LVIV CITY COUNCIL

FORECASTING THE CREATION OF ADDITIONAL GROUPS IN KINDERGARTENS

Anastasia Kurdydyk
Hanna Oleksiienko
Venia Veselovsky
Khrystyna Skopyk

Main Topics

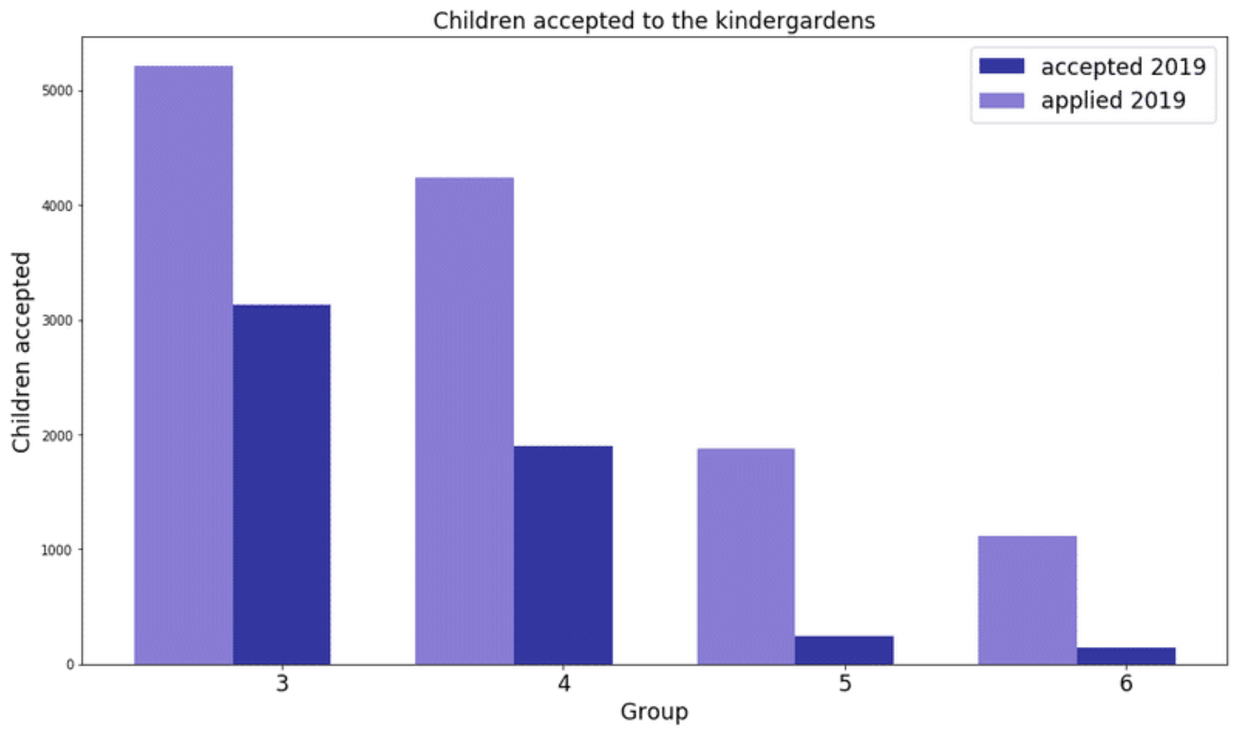
Points to talk about

Problem definition

Data

Demographic data

Visualization



Problem

The number of children accepted to the kindergartens in 2019 is less than the number of children applied.

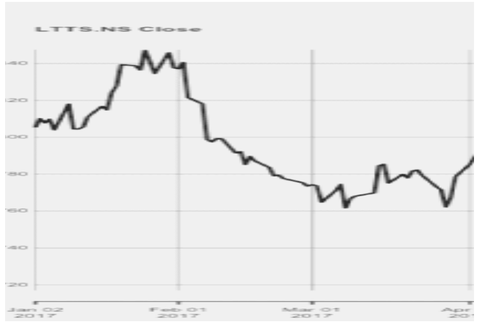
56%

OF CHILDREN STRUGGLE TO FIND A KINDERGARTEN

31%

OF FAMILIES DO NOT HAVE A KINDERGARTEN WITHIN 400 M.

DATA



DEMOGRAPHICS

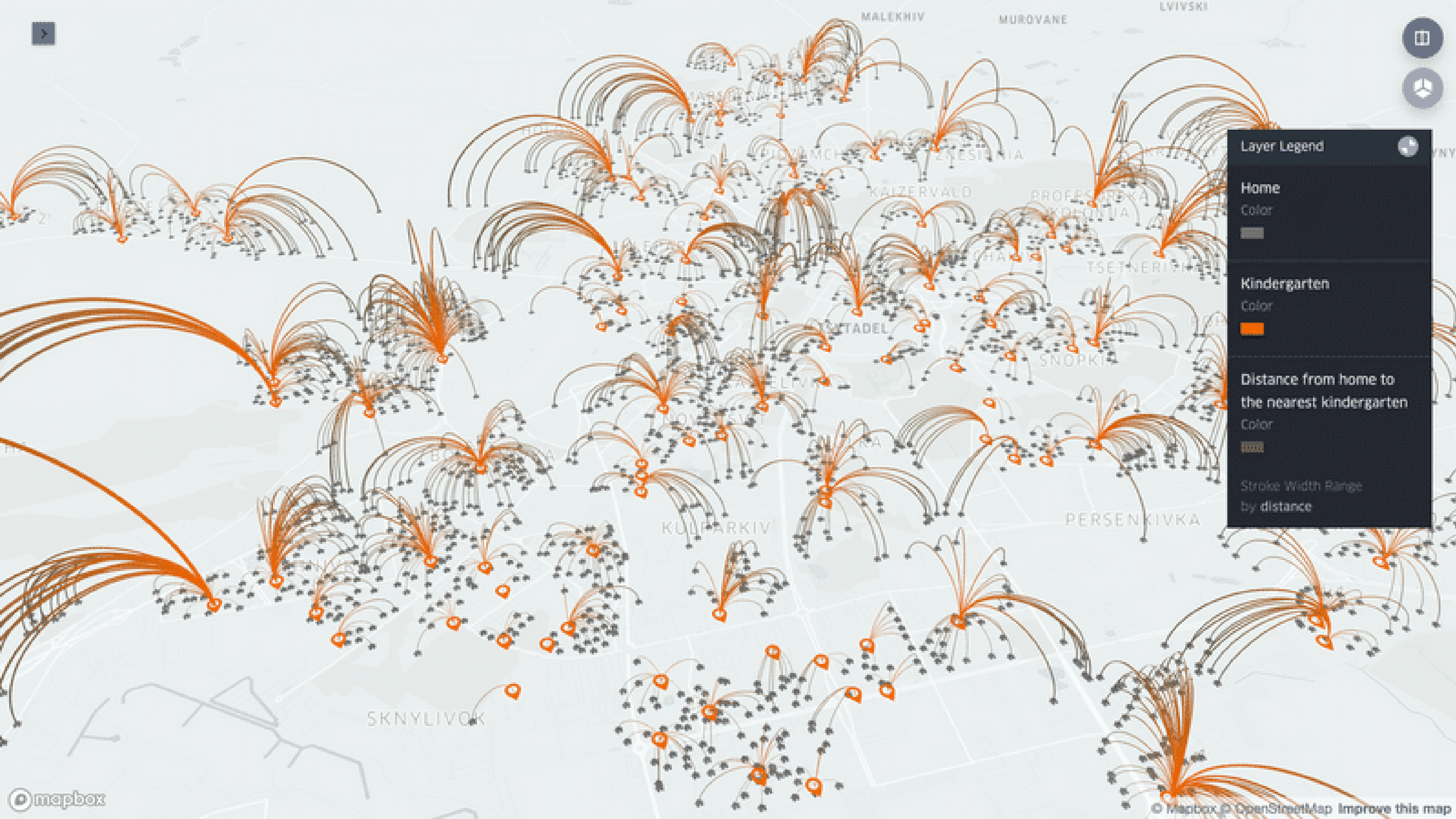
Age groups of populations

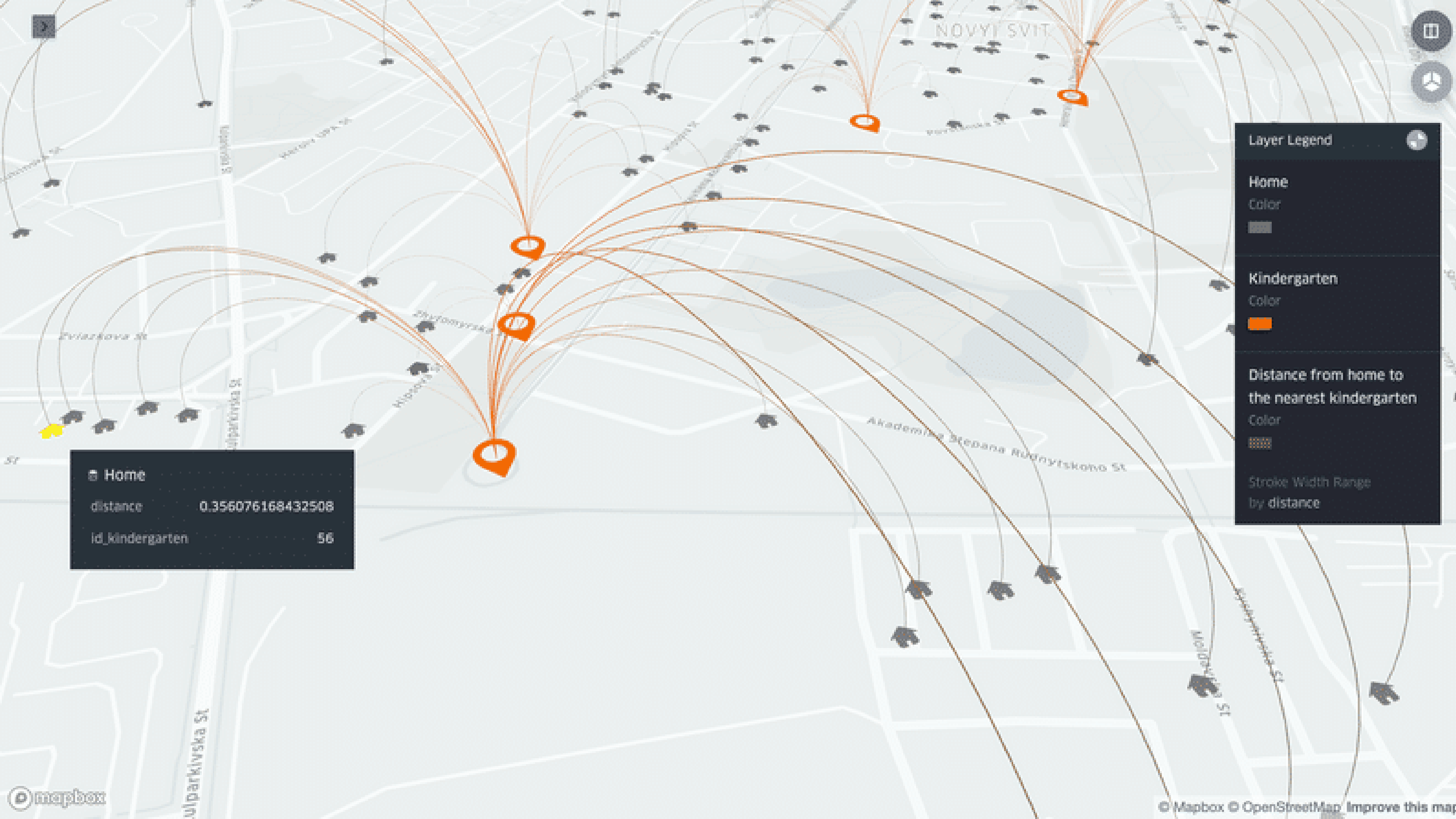
KINDERGARTENS

Geocoordinates

APPLICATIONS

3 priorities and orders location


Layer Legend
Home
Color
Kindergarten
Color
Distance from home to the nearest kindergarten
Color
Stroke Width Range
by distance
MALEKHIV
MUROVANE
LVIVSKI
KAIZERVALD
TSETNERIVKA
SNOPKIV
PERSENKIVKA
SKNYLIVOK
mapbox
© Mapbox © OpenStreetMap Improve this map


NOVYI SVIT
Layer Legend
Home
Color
Kindergarten
Color
Distance from home to the nearest kindergarten
Color
Stroke Width Range
by distance
Home
distance 0.356076168432508
id_kindergarten 56
Zhytomyrska St
Zviazkova St
Akademika Stepana Rudnytskoho St
Moldavska St
Kyshynivska St
Kulparkivska St
mapbox
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Layer Legend
Home
Color
Kindergarten
Color
Distance from home to the nearest kindergarten
Color
Stroke Width Range
by distance
Distance From Home To The Nearest Kindergarten
distance 2.14192656511091
id_kindergarten 22
LWO
SKNYLIV
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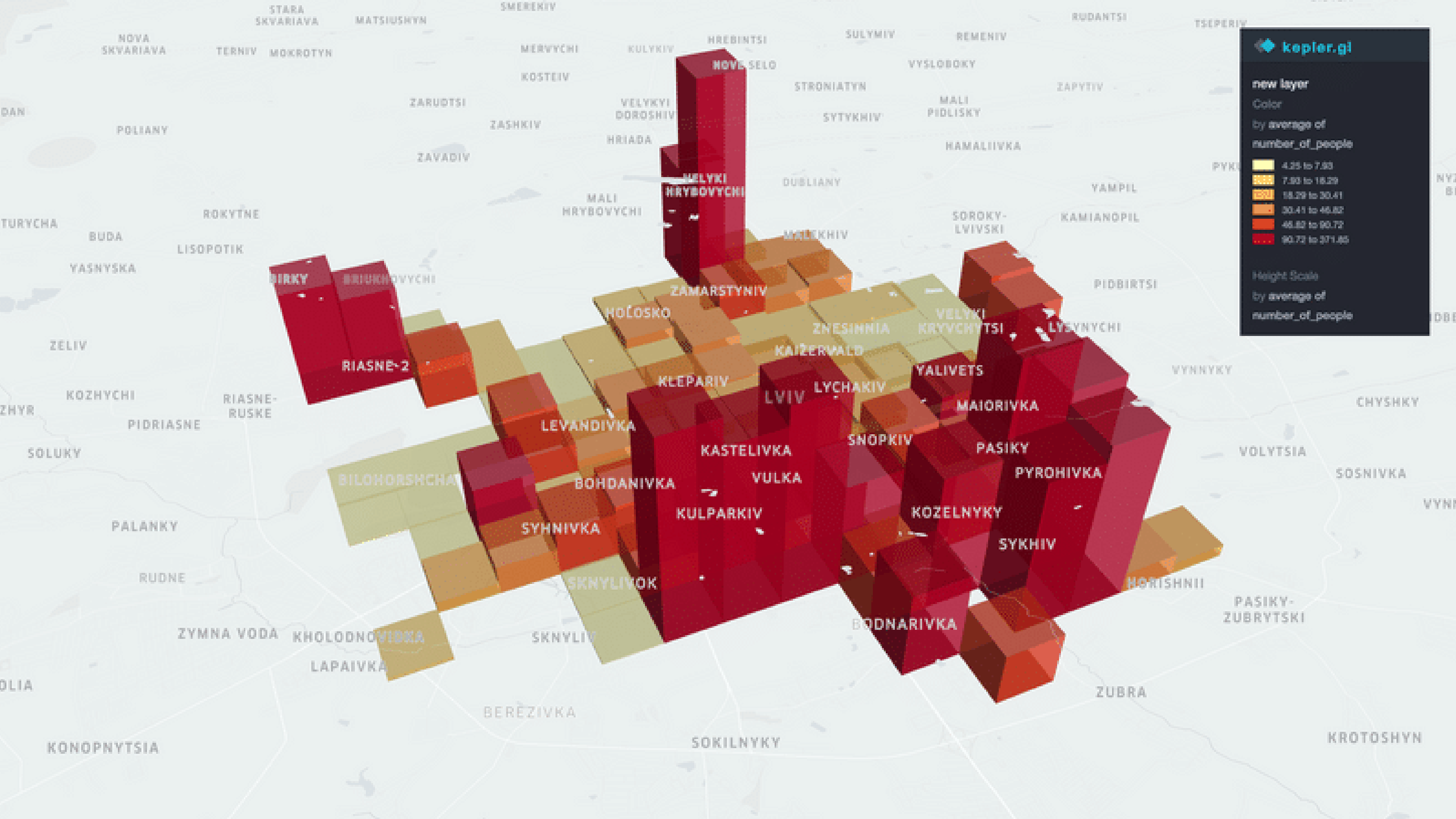
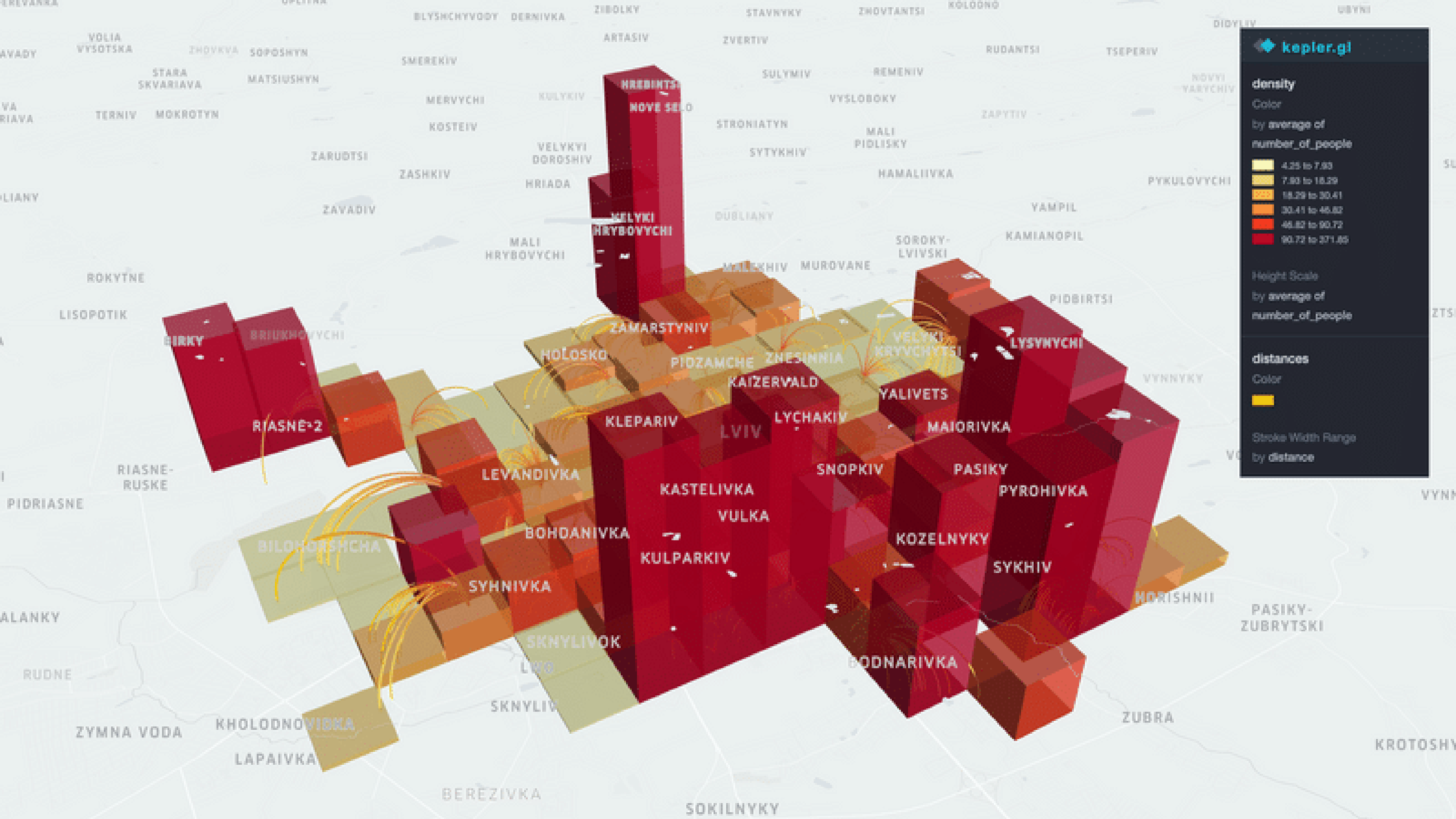

kepler.gl
new layer
Color
by average of
number_of_people
4.25 to 7.93
7.93 to 18.29
18.29 to 30.41
30.41 to 46.82
46.82 to 90.72
90.72 to 371.85
Height Scale
by average of
number_of_people
STARA SKVARIAVA
MATSIUSHYN
SMEREKIV
NOVA SKVARIAVA
TERNIV
MOKROTYN
MERVYCHI
KULYKIV
HREBINTSI
SULYMIV
REMENIV
RUDANTSI
TSEPERIV
NOVE SELO
VYSLOBOKY
KOSTEIV
STRONIATYN
ZAPYTIV
ZARUDTSI
VELYKYI DOROSHIV
MALI PIDLISKY
SYTYKHIV
POLIANY
ZASHKIV
HRIADA
HAMALIIVKA
ZAVADIV
VELYKI HRYBOVYCHI
DUBLIANY
YAMPIL
MALI HRYBOVYCHI
ROKYTNE
SOROKY-LVIVSKI
KAMIANOPIL
TURYCHA
BUDA
LISOPOTIK
YASNYSKA
PIDBIRTSI
BIRKY
BRIUKHOVYCHI
ZAMARSTYNIV
HOLOSKO
VELYKI KRYVCHYTSI
ZNESINNIA
LYEYNYCHI
ZELIV
KAIZERVALD
RIASNE-2
YALIVETS
VYNNYKY
KLEPARIV
LYCHAKIV
KOZHYCHI
RIASNE-RUSKE
LVIV
MAIORIVKA
CHYSHKY
PIDRIASNE
LEVANDIVKA
SNOPKIV
SOLUKY
KASTELIVKA
PASIKY
VOLYTSIA
BILOHORSHCHA
VULKA
PYROHIVKA
SOSNIVKA
BOHDANIVKA
KULPARKIV
KOZELNYKY
PALANKY
SYHNIVKA
SYKHIV
RUDNE
SKNYLIVOK
HORISHNII
PASIKY-ZUBRYTSKI
BODNARIVKA
ZYMNA VODA
KHOLODNOVIDKA
SKNYLIV
LAPAIVKA
ZUBRA
BEREZIVKA
KONOPNYTSIA
SOKILNYKY
KROTOSHYN


kepler.gl
density
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by average of
number_of_people
distances
Color
Stroke Width Range
by distance
HREBINTSI
NOVE SELO
VELYKI HRYBOVYCHI
ZAMARSTYNIV
HOLOSKO
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KAIZERVALD
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RUDANTSI
TSEPERIV
DIDYLIV
UBYNI
ZAPYTIV
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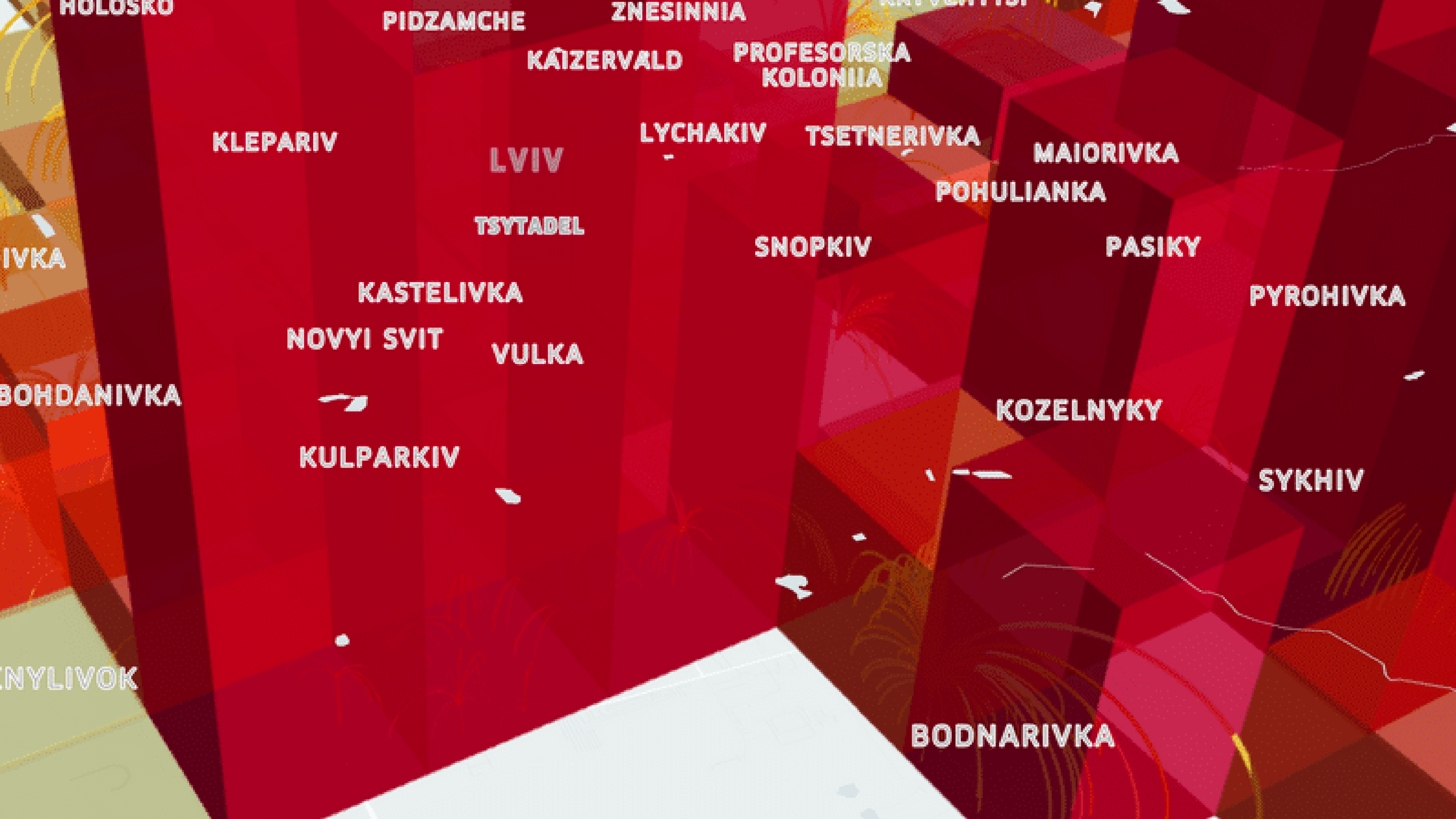
BLYSHCHYVODY
DERNIVKA
VOLIA VYSOTSKA
ALANKY
VYNNYKY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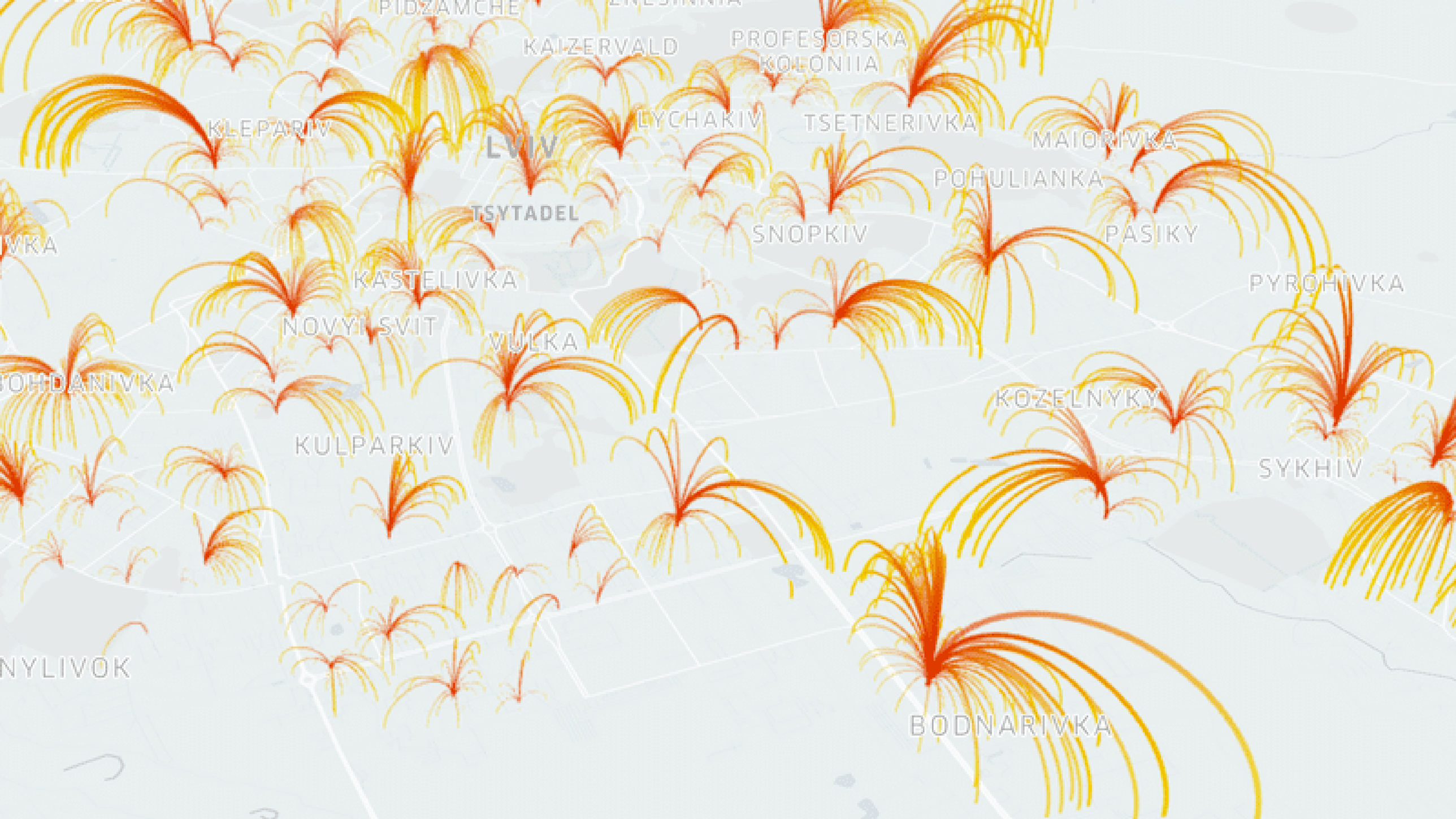
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TSYTADEL
SNOPKIV
PASIKY
KASTELIVKA
PYROHIVKA
NOVYI SVIT
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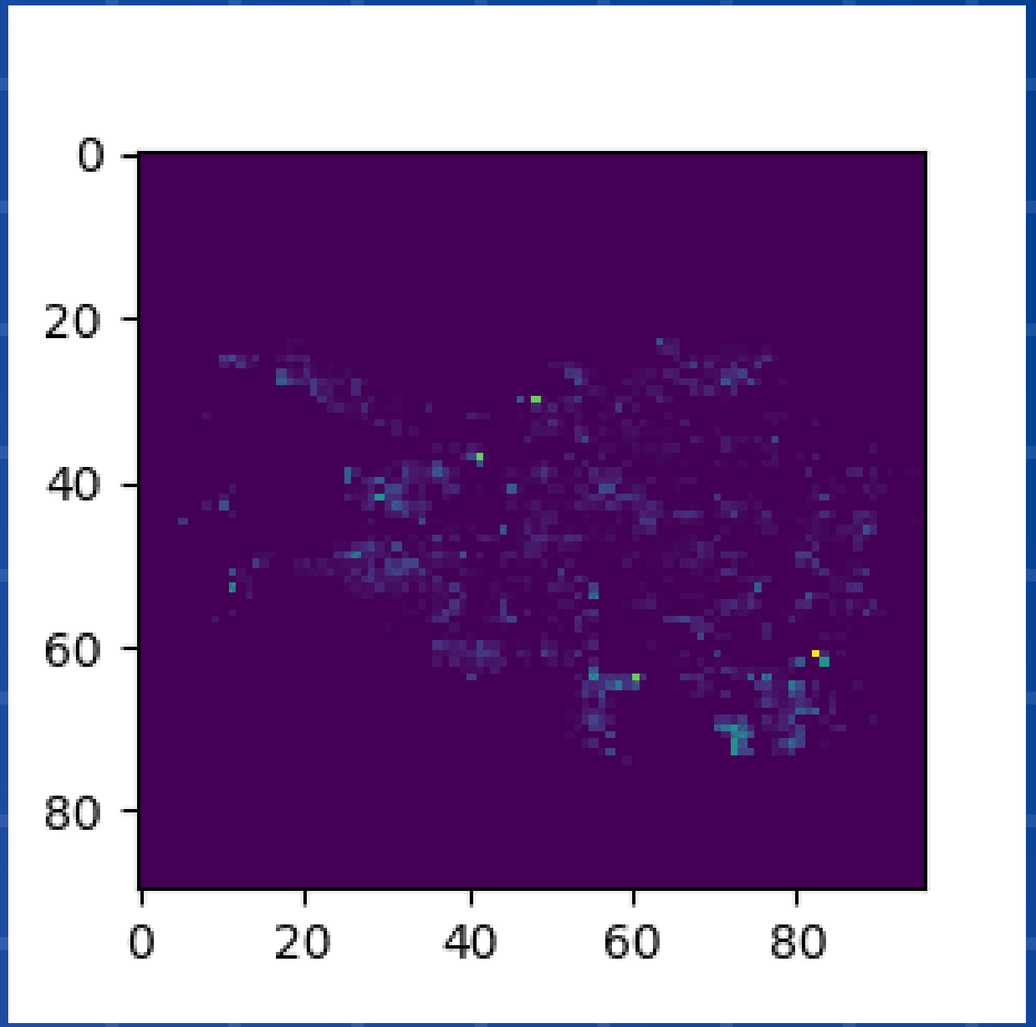
THE PROTOTYPE

Mathematical representation of the city using 200x200 grids

Shows demand per region



OUR CHALLENGES

1

Noisy data

Data requires a lot of cleaning and standartization – open source data

2

Lack of observations

Proper data collection has started recently

3

Multiple solutions

Complex problem implies a variety of solutions

FUTURE STEPS

CONTINUOUS DATA

Integrate our system into a continuous data flow

LOCATION RECOMMENDATION

features:
– demand for kindergartens
– average commute
– average distance from home
– birth rate

TEST AND EVALUATION

Improving the algorithm based on the feedback

EXPANSION

Apply the framework to new data sources

Thank you for attention