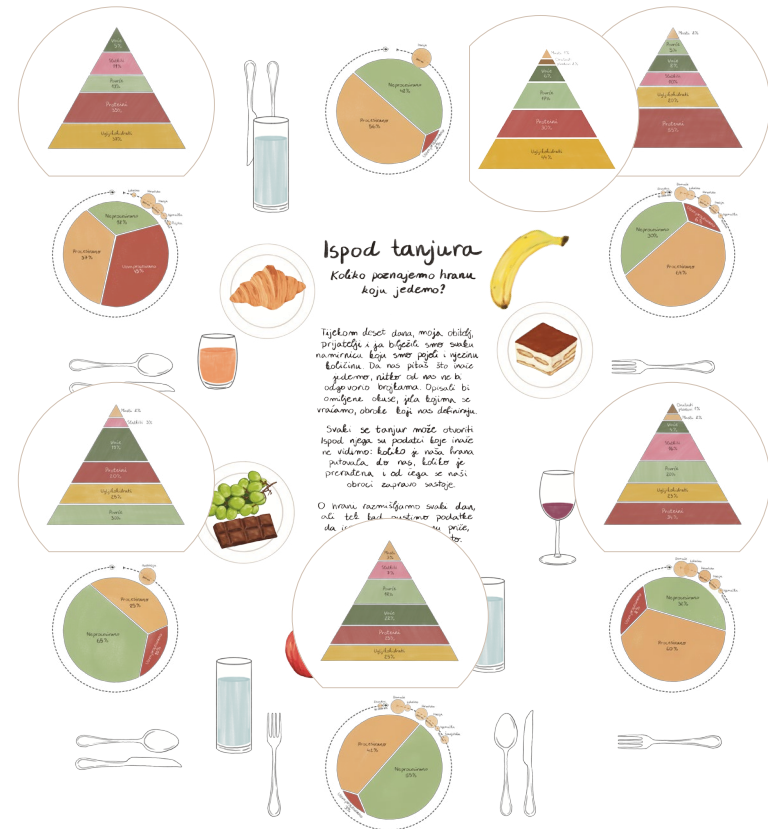




# Beneath the Plate

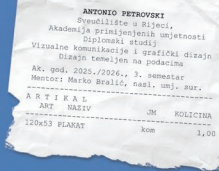
Stefani Darrer

How well do we really know the food we eat? Over ten days, the author's family and friends recorded every ingredient they consumed and its quantity. If asked beforehand what they usually eat, none of them would have answered in numbers. They would have described favorite flavors, familiar dishes, meals that define them. Each plate in this visualization can be opened. Beneath it lies what we normally never see: how far our food has traveled to reach us, how processed it is, and what our meals truly consist of. We think about food every day — but only when we let the data tell its side of the story does the unknown become known.



# Jedna turistička sezona 2024 / 2025

Vizualizacija prikazuje analizu sezonske potrošnje hrane u ugostiteljskom obrtu Puntica tijekom turističke sezone 2024./2025., temeljenu na stvarnim operativnim podacima.



6022 I PIVA  
30,2 M = zgrada od  
10 katova

## Lignje sa prilogom

NORMATIV PO JEDNOJ PORCIJI  
Lignje 250 g  
Krompir 50 g  
Bibina 30 g  
Lignji 14 kom



Lignje ukupno:  
1.836,5 porcija  
Svaka peta porcija u  
restoranu sadrži  
lignje.

## Čevapi sa prilogom

NORMATIV PO JEDNOJ PORCIJI  
Čevapi 300 g  
Krompir 100 g  
Umak 20 g



Čevapi ukupno:  
874 porcija

## Dagnje na buzaru

NORMATIV PO JEDNOJ PORCIJI  
Dagnje 500 g  
Kruh 100 g  
Umak 20 g



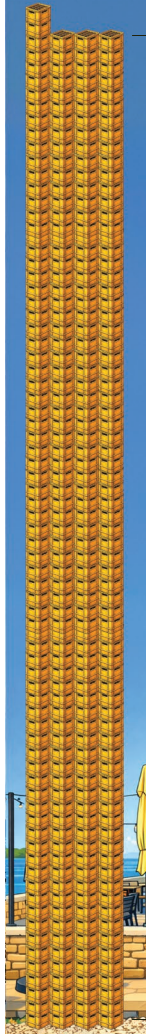
Dagnje ukupno:  
527 porcija

## Palačinke sa sladoledom

NORMATIV PO JEDNOJ PORCIJI  
Palačinke 200 g  
Sladoled 100 g  
Kolač 20 g



Palačinke  
ukupno: 469,5  
porcija

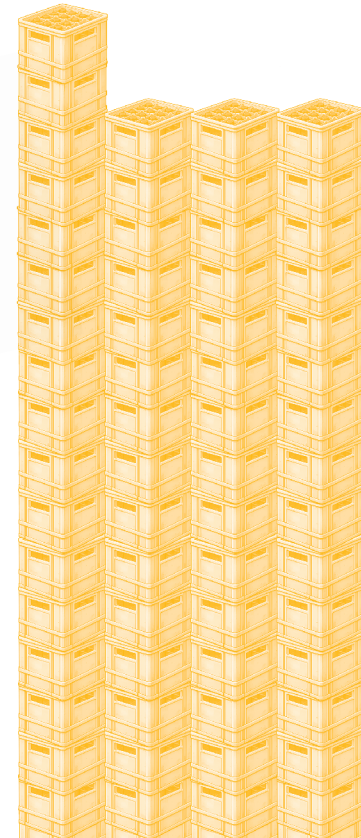


# The 2024/2025 Tourist Season

Antonio Petrovski

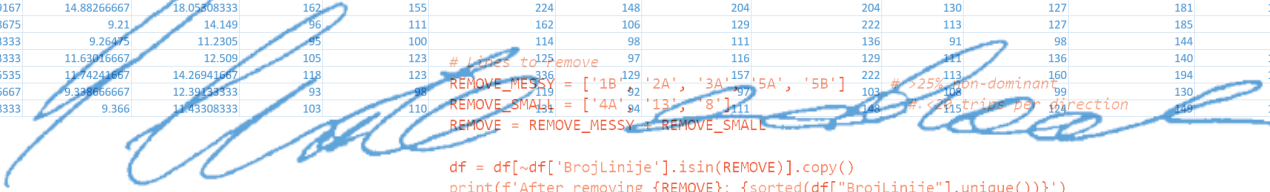
A small family restaurant in Poreč records every transaction through its cash register, as every business does. The owner reads the numbers, the accountant reads the numbers, the tax office reads the numbers. This project visualizes them, for the restaurant's guests and community. The central element speaks for itself: beer crates stacked to represent the season's consumption, rising thirty meters beside the restaurant. After the exhibition, the poster moves to its permanent home on the restaurant wall, to the great delight of its beerdrinking patrons.

6022 I PIVA  
30,2 M = zgrada od  
10 katova



Age Baseline	Age Post Cellfield Test	Age Delayed Post Test	WI Skill Baseline	WI Skill Post Cellfield	WI Skill Delayed Post Test	WA Skill Baseline	WA Skill Post Cellfield	WA Skill Delayed Post Test	PC Skill Baseline	PC Skill Post Cellfield	PC Skill Delayed Post Test	RATE Skill Baseline	RATE Skill Post Cellfield
10.3926667	10.4283333	12.7526667	101	111	111	136	94	118	136	111	112	149	111
11.1319167	11.2311667	14.0421667	124	155	129	396	116	148	222	140	144	194	132
10.3598333	10.4693333	11.9943333	105	110	122	92	96	119	127	119	127	149	108
12.0846667	12.2105833	13.5165	108	119	129	139	98	111	140	129	144	157	108
7.737	7.81091667	10.8745833	89	94	126	92	93	103	129	79	90	166	72
14.6581667	14.7430833	16.1420833	125	139	155	129	218	222	124	152	163	129	126
9.878	9.9218333	13.42891667	104	105	136	98	103	103	111	111	136	84	99
7.5125	7.68775	8.62408333	90	91	97	90	97	100	89	93	101	72	78
9.9026667	9.97658333	13.355	99	110	150	97	125	190	97	109	199	102	105
12.8621667	12.99091667	13.9326667	118	139	150	119	140	148	130	144	149	99	108
9.83691667	9.8976667	11.1793333	111	114	119	119	98	118	92	107	113	117	108
7.60291667	7.70291667	8.2216667	81	81	81	81	81	81	81	81	81	81	81
12.12025	12.2011667	12.2116667	101	110	110	110	110	118	118	118	127	127	111
10.0094167	10.1545	11.5836667	108	118	139	98	116	178	111	115	115	119	108
15.6410833	15.70575	18.2783333	125	146	157	106	98	148	134	140	140	149	132
9.544	9.65075	10.8745833	115	115	115	115	115	204	124	124	124	124	111
7.37291667	7.47291667	8.2216667	85	88	88	88	88	109	88	91	108	99	72
14.2365833	14.28041667	15.73416667	125	135	158	116	104	204	127	199	199	199	126
7.76991667	7.904	11.7311667	92	98	135	97	116	204	90	97	140	72	78
16.3885	16.4825	18.2216667	122	122	122	122	122	185	199	199	199	199	126
8.71991667	8.81991667	10.0783333	116	116	116	116	116	178	95	103	103	72	72
11.44675	11.5480833	13.5841667	121	134	201	100	116	105	127	132	132	102	120
9.3085	9.5193333	10.73491667	119	131	162	111	136	190	124	124	124	144	120
11.9806667	12.0545833	13.59316667	106	112	124	94	111	111	124	134	134	144	117
12.4214167	12.53091667	13.68625	143	152	188	125	178	222	163	152	157	126	135
14.6144167	14.6581667	16.1420833	122	122	146	106	148	222	111	109	149	120	117
12.394	12.53641667	13.9555	116	139	137	109	157	204	140	144	173	120	123
14.6719167	14.8826667	18.0598333	162	155	224	148	204	204	130	127	181	138	138
9.08675	9.21	14.149	96	111	162	106	129	222	113	127	185	90	90
9.1223333	9.26475	11.2305	85	100	114	98	111	136	91	98	144	72	72
9.1233333	11.6321667	12.509	105	123	119	116	116	136	141	136	140	102	102
11.5535	11.7421667	14.26941667	118	128	128	128	128	222	122	133	194	102	102
9.2126667	9.3886667	12.3918333	93	93	93	93	93	103	108	103	130	81	81
9.1360833	9.366	11.4330833	103	110	110	110	110	108	108	108	108	102	102

# Making the Problem Legible: To Solve Something We Must First See It Clearly



```
# Lines to remove
REMOVE_MESSY = ['1B', '2A', '3A', '5A', '5B'] # >25% non-dominant
REMOVE_SMALL = ['4A', '13', '8'] # <15 strips per direction
REMOVE = REMOVE_MESSY + REMOVE_SMALL
```

```
df = df[~df['BrojLinije'].isin(REMOVE)].copy()
print(f'After removing {REMOVE}: {sorted(df["BrojLinije"].unique())}')

# Now keep only trips that match the dominant route per line+direction
keep_pids = set()

for (bl, smjer), grp in df.groupby(['BrojLinije', 'Smjer']):
    trips = {}
    for pid, tgrp in grp.groupby('PolazakId'):
        ordered = tgrp.sort_values('RedniBrojStanice')
        route_str = '-'.join(ordered['Naziv'].values)
        trips[pid] = route_str

    dominant_route = Counter(trips.values()).most_common(1)[0][0]

    for pid, rs in trips.items():
        if rs == dominant_route:
            keep_pids.add(pid)
```

```
df = df[df['PolazakId'].isin(keep_pids)].copy()
print(f'Kept {df["PolazakId"].nunique()} trips, {len(df)} rows')

df.to_csv('vozni_red2.csv', index=False)
print('Saved + vozni_red2.csv')
```

Visualizations of Reading Ability Measurements  
— Elena Kiss

Data source  
Charalambous, A., & Wilsenach, C. (2023). A longitudinal study of the efficacy of the Cellfield reading intervention in a South African context [Dataset]. figshare. DOI: 10.6084/m9.figshare.23544744

```
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {},
  "outputs": [],
  "source": [
    "# Driving time per pair (pause excluded)\n",
    "pairs_df['A_min'] = (pairs_df['A_end'] - pairs_df['A_start']) / 60\n",
    "pairs_df['B_min'] = (pairs_df['B_end'] - pairs_df['B_start']) / 60\n",
    "pairs_df['drive_min'] = pairs_df['A_min'] + pairs_df['B_min']\n",
    "pairs_df['pause_min'] = (pairs_df['A_end'] - pairs_df['A_end']) / 60\n",
    "\n",
    "# Fastest and slowest pair per line\n",
    "for bl, grp in pairs_df.groupby('BrojLinije'):\n",
    "    fastest = grp.loc[grp['drive_min'].idxmax()]\n",
    "    slowest = grp.loc[grp['drive_min'].idxmin()]\n",
    "    print(f'Line {bl:3s} | fastest: {fastest[\"drive_min\"]:.0f} min (route {int(fastest[\"TrueRoute\"]})} \\n\\n',\n",
    "          f' | slowest: {slowest[\"drive_min\"]:.0f} min (route {int(slowest[\"TrueRoute\"]})} \\n\\n',\n",
    "          "\n",
    "    "pairs_df.to_csv('vozni_red3.csv', index=False)\n",
    "    print('\\nSaved + vozni_red3.csv')
  ]
}
```

Some of the most consequential information in our lives arrives in forms we cannot read. A test score, a transit schedule, a discharge summary — these carry real weight, yet their meaning remains locked behind formats designed for systems, not for people. The projects in this group use visualization as an act of translation: turning opaque information into something a person can genuinely hold, understand, and act upon. They do not simplify — they clarify. And in doing so, they shift power from the institution to the individual.

## UŠTEĐENO VRIJEME



More Traffic, Slower Buses, and How to Finally Break the Cycle  
— Matej Anđelko Bošković

Data source  
City of Rijeka. Pozicije autobusa [Bus Positions] [Dataset]. Portal otvorenih podataka Rijeka. data.rijeka.hr  
Wikipedia: Lungomare, Opatijska rivijera udaljenosti.com, srednja.hr

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```

# Visualizations of Reading Ability Measurements

Elena Kiss

The program presents a visual visualization of children's reading abilities measured across time. The data comes from a study that followed children with reading difficulties in 1st, 2nd, and 3rd grades. The study was part of an intervention program called "Handwriting, The Way to Read."

It is to consider reading performance in a way that reflects the reading experience from which the data originates. The visualizations are designed to mirror the structure and logic of the reading test. Illustrations, following across the readability, understand what the

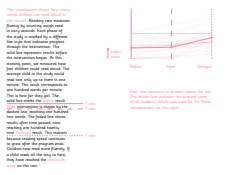
Each test visualization contains embedded text that explains how the test is structured and how the visualization itself will clarify the logic behind it.

Children who struggle with reading and writing should have additional support. The program demonstrates how, with the right adjustments, meaningful progress can be achieved.

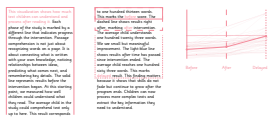
Handwriting, The way to read & Rosemary Sassoon

*I hate school*  
*man I hate school*

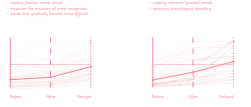
## Reading rate



## Passage Comprehension



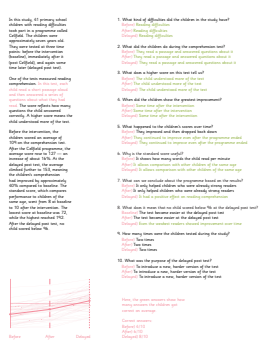
## Word Identification Word Attack



## Reading Accuracy



## Reading Comprehension



A child's reading ability is measured and the results arrive as numbers. This project visualizes each part of the test by mimicking its form: where the child read sentences, the diagram presents sentences too, but ones that explain what is being measured and where the score falls. You learn what was tested by reading the diagram the same way the child read the test. A parent who looks at this will understand what their child struggles with, concretely enough to act on it. At a broader level, the work scratches at a profound question: what do the numbers that define us actually mean? BMI, cholesterol, credit scores, GDP, IQ, media freedom indices — we are constantly measured, sorted, and classified. Can visualization help us reclaim comprehension, and through comprehension, control?

Before

big challenge for all of these very young learners at school

that the training worked and that these children were already starting to become much stronger and better readers every day

After

much greater fluency accuracy and confidence Each word in this list represents one point in their final score demonstrating substantial improvement compared to where they originally started. The difference between this measurement and the baseline clearly illustrates the meaningful progress these young readers achieved through dedicated intervention and considerable continued practice permanently transforming their relationship with literacy

Writing reflects our feelings. You do not need to read the message to see that this boy is in trouble.

The message is: "I hate school, man I hate school."

— Handwriting, The way to teach it Rosemary Sassoon

Children who struggle with reading and writing deserve better methods. This program demonstrates that, with the right adjustments, meaningful positive progress can be achieved.

*I hate school*  
*man I hate school*

# SVE VIŠE GUŽVI, SVE ŠPORIJI AUTOBUSI I KAKO TO KONČANO PREKINUTI

U podzemnim stanicama, autobusi linije 1 i linija 2 imaju najbrži i najsigurniji promet, ali to ne znači da su najbrži i najsigurniji u cijeloj mreži.

Sporedni prometni pravci nisu uvijek najbrži na putovanju od centra do periferije. Naime, u slučaju prometa izvan centra, najbrži su pravci koji su najkraći i najsigurniji. To znači da su najbrži i najsigurniji pravci oni koji su najkraći i najsigurniji.

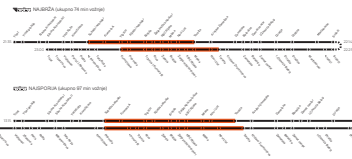
Autobusni K2 također je odličan, ali to ne znači da je najbrži i najsigurniji. Naime, u slučaju prometa izvan centra, najbrži su pravci koji su najkraći i najsigurniji. To znači da su najbrži i najsigurniji pravci oni koji su najkraći i najsigurniji.

— Dugoprivremna staza — Prometno prometna staza

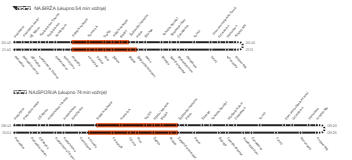
## 1 PEĆINE – CENTAR – BIVIO



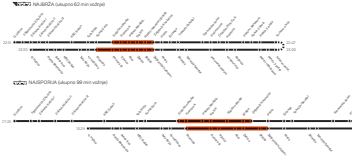
## 2 SRDOČI – RIVA – TRSAT



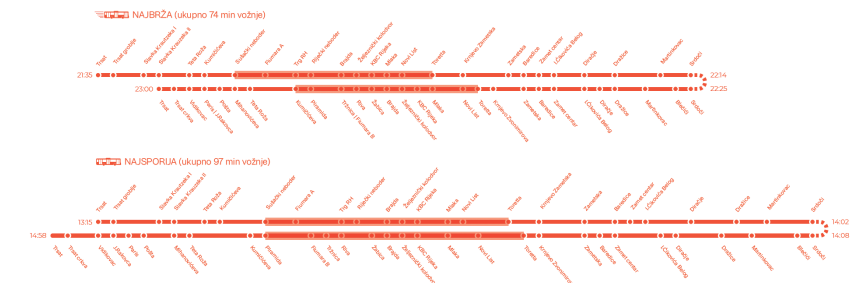
## 6 PODVEŽICA – CENTAR – KRNEVCI NN



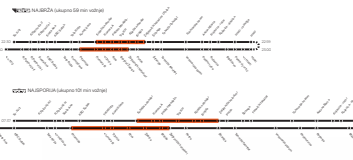
## 7 GORNJA VEŽICA – CENTAR – TURKOVO



## 2 SRDOČI – RIVA – TRSAT



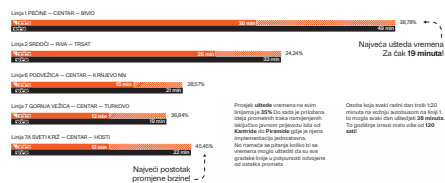
## 7A SVETI KRIŽ – CENTAR – HOSTI



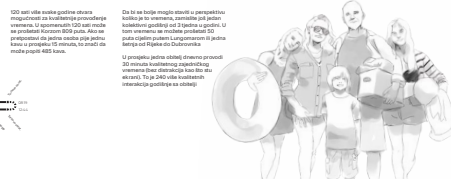
## LOKACIJA PROMETNIH TRAKA

Lokacija prometnih traka određuje brzinu prometa na stanicama na kojima se na primarna linija prometuje. To znači da su najbrži i najsigurniji pravci oni koji su najkraći i najsigurniji.

## UŠTEDENO VRIJEME



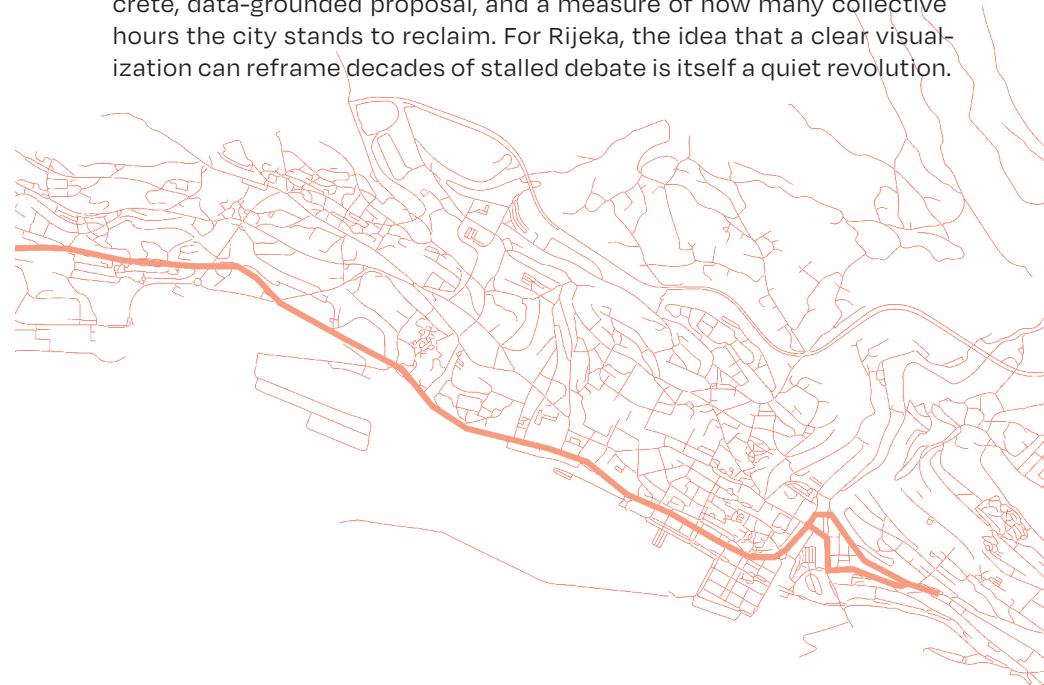
## PROVODENJE UŠTEDENOG VREMENA



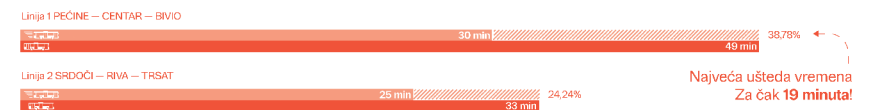
# More Traffic, Slower Buses, and How to Finally Break the Cycle

Matej Anđelko  
Bošković

Rijeka's public bus system publishes arrival time data for every route. Buried in that dataset is a simple, powerful comparison: the time a bus takes to complete a route in the evening, when the roads are empty, versus the same route during rush hour. Line 1 takes fifty minutes at 10 pm. In the afternoon, an hour and eighteen. The gap is not caused by the bus. It is caused by everything else on the road. The project visualizes this difference across routes, then makes the argument that follows from it: if the bus had its own lane, rush hour could move at the speed of an empty road. What emerges is not a complaint about traffic but a concrete, data-grounded proposal, and a measure of how many collective hours the city stands to reclaim. For Rijeka, the idea that a clear visualization can reframe decades of stalled debate is itself a quiet revolution.



## UŠTEDENO VRIJEME





ENDANGERED SPECIES OF THE WORLD (19,272 species\*)



# Endangered Species of the World

Ena Zita Linić

\*The IUCN Red List of Threatened Species is the global authority on the conservation status of species. It is the world's most comprehensive information source on the conservation status of species, and is used to set conservation priorities.

**MAJOR THREAT**

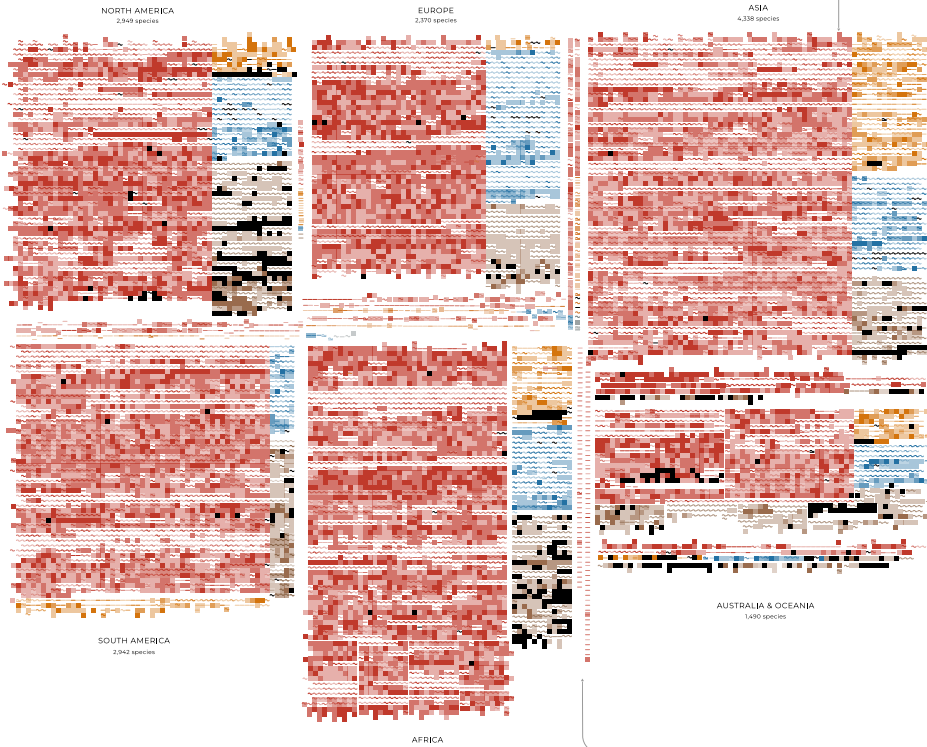
- Habitat Loss & Degradation, Logging, Wildfires, etc.
- Over-Exploitation (hunting, food, clothing, etc.)
- Climate & Environmental Change
- Other / Unknown

**IUCN RED LIST CATEGORY**

- Extinct
- Critically Endangered
- Endangered
- Vulnerable

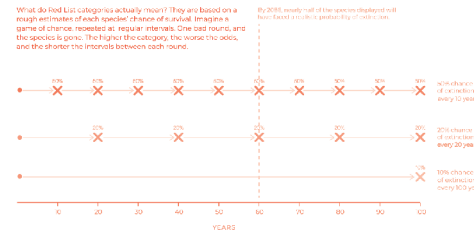
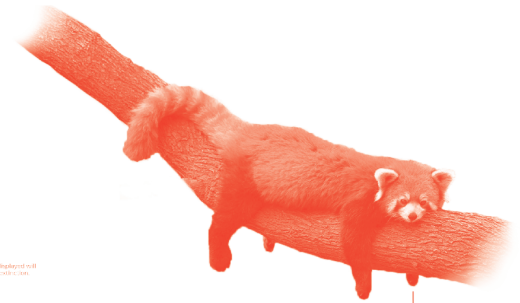
**HABITAT**

- Terrrestrial
- Freshwater
- Marine



EUROPE  
2,370 species

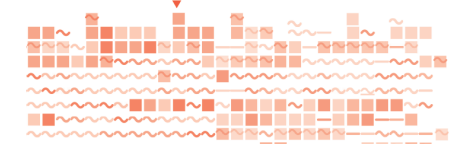
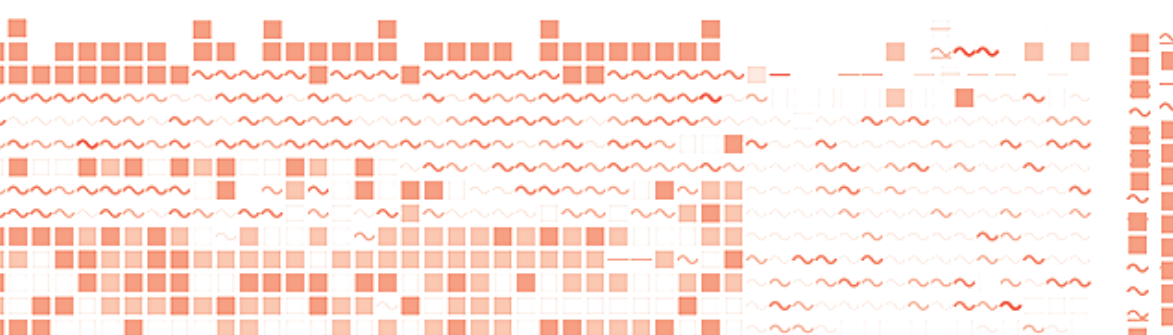
All 19,272 endangered animals from the IUCN Red List of Threatened Species, visualized. Every symbol represents a single species, encoded through color, shape, and position to carry multiple variables at once. The scale is the message. When every species occupies its own space on the page, neutrality becomes impossible. You cannot look at the full weight of what is being lost and remain indifferent. The work does not argue — it simply shows everything, and lets the totality do what statistics alone cannot.



**Red panda**

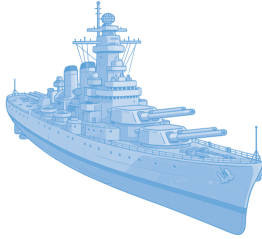
Going extinct primarily due to rapid habitat loss, fragmentation, and degradation in the Eastern Himalayas, caused by human population growth, deforestation, livestock grazing, and agriculture. With only an estimated 10,000 or fewer left in the wild, they are classified as Endangered due to a 40-50% population decline over the past two decades.

One symbol = One animal



# Economic Anatomy of the Second World War

Faruk Hadžić



## Ako ne ide milom, ide silom

Tijekom dana D, američki bojni brod USS Texas nije mogao dignuti topove dovoljno visoko da gađa mete duboko u kopnu. Rješenje? Namjerno su napunili jednu stranu vodom da se brod nagne, topovi su dobili veći kut, i nastavili su paliti.

Across three chronological fronts, 1933 to 1939, 1940 to 1945, and 1946 to 1951, over six hundred icons stand in formation: tanks, artillery, aircraft and vessels alongside the coal, steel, oil, and GDP that drove them, color-coded by nation and ranged against one another in Allied and Axis opposition. At this scale, strategy, tactics, and heroism recede and what remains is cold arithmetic: war as a contest of production capacity. The whole war seen at once, laid out as one vast battlefield, nothing left outside the count. A valuable historical lesson for current times, when the world once again seems to be sorting into opposing formations.

# Ekonomska anatomija 2. svjetskog rata

Prije, za vrijeme i nakon rata

- 500 tenkova
- 500 kopničkih oruđa
- 500 aviona
- 50 brodova
- 50 podmornica
- 100 milijuna tona ugljena
- 100 milijuna tona nafte
- 100 milijuna tona čelika
- 1000 milijardi dolara

- Sve osovine**
- Njemačka
  - Italija
  - Japan
  - Ostali (Rumunjska, Poljska, Francuska, Norveška, Nizozemska, Belgija, Švicarska, Španjolska, Portugal, Grčka, Turska, Srbija, Jugoslavija, Kina, Indija, Australija, Filipini, Indonezija, Brazil, Argentina, Čile, Peru, Ekvador, Kolumbija, Venecuela, Paragvaj, Urugvaj, Čile, Argentina, Brazil, Peru, Ekvador, Kolumbija, Venecuela, Paragvaj, Urugvaj)
- Saveznici**
- USA
  - Velika Britanija
  - Francuska
  - SSSR
  - Ostali (Kina, Kanada, Australija)

**IZVORI**

**Tenkov i topništvo:** Harrison, M. (1998) *The Economics of World War II*. Cambridge UP; US888 (1945) *Effects of Strategic Bombing on the German War Economy*; Wikipedia - *Military Production during WW2*; *Tanks in WW2*; *Coastal Artillery Production during WW2*; *Statistics / Univ. of Warwick*; *Tank & APC Production 1939-1945*; *Encyclopedia Britannica - Tanks WW2*; *The National WWII Museum - "Warfare Production"*

**Avioni:** Wikipedia - *World War II Aircraft Production*; Harrison (1998)

**Brodovi i podmornice:** Potter, B. (2003) *How the US Built Its 1000 Ships in WW2*; *Coalition Physics*; Wikipedia - *Naval History of WW2*; *Statistik / Univ. of Warwick*; *Major Naval Vessel Production 1939-1945*; *USNM Proceedings (1998)*; *Stover Navy How Many Submarines?*; *ahoy34-Juvel - Submarine Fleet Statistics*

**Ugljen:** Mitchell, B.L. (1981) *European Historical Statistics 1750-1975*; *Mossmen, Statistics - Coal*

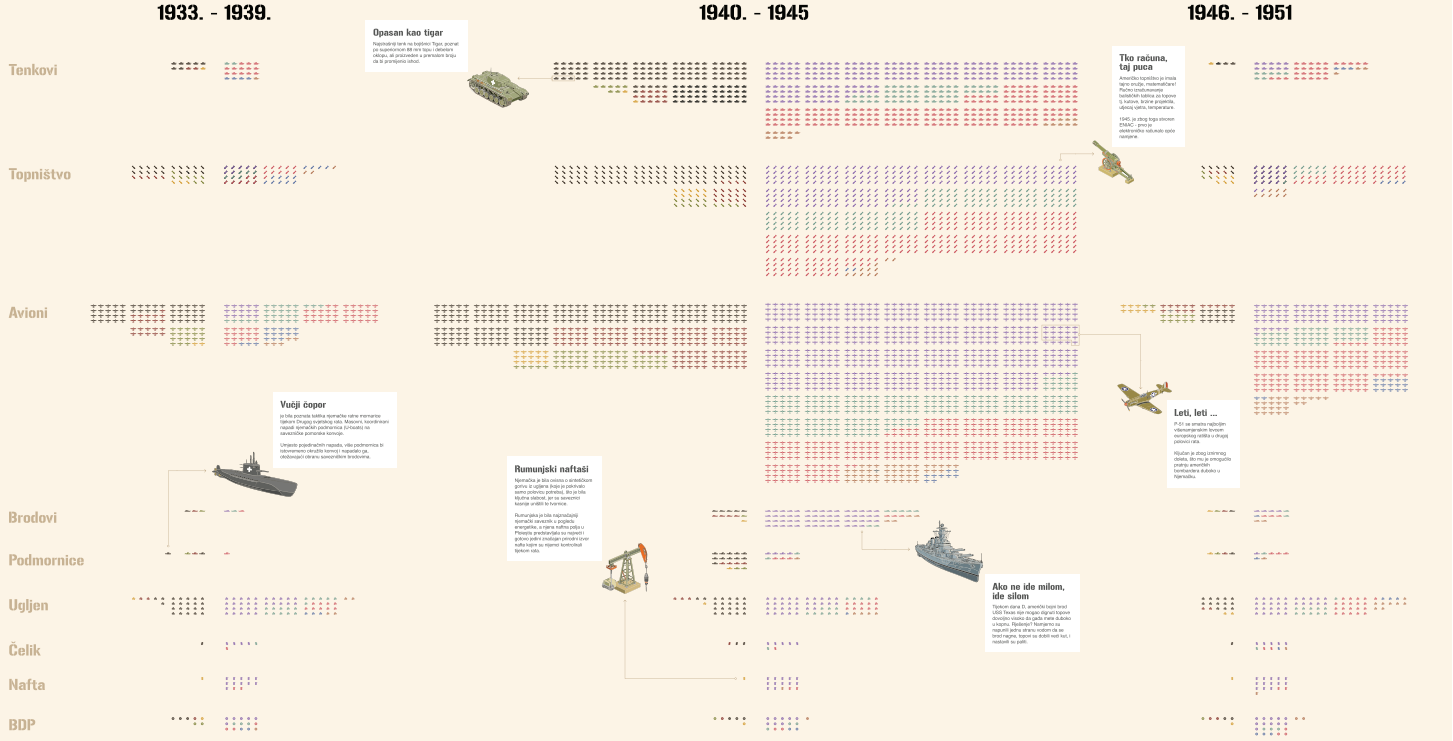
**Čelik:** *Production, Axis & Allied Europe 1930-1945*; *Frankfurt - German Coal Statistics (zavr. US888 1945, NARA 178)*

**Nafta:** *CEIC - Dinges, A. (2024) "Import Dependence and Strategic War Planning - The German Iron and Steel Industry, 1933-1945"*; *International History Review 46(4), pp. 486-499*; *Univ. of Maryhamp - Statista / Mironč (1981) - "Crude Steel Production, Axis & Allied Europe 1930-1945"*

**BDP:** Harrison, M. (1998) - *GDP per capita 1938*; *u međunarodim odabira 1990*; *Statista - "Pre-War GDP"*; *Pluett, T. & Zisman, G. (2014) "Capital Back"*; *Quarterly Journal of Economics, tablica T167*

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 Dizajn temeljen na podacima  
 Ak. god. 2025./2026., 3. semestar  
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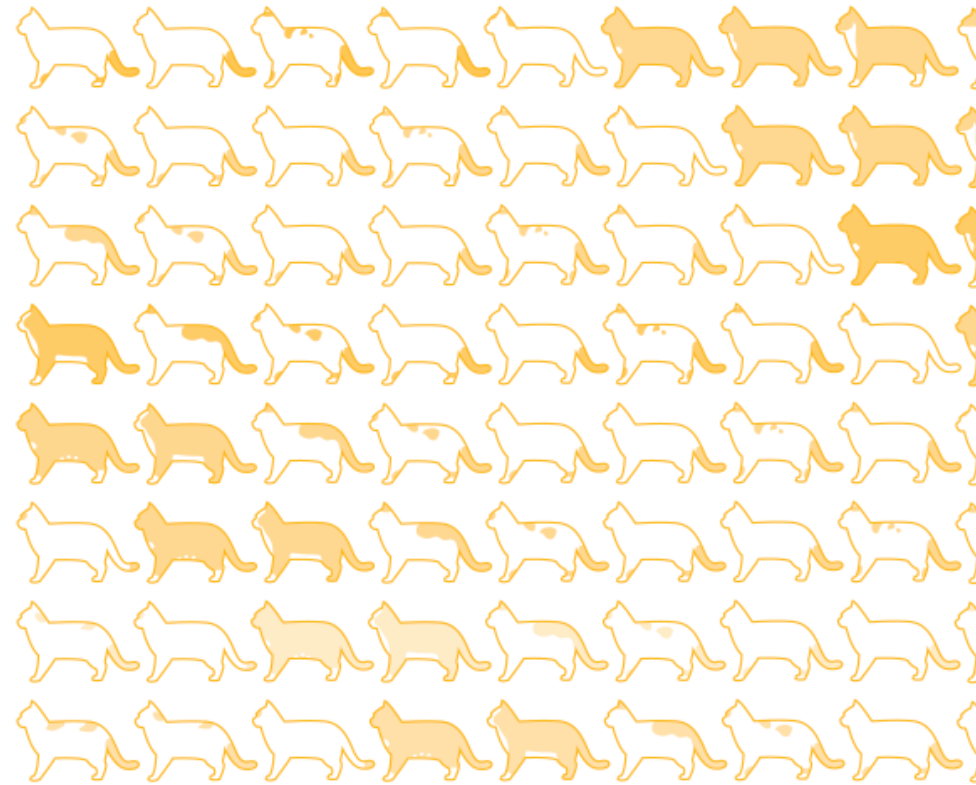




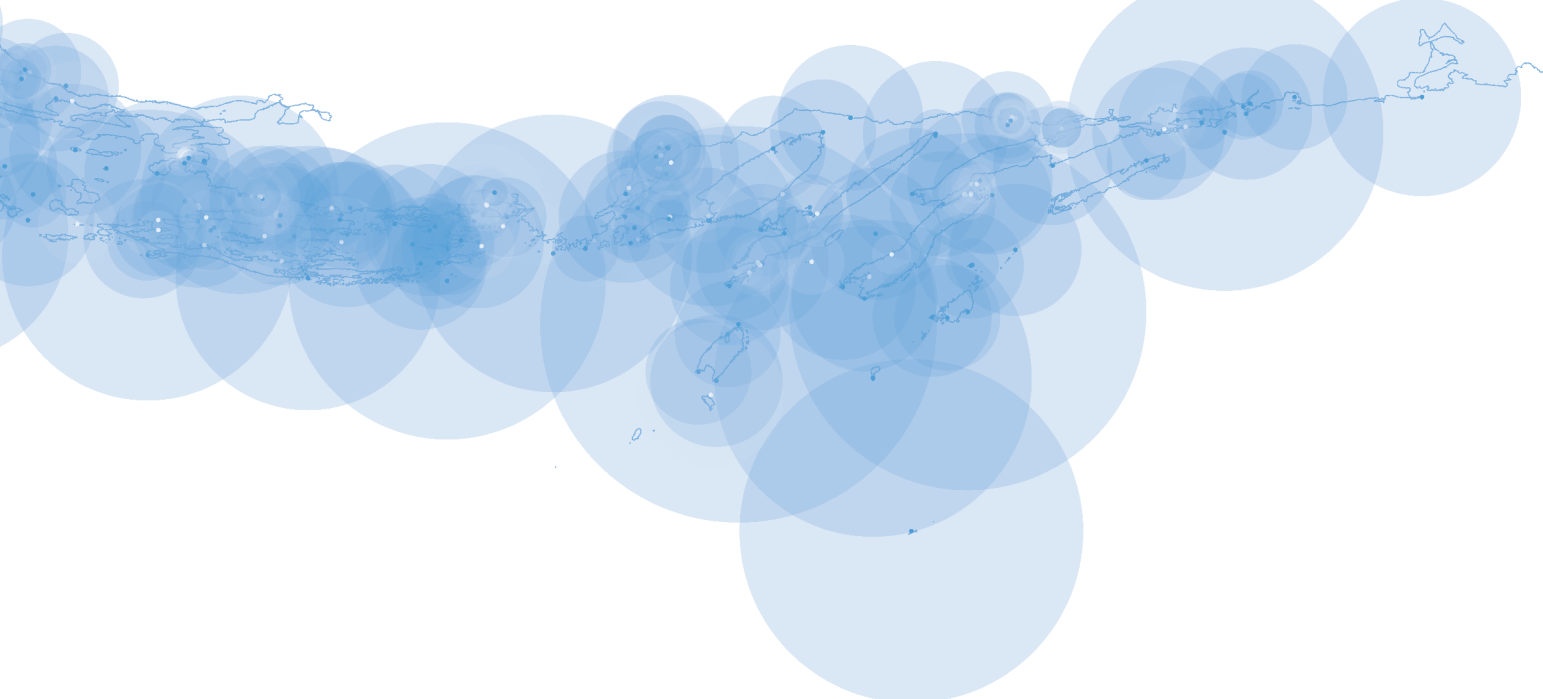
# Practically Every Cat That Could Exist\*

Mia Duić

There are at least 80,000 possible combinations of cat fur patterns. This project draws 490 of them, but arranged in such precise and logical order that the genetic grammar behind every tabby, calico, and tortoiseshell gradually becomes visible. By the end, you know something you were never asked to learn. And somewhere in it, you find the cats you have known in your own life.



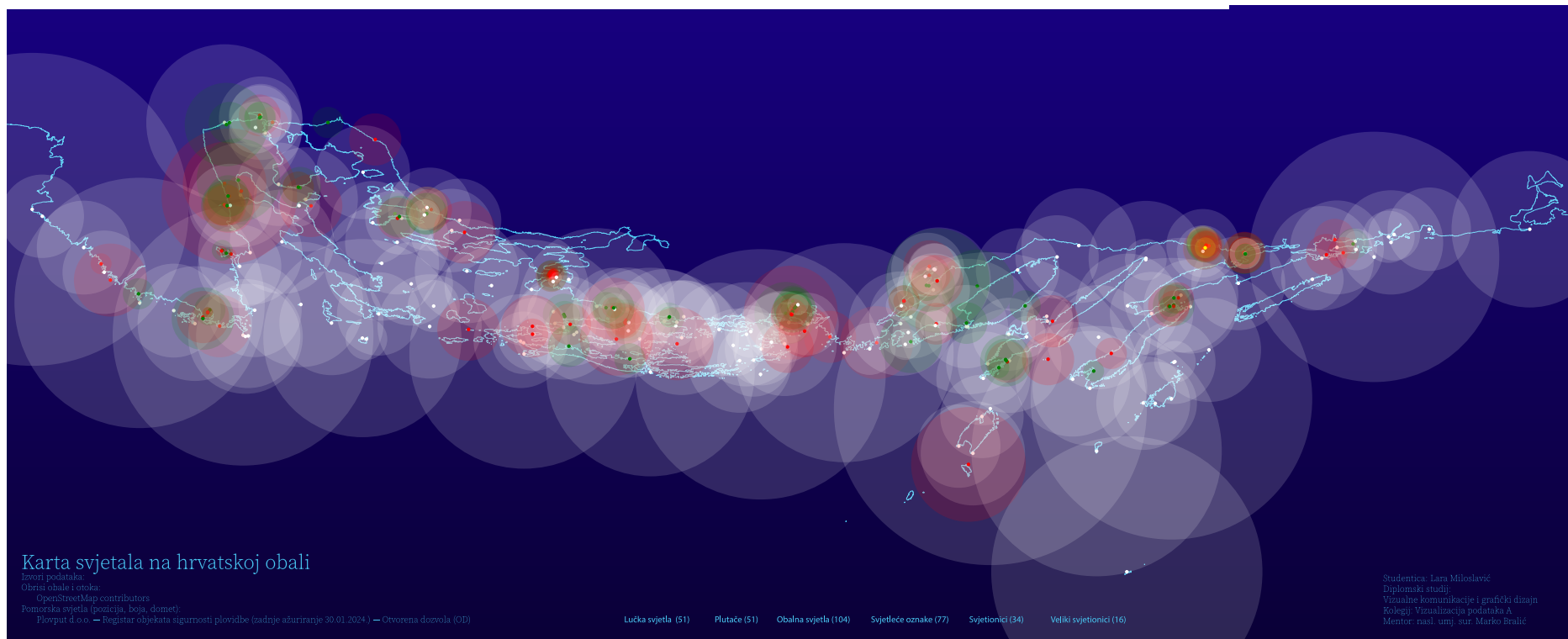
\* There are at least 80,000 possible combinations of cat coat color and pattern. This poster draws 490 of them: every grade of white spotting paired with every base color, tipping shown across its full range, colorpoint across all three contrast levels, each variable ordered so the whole system can be read from the sequence. The reader is invited to imagine each cat here repeated across every variable not yet shown. Somewhere in this grid, you will find a cat you have known.



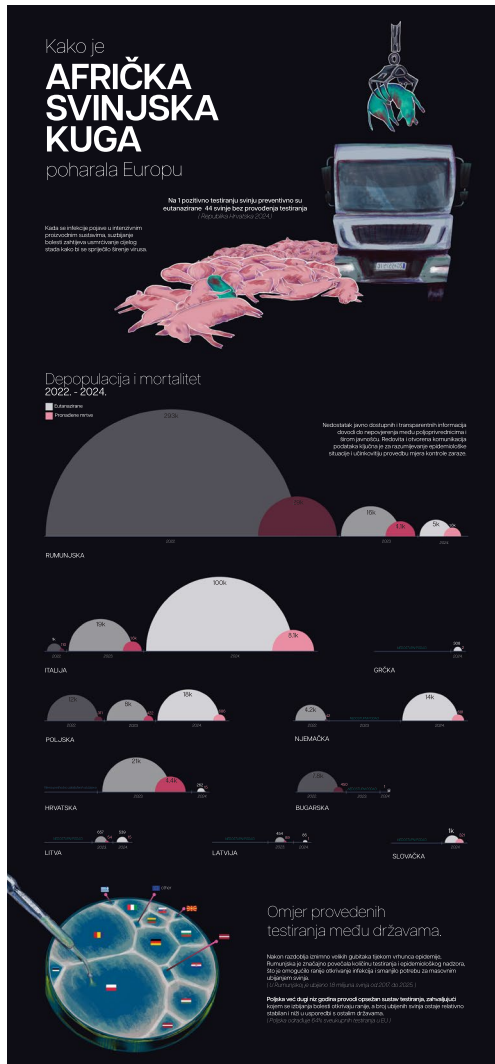
Lara Miloslavić

→ Croatian Adriatic coast, lighthouses, mapped in a single image. The seen before: not its geography, but ; the whole sea looked after. It does

Svjetleće oznake (77) Svjetionici (34) Veliki svjetionici (16)



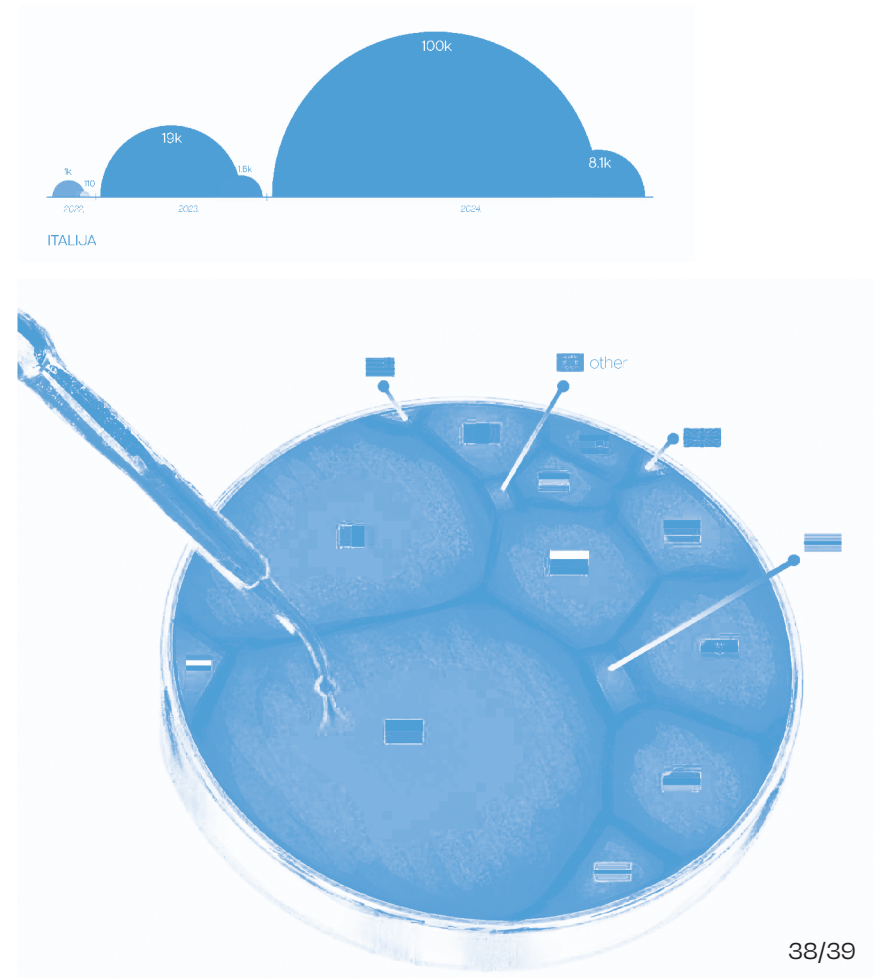




# How African Swine Fever Swept Through Europe

Katarina Šekutor

African swine fever moves across Europe as if borders do not exist. The question is whether the response can do the same. This project visualizes testing intensity, confirmed cases, and the number of pigs culled across Europe over recent years. The pattern is clear: where countries tested systematically, losses were smaller. The visualization is an argument for coordinated surveillance, transparent data, and the kind of shared commitment that protects every farmer in every country equally.

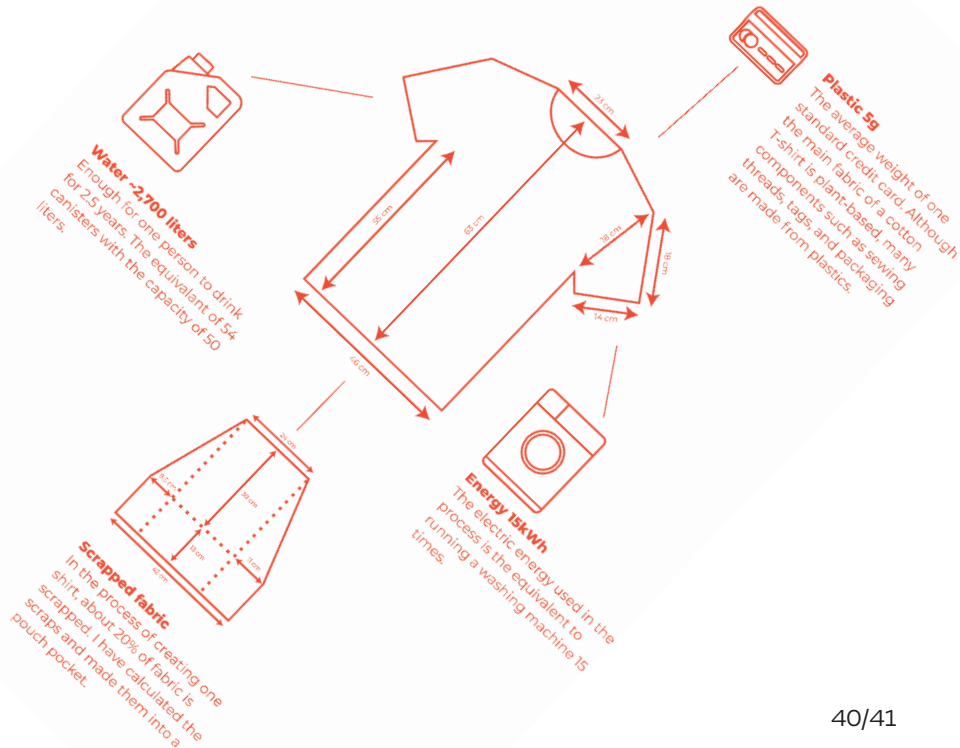


# The Story You Wear

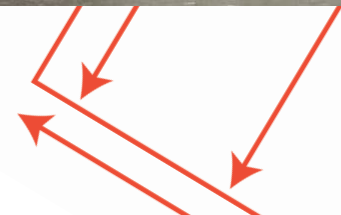
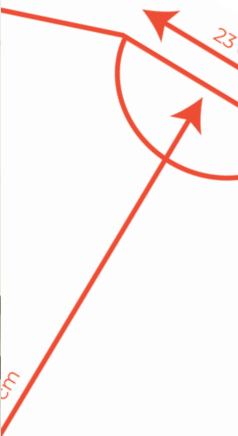
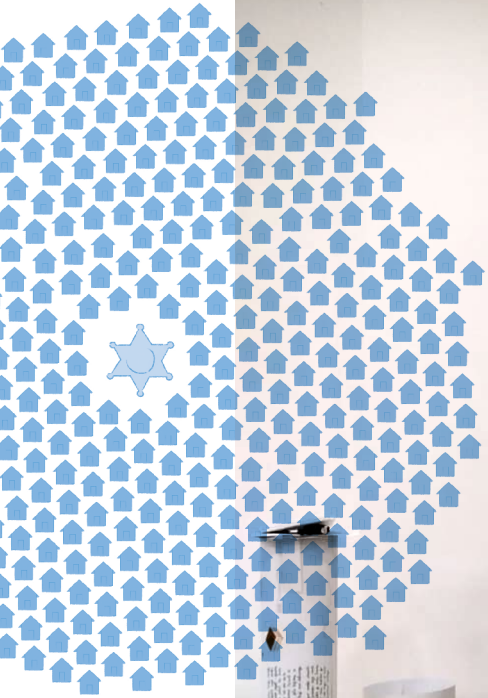
Anamari Boršić



In February 2026, the European Union announced new rules prohibiting the destruction of unsold clothing and footwear, an institutional acknowledgment of what the textile industry has long preferred to keep invisible. By then, this project was already finished. The author collects discarded garments and scraps, then remakes them into new clothing with a precise, data-informed logic. A pocket is cut to the exact dimensions of the fabric that was wasted when the original garment was made — a direct record of what the production process threw away. Double-stitched seams encode a commitment to longevity over disposability. Each finished piece carries additional data: printed icons show the electricity and water consumed in manufacturing, and a tag displays the ratio of chemicals to cotton. Nothing is decorative. Everything is evidence. The work preceded the regulation by weeks. Policy caught up with what the artist was already trying to solve on her own.



*Plot abstract*



## AAA+ Open Data Exhibition

Academy of Applied Arts Gallery (APU Galerija)

11 March — 14 May 2026

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SDA 4.1.4: Tables

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Role	Name	Label	Range	MD	Dataset
15	nativity	Foreign birthplace or parentage	1-5	1	
10	stateipc	State (ICPSR code)	1-98	1	
5	perwt	Person weight	.01-12.67	1	
20	stateipc(32,49,35-37,61-68,71-73)	State (ICPSR code)	1-98	1	
20	urban(1,9)	Urban/rural status	1-2	1	
60	occ1950(782)	Occupation, 1950 basis(=Sheriffs and bailiffs)	0-999	1	

		Frequency Distribution										
		stateipc										
Column percent	Weighted N	32	35	37	49	62	63	64	65	66	68	
		Kansas	Nebraska	South Dakota	Texas	Colorado	Idaho	Montana	Nevada	New Mexico	Wyoming	
100.0	87.8	75.2	23.9	89.6	77.8	44.6	.0	.0	66.7	100.0	9.3	
87.8	61.5	15.4	259.1	107.2	17.4	.0	.0	.0	4.9	.0	.0	
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
.0	.0	.0	.0	.0	.0	.0	.0	100.0	.0	.0	.0	
.0	.0	.0	.0	.0	.0	.0	.0	.0	10.0	.0	.0	
.0	.0	30.4	8.7	7.4	10.8	100.0	.0	22.3	.0	.0	.0	
.0	.0	19.6	25.1	10.2	4.2	5.1	.0	9.9	.0	.0	.0	
.0	.0	24.8	1.7	14.8	44.6	.0	.0	.0	.0	.0	.0	
.0	20.3	29.4	5.0	20.4	17.4	.0	.0	.0	.0	.0	.0	
100.0	87.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
87.8	61.5	64.5	289.2	137.7	39.1	5.1	10.0	44.4	9.3			

Year	USA	UK	USSR	Canada	Australia	France
1933	500	400	1000	20	10	
1934	600	500	1500	30	15	
1935	800	700	2000	50	20	
1936	1000	1000	3000	70	30	
1937	1200	1500	4000	100	50	
1938	1500	2000	5000	150	70	
1939	2100	8000	10000	200	100	
Total	7700	14100	26500	620	295	

Year	Germany	Japan	Italy	Romania	Hungary	Finland
1933	800	300	400	20	10	
1934	1200	400	500	30	20	
1935	2000	600	700	50	30	
1936	3000	1000	1000	70	50	
1937	4000	1500	1500	100	70	
1938	5000	2000	2000	150	100	
Total	14300	4900	3000	200	150	

Year	USA	UK	USSR	Canada	Australia	France
1940	6000	15000	10600	500	200	
1941	26300	20100	15700	1000	400	
1942	47800	23700	25400	2000	800	
1943	85900	34200	34200	4000	1500	



Danas samo za obed jili mljeveno na bolonje, gre kapula, i mrkva, parmezan 24300 9:28 AM

Pokle za desert tiramsu 9:28 AM

Kad ces prit doma? 9:28 AM

Hvala! UK 9:30 AM

u tri 9:30 AM

idem s Mijom na izložbu mačaka