

THE INTERVENTION INDEX

Data-Driven Prioritisation of £1.58 Billion Transport Investment in Liverpool City Region

Alex Singleton

Professor of Geographic Information Science

Director of Geographic Data Service



WWW.GEODS.AC.UK



ABOUT TODAY'S TALK

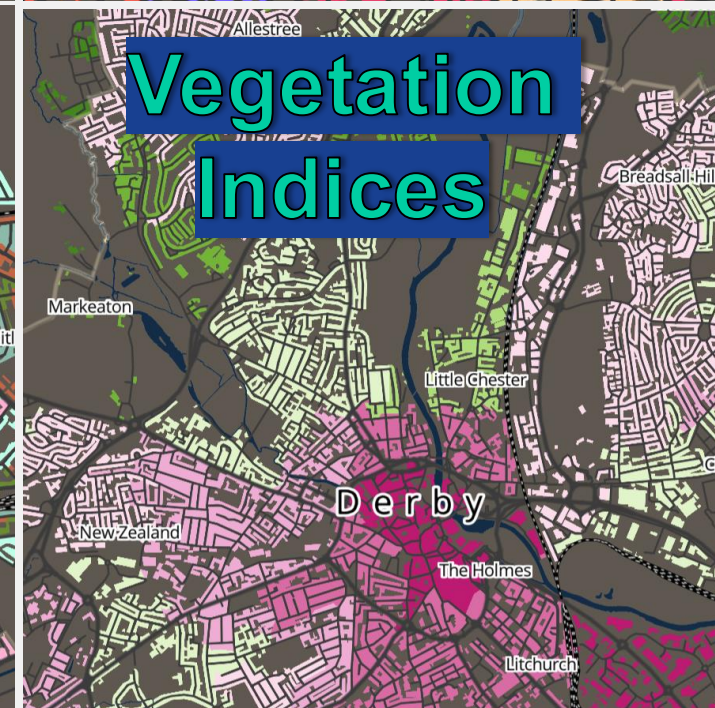
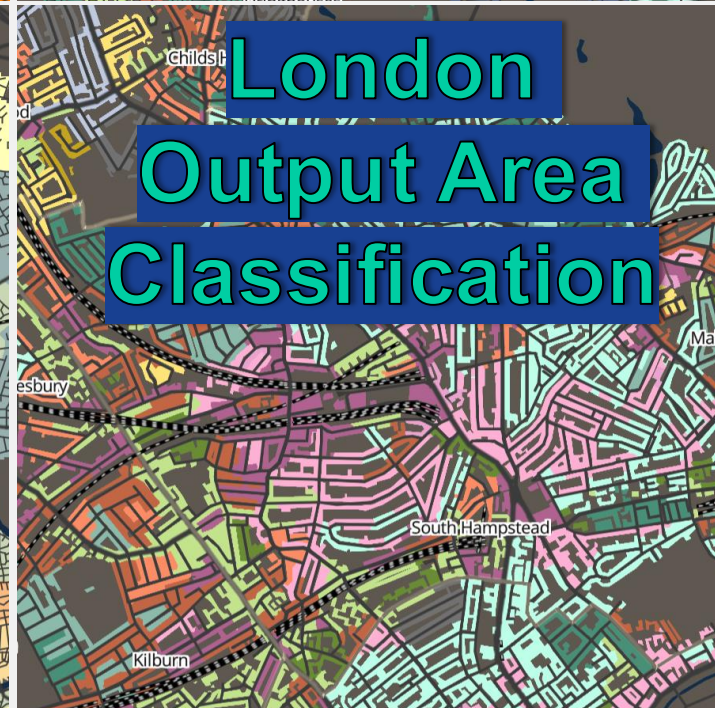
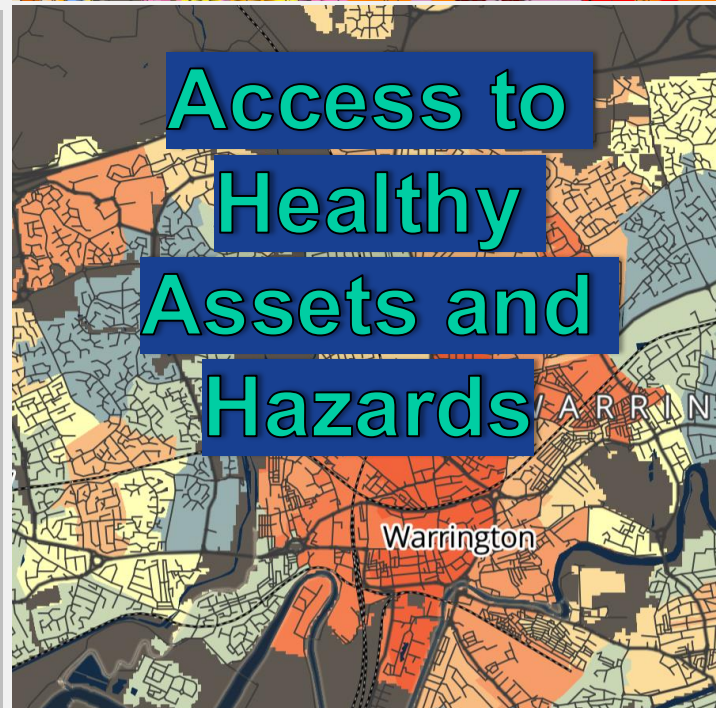
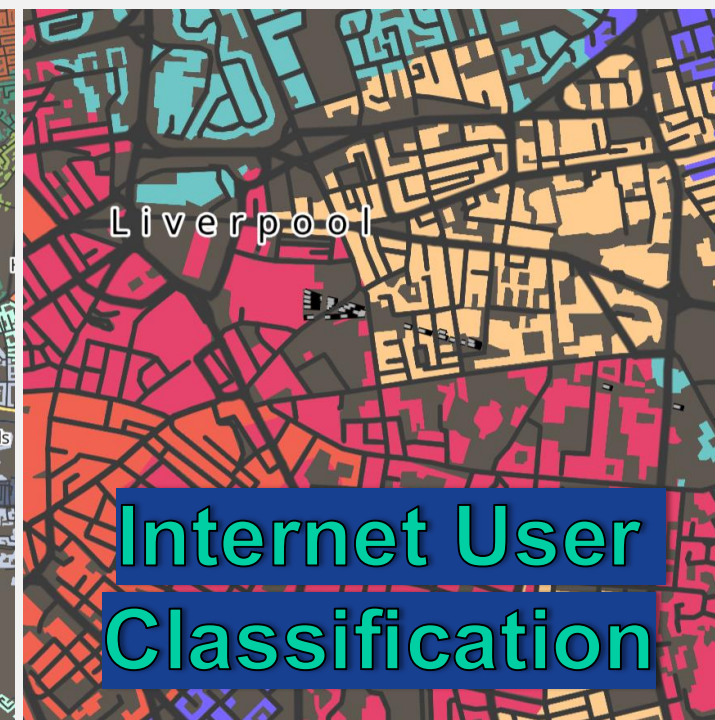
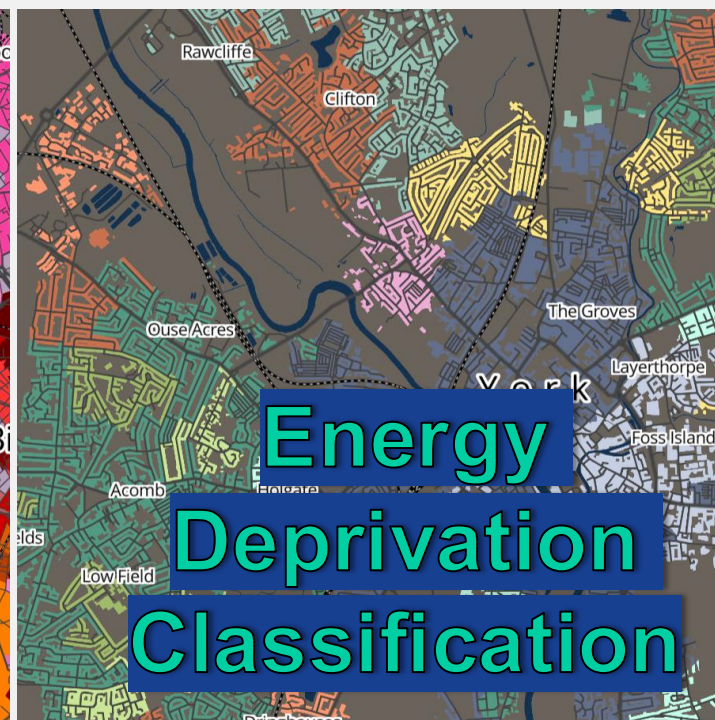
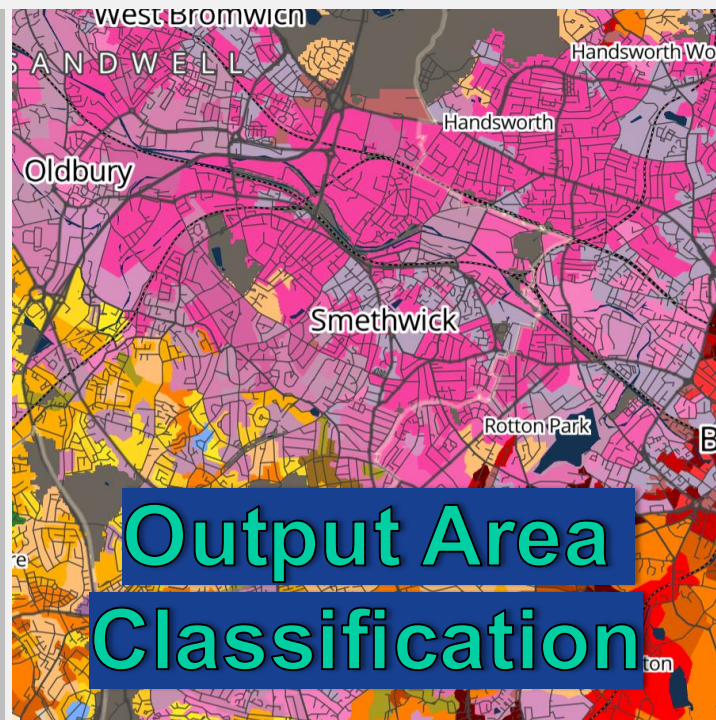
- **A Quick Introduction to Me**
- **Turning Data into Information**
- **Transport for City Regions (TCR) Funding...**
 - Our Role
 - What we did to help LCRCA



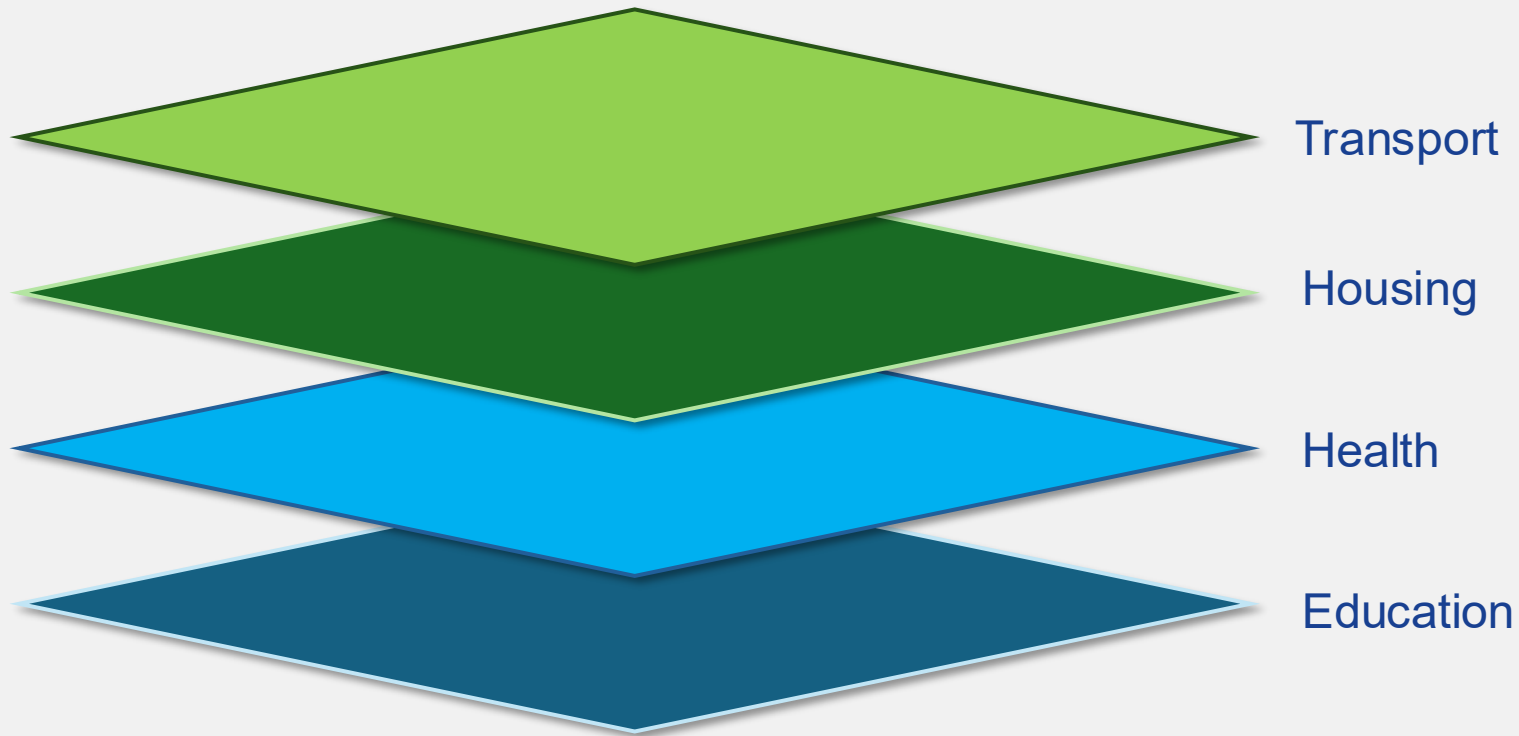
ABOUT ME...

- **Professor of Geographic Information Science**
- **University of Liverpool**
- **Founded Geographic Data Science Lab**
- **Director of Geographic Data Service**
- **Research: geodemographics; urban analytics; AI; inequalities**





DATA INTO INFORMATION



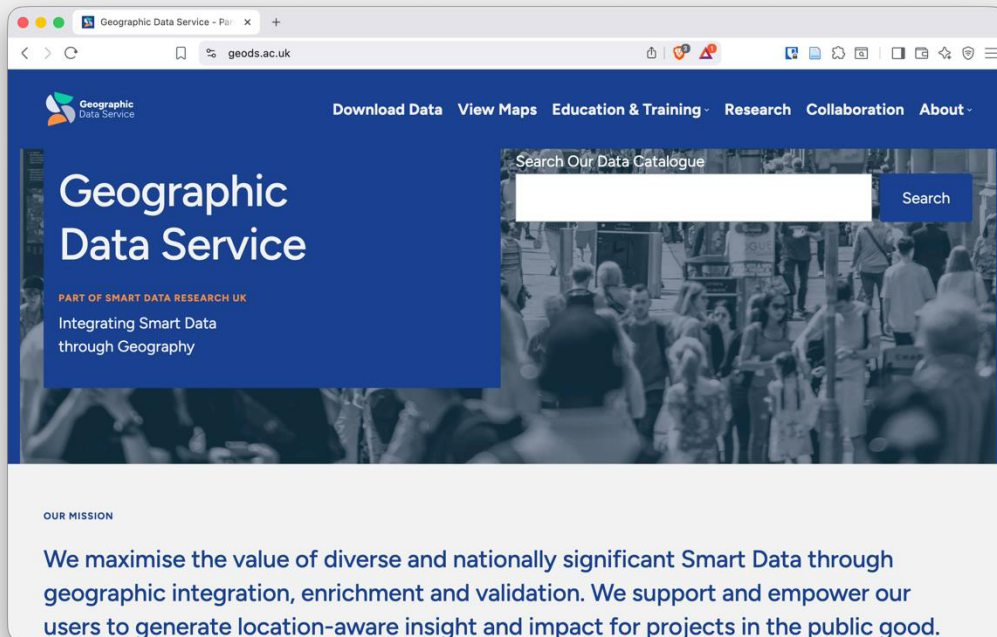
- **Multiple layers of data**
- **Geographic Information Systems**
- **Turn into information**



ACCESS OUR DATA

<https://tinyurl.com/y8bh82zd>

Follow Us
On LinkedIn



- **National data service**
- **Create data products**
 - Mostly UK
- **Lots are Open Data**
- **Projects in the “Public Good”**
- **Free!**

WWW.GEODS.AC.UK



TRANSPORT FOR CITY REGIONS (TCR) FUNDING

- Provide **evidence base** for future TCR bid
 - **Targeting** framework
 - **Evaluation** framework
- **Co-designed** schema with policymakers around perceptions of inequality in strategic policy areas.
- Emphasis on domains where policymakers have **strategic powers**
- Quantitative & Qualitative



CITY REGION SUSTAINABLE TRANSPORT SETTLEMENTS (CRSTS) 1

- **A significant investment initiative by the UK government aimed at enhancing local transport networks across eight major English city regions (£5.7B)**
- **Expected Outcomes:**
 - **Improved Public Transport:** Enhanced services leading to increased usage and reduced congestion.
 - **Economic Growth:** Better connectivity supporting local businesses and attracting investment.
 - **Environmental Benefits:** Promotion of sustainable transport options contributing to decarbonisation goals.



CRSTS 1 MODEL (2022/23 TO 2026/27)



- Request for Schemes against CRSTS priority



- Rationalise
- Rank
- Develop Narrative



Department
for Transport





2022/23 to 2026/27

Liverpool City Region: £710 million

STARTED WITH GOVERNANCE



[Return](#)

Meetings, agendas and minutes

Calendar

Committees

Constitution

Decisions

Election results

Forthcoming Decisions

Forward plans

Library

Meetings

Outside bodies

Constituent Local Authorities

Search documents

Subscribe to updates

MPs

What's New

Webcasts

Agenda item

Development of the next LCR place-based pipeline

Meeting of Quorate, LCR Overview and Scrutiny Committee, Wednesday, 6th September, 2023 2.00 pm (Item 14.)

View the background to item 14.

To consider the report of the Executive Director of Investment and Delivery.

Minutes:

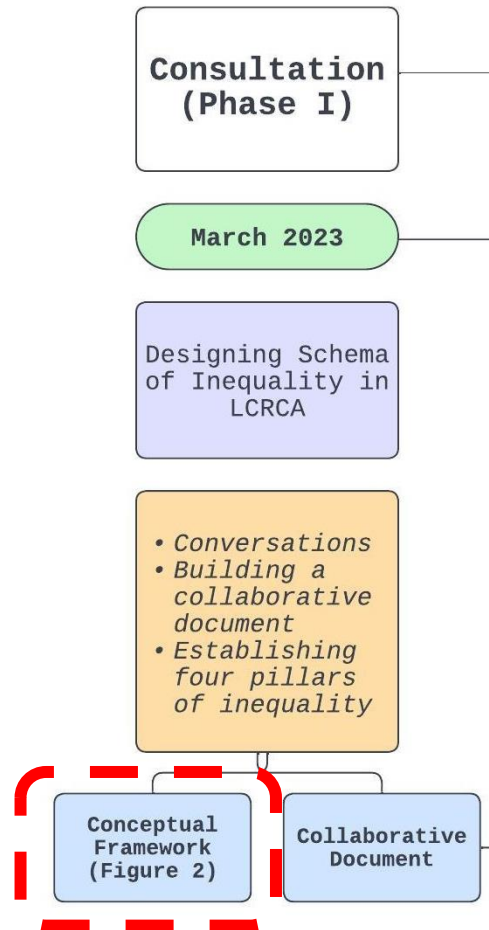
The Committee considered a report which set out the proposed approach for development of the Liverpool City Region (LCR) place-based pipeline across transport, housing, investment and net zero.

It was reported that in 2021, the Liverpool City Region Combined Authority (LCRCA) was awarded £710m of capital transport funding through the City Region Sustainable Transport Settlements (CRSTS) programme. This funding would support transport schemes across the City Region including Headbolt Lane and Liverpool Baltic Railway stations, independently Powered Electric Multiple Units (IPEMU) trains, Green Bus Corridors and a settlement for Highway maintenance.

The pipeline of projects for CRSTS had been identified through a thematic data-led approach. The projects contained within the pipeline were at various stages of maturity of which the LCRCA had carried out the required due diligence to ensure they aligned with priorities and represented on balance the best solutions to the problems and opportunities identified by the data. Having a pipeline of projects also allows the LCRCA to respond quickly to funding streams or bid opportunities, particularly when deadlines are short.



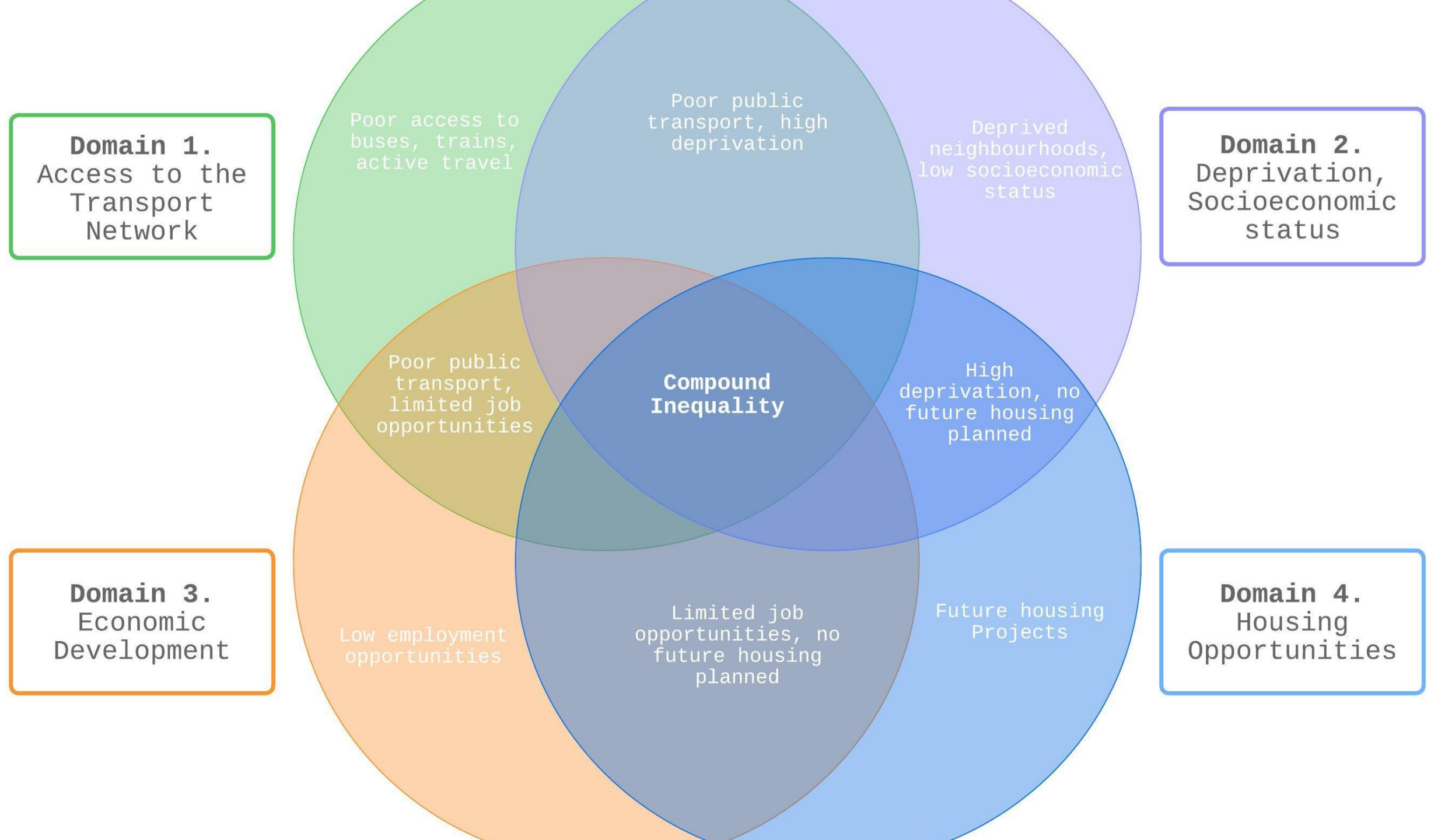
• Conceptual Model



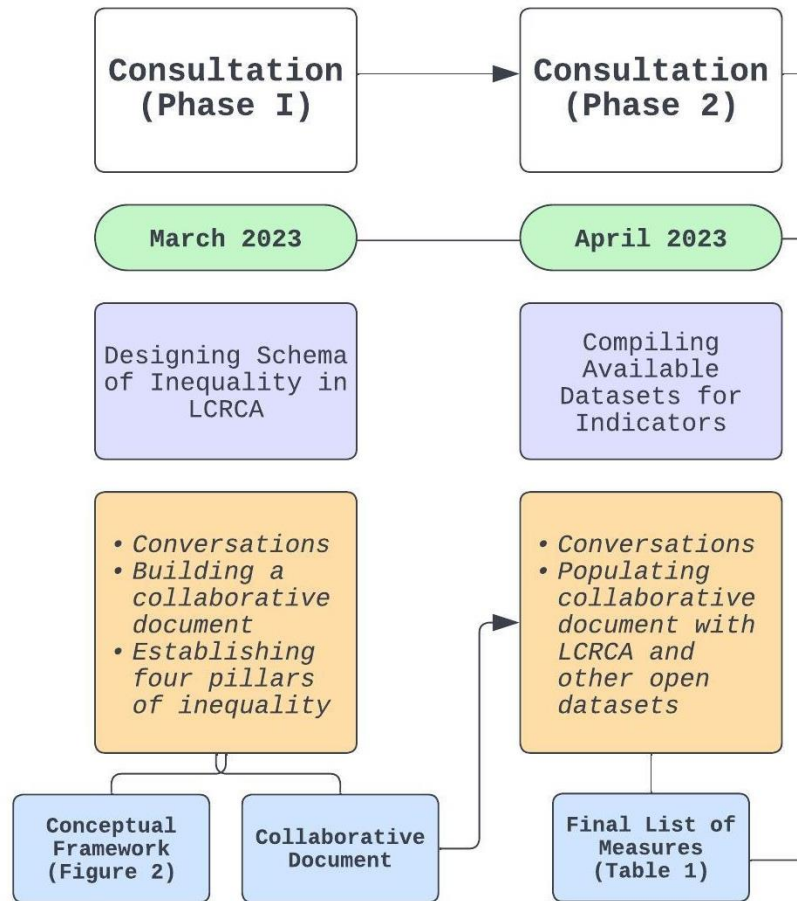
- Co-designed schema with policymakers around perceptions of inequality in strategic policy areas.
- Emphasis on domains where policymakers have strategic powers
- Collaborative document capturing policymakers' questions they felt empowered to answer
- Conceptual Framework.
 - Compound inequalities

Legend

- Research Phase
- ◻ Timeline
- Phase Purpose
- Phase Activities
- Phase Outputs



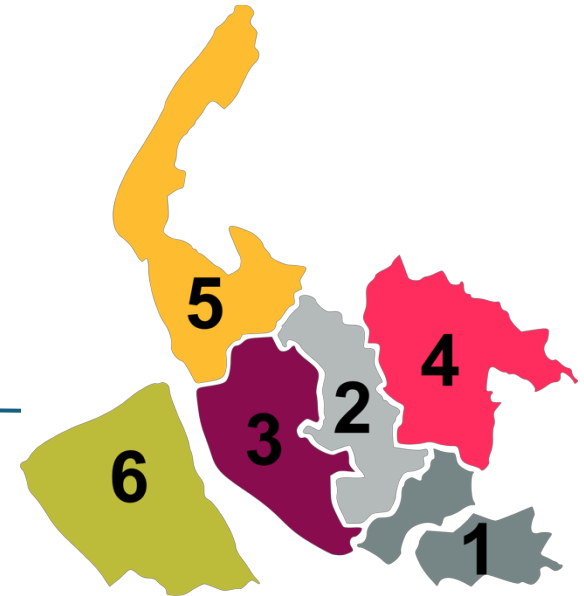
• Data Mapping



GeoDS Data

LCRCA Data

Open Data



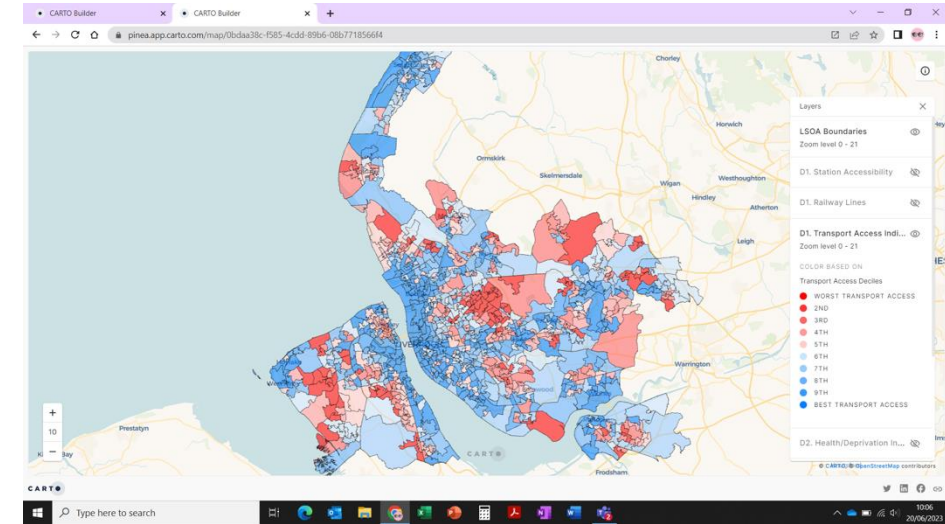
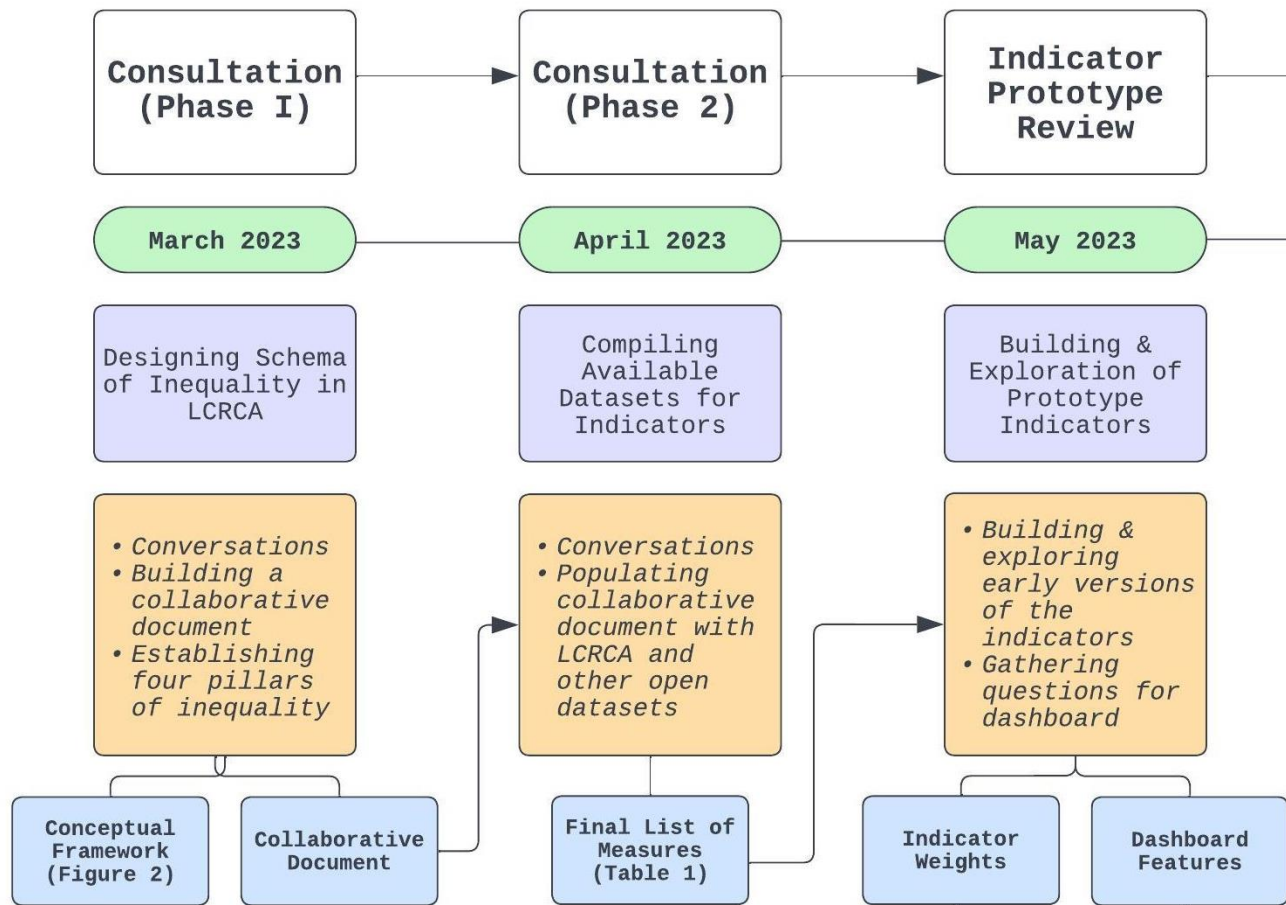
Legend

- Research Phase
- Timeline
- Phase Purpose
- Phase Activities
- Phase Outputs

- Google Doc
- Wide team within LCRCA + LAD

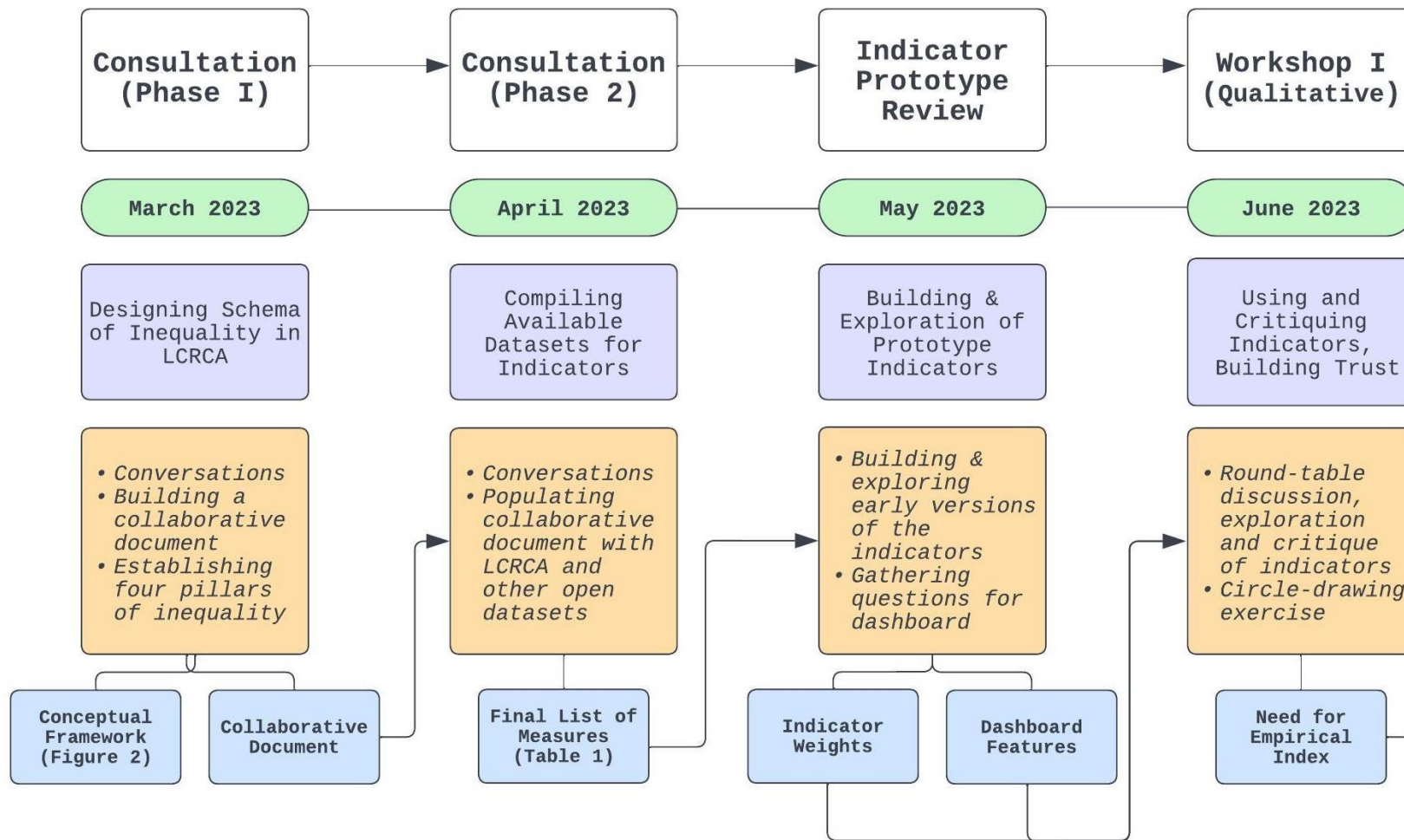
Domain	Indicator	Source
Domain 1. Access to the Transport Network	Rail station accessibility	Darwin API
	Bus stop accessibility	NaPTAN
	Active travel accessibility	LCRCA
Domain 2. Deprivation and Socioeconomic Status	Deprivation	IMD (2019)
	Socioeconomic status	2021 Census
Domain 3. Economic Development	Innovative populations	Business Register and Employment Survey (BRES)
	Major employer locations	LCRCA
Domain 4. Housing Opportunities	Future housing projects	LCRCA





Legend

- Research Phase
- Timeline
- Phase Purpose
- Phase Activities
- Phase Outputs



Legend

- Research Phase
- Timeline
- Phase Purpose
- Phase Activities
- Phase Outputs

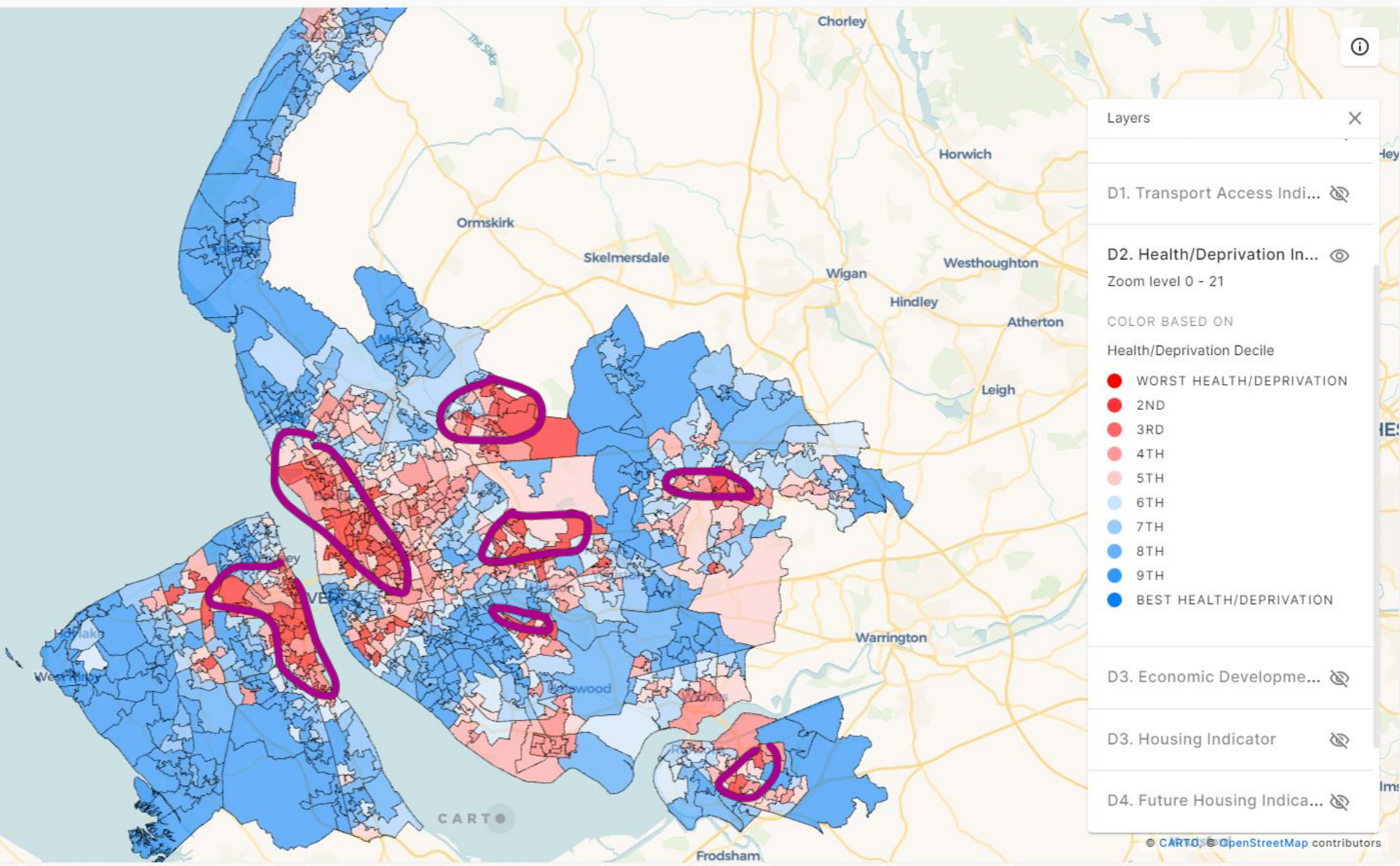


Health / Deprivation

+

10

-



Layers

D1. Transport Access Indi...

D2. Health/Deprivation In...
Zoom level 0 - 21
COLOR BASED ON
Health/Deprivation Decile

●

 WORST HEALTH/DEPRIVATION

●

 2ND

●

 3RD

●

 4TH

●

 5TH

●

 6TH

●

 7TH

●

 8TH

●

 9TH

●

 BEST HEALTH/DEPRIVATION

D3. Economic Developme...

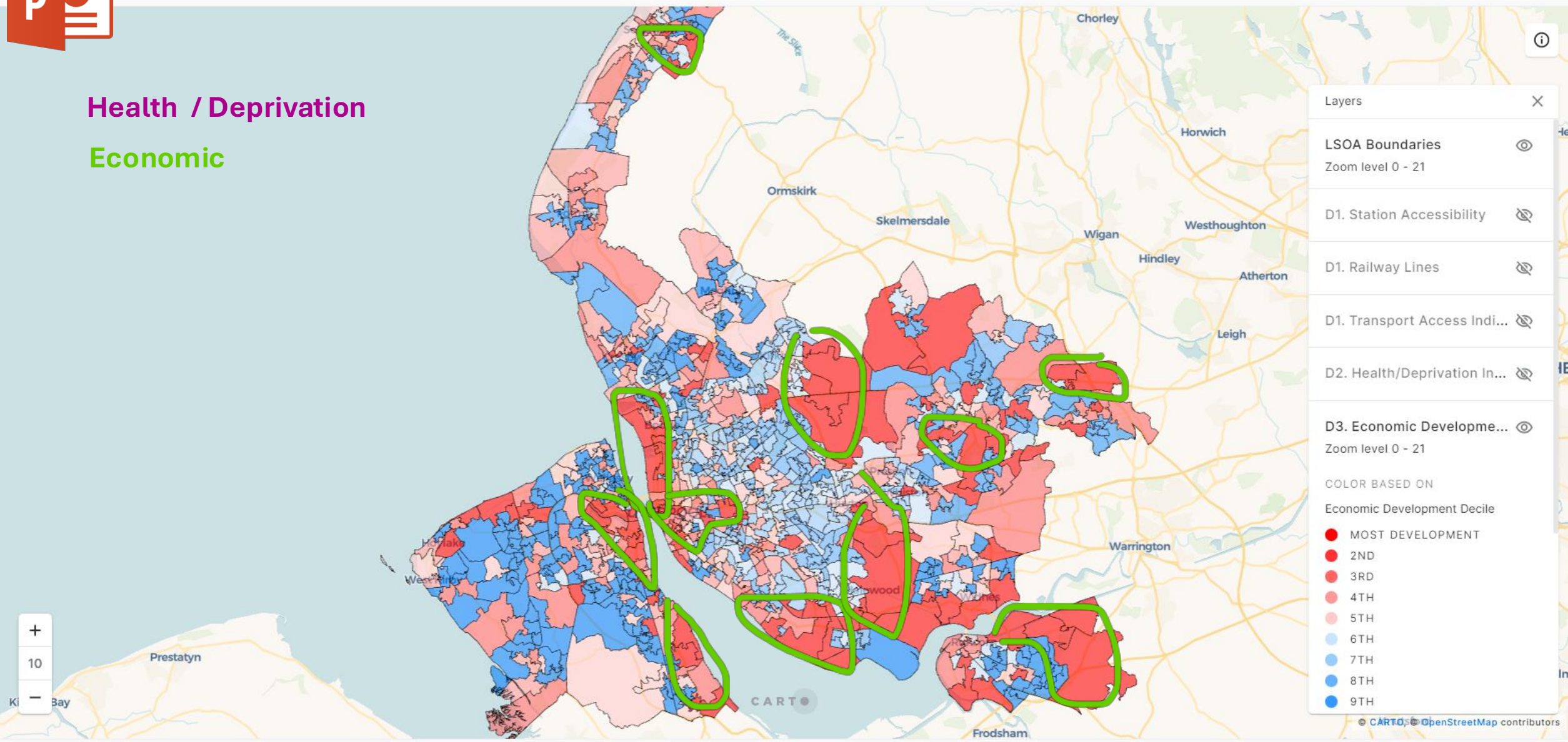
D3. Housing Indicator

D4. Future Housing Indica...



Health / Deprivation

Economic

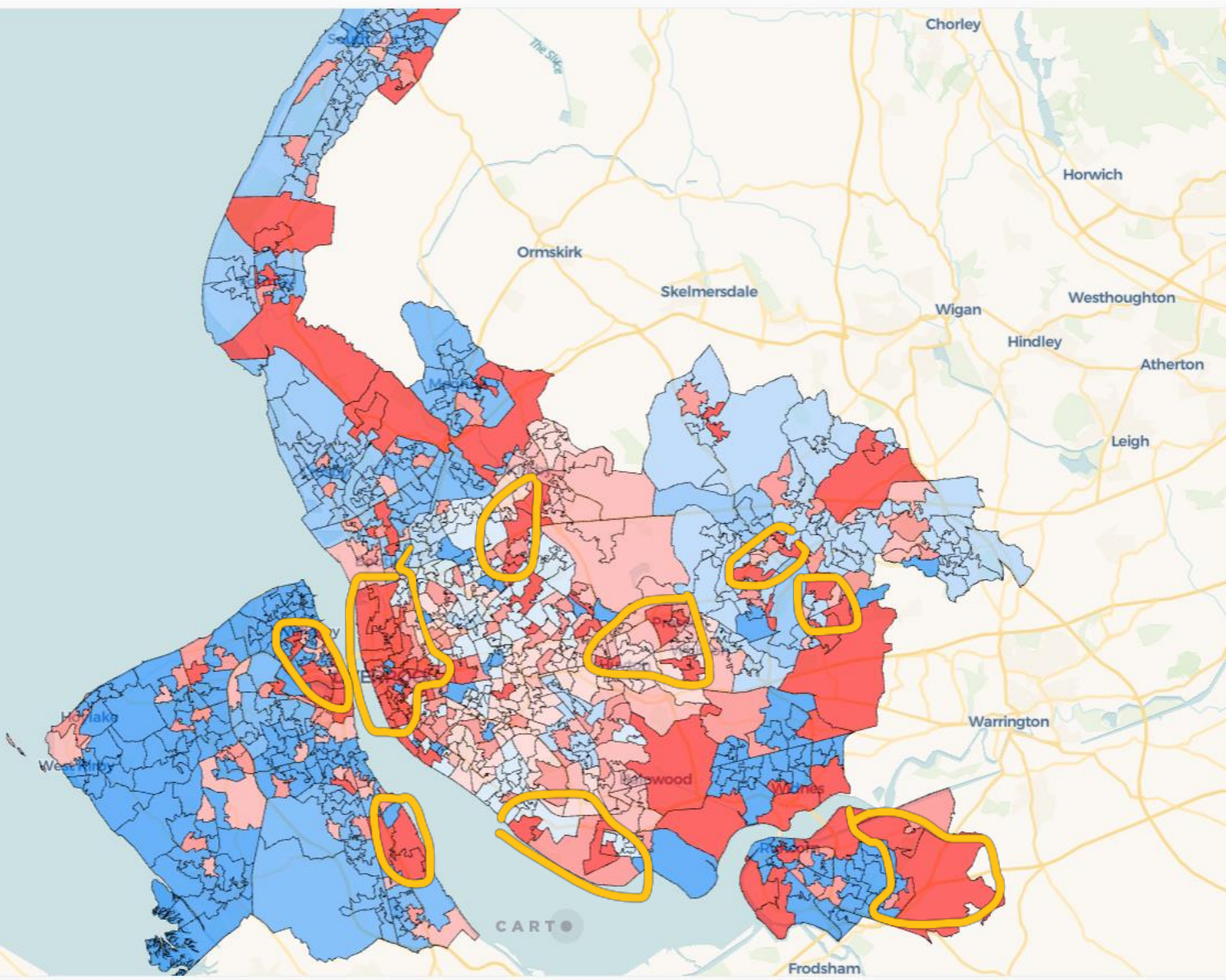




Health / Deprivation

Economic

Housing



Layers

LSOA Boundaries

Zoom level 0 - 21

☒

D1. Station Accessibility

☐

D1. Railway Lines

☐

D1. Transport Access Indi...

☐

D2. Health/Deprivation In...

☐

D3. Economic Developme...

☐

D3. Housing Indicator

☐

D4. Future Housing Indica...

Zoom level 0 - 21

☒

COLOR BASED ON

Future Housing Decile

MOST HOUSING PLANNED

2ND

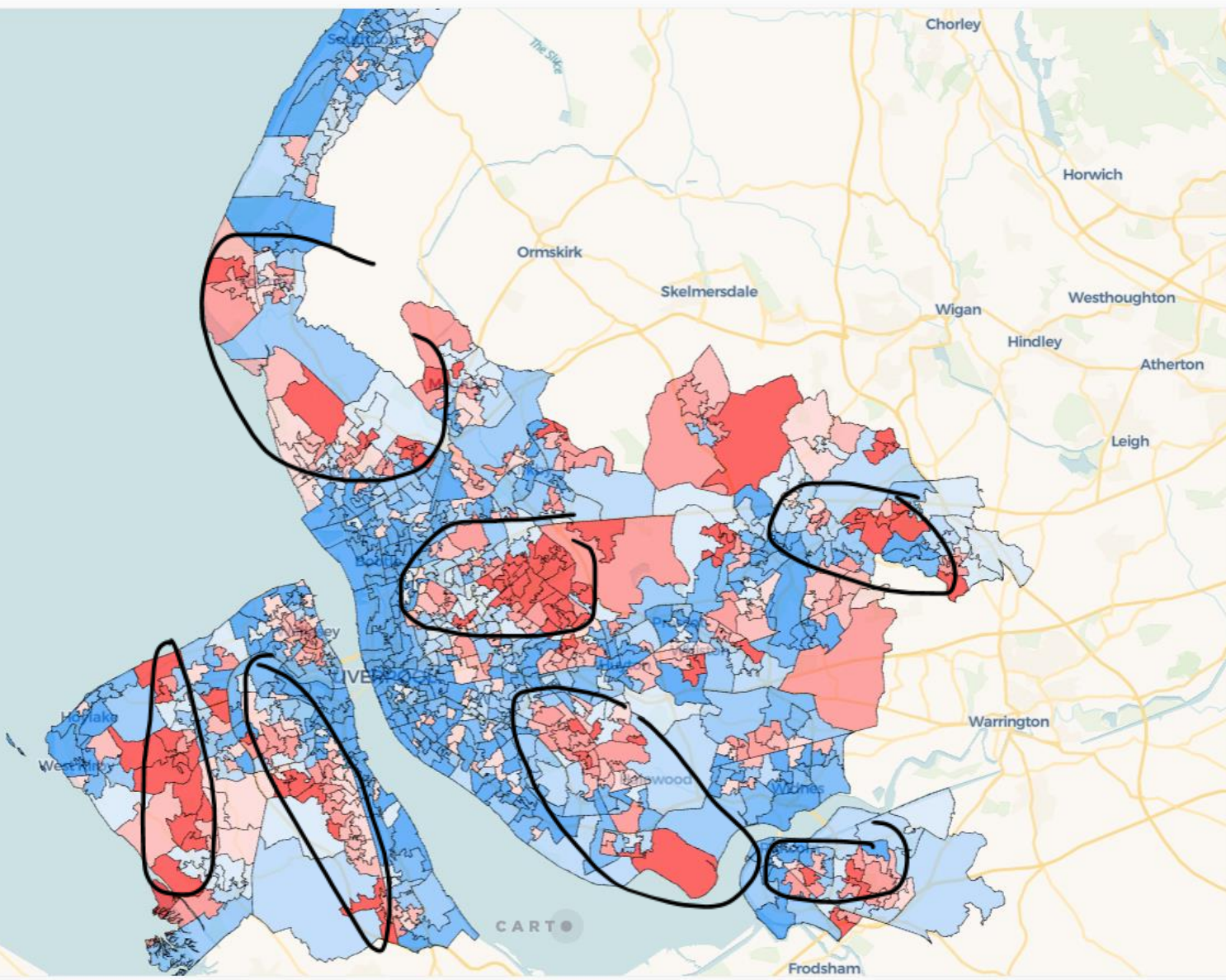
3RD

4TH

contributors



Health / Deprivation
Economic
Housing
Transport Access



Layers

LSOA Boundaries

Zoom level 0 - 21

D1. Station Accessibility

D1. Railway Lines

D1. Transport Access Indi...

Zoom level 0 - 21

COLOR BASED ON

Transport Access Deciles

● WORST TRANSPORT ACCESS

● 2ND

● 3RD

● 4TH

● 5TH

● 6TH

● 7TH

● 8TH

● 9TH

● BEST TRANSPORT ACCESS

D2. Health/Deprivation In...

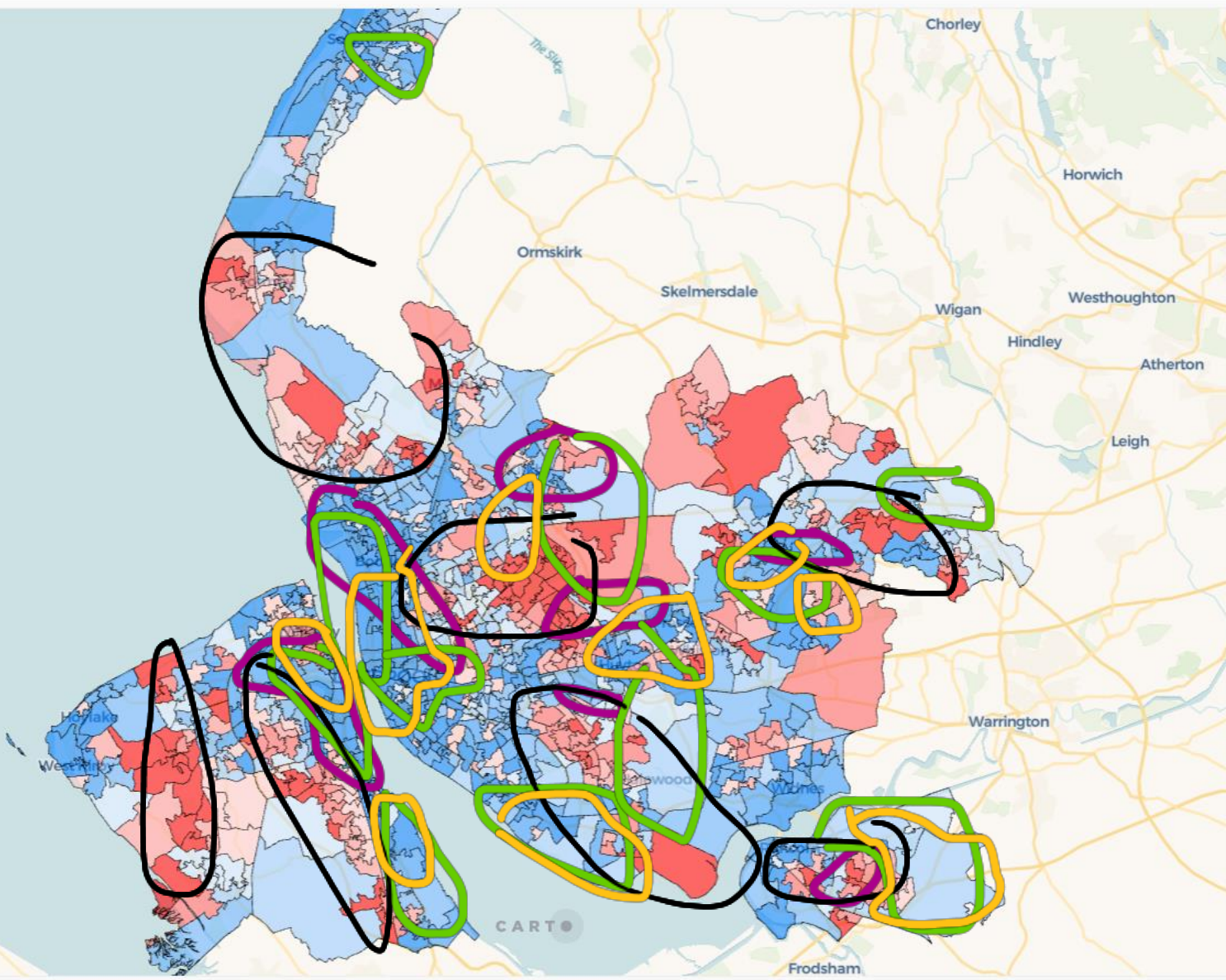


Health / Deprivation

Economic

Housing

Transport Access



Layers

LSOA Boundaries

Zoom level 0 - 21

D1. Station Accessibility

D1. Railway Lines

D1. Transport Access Indi...

Zoom level 0 - 21

COLOR BASED ON

Transport Access Deciles

● WORST TRANSPORT ACCESS

● 2ND

● 3RD

● 4TH

● 5TH

● 6TH

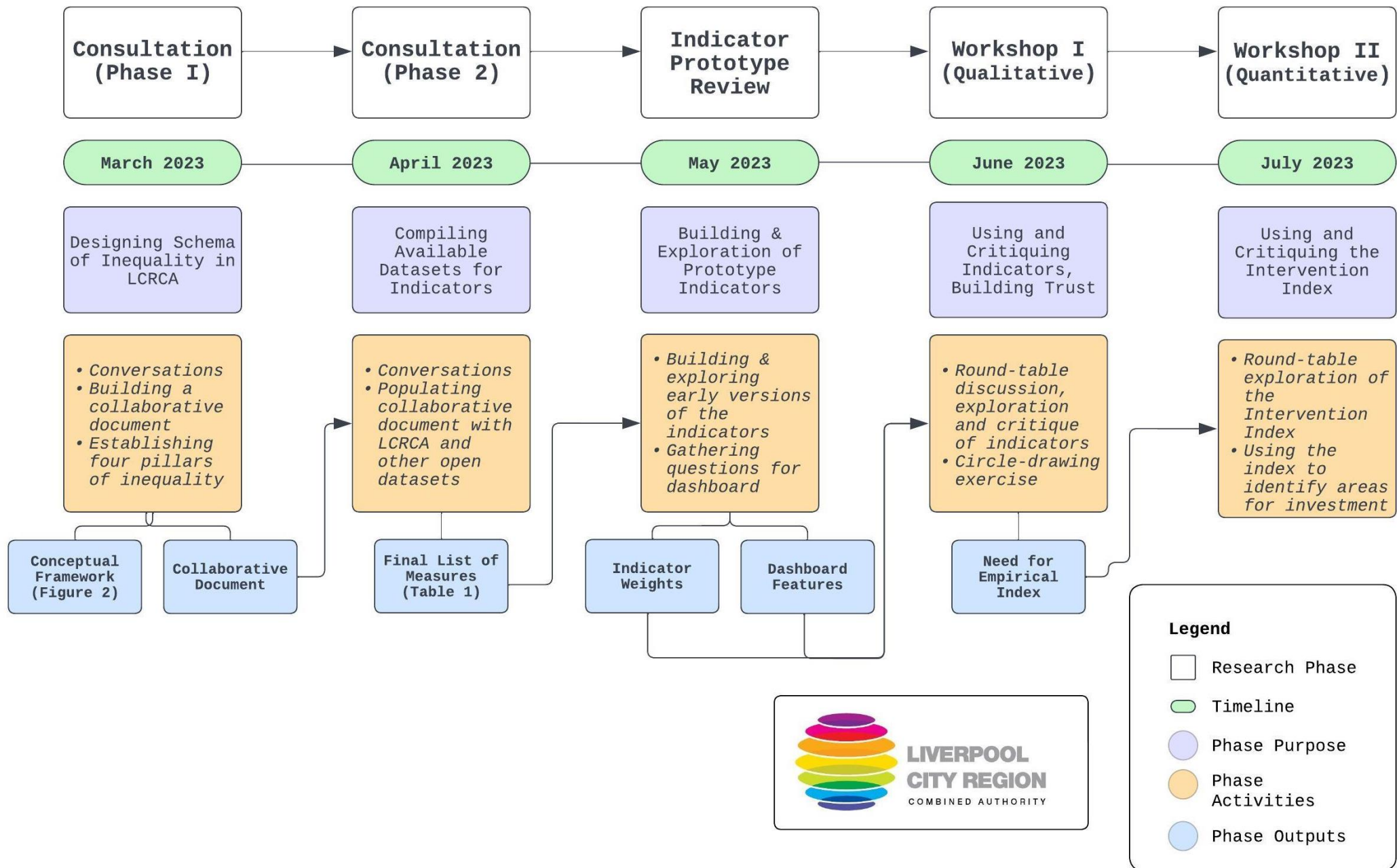
● 7TH

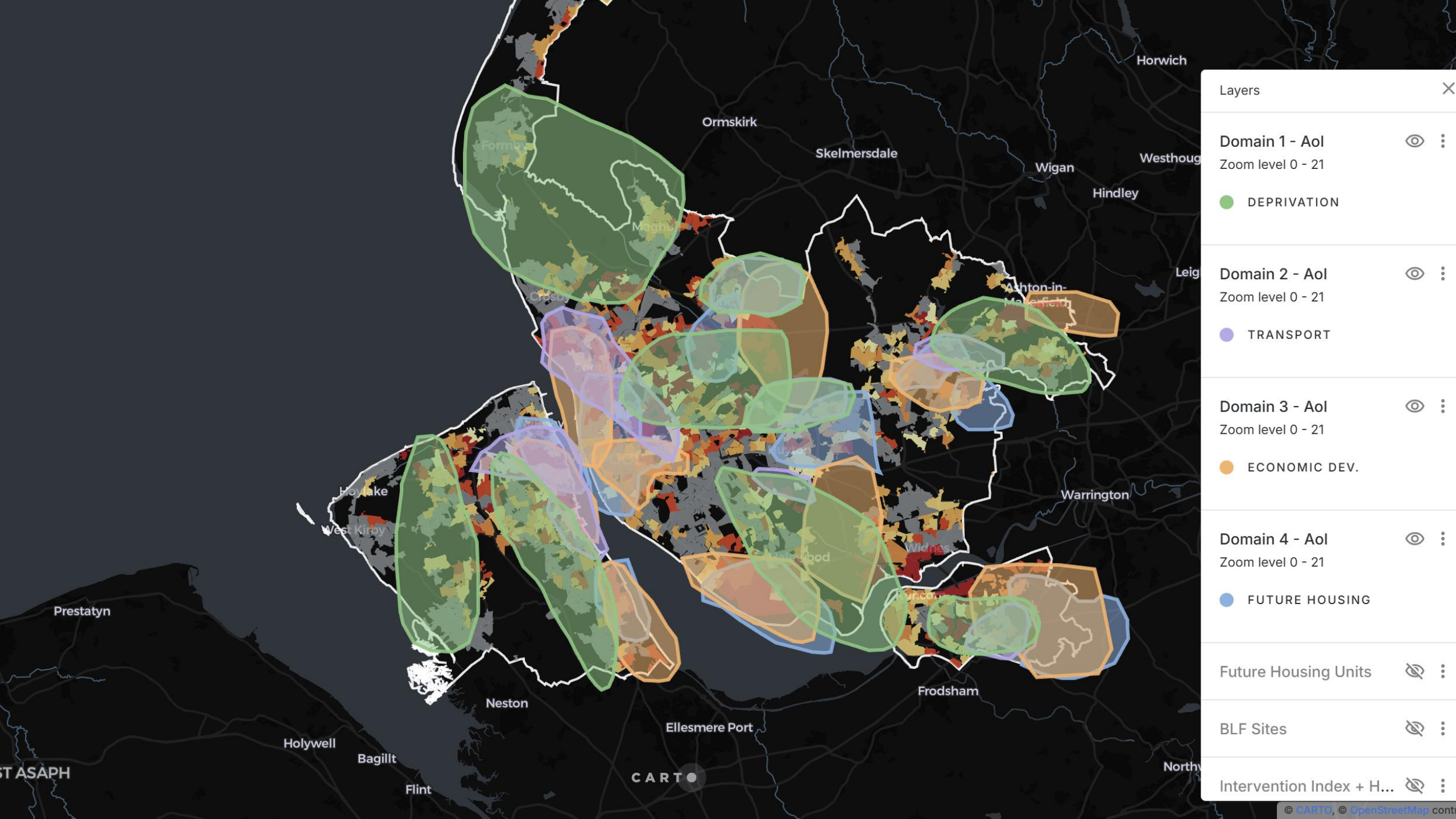
● 8TH

● 9TH

● BEST TRANSPORT ACCESS

D2. Health/Deprivation In...





Layers

Domain 1 - AoI

Zoom level 0 - 21

● DEPRIVATION

Domain 2 - AoI

Zoom level 0 - 21

● TRANSPORT

Domain 3 - AoI

Zoom level 0 - 21

● ECONOMIC DEV.

Domain 4 - AoI

Zoom level 0 - 21

● FUTURE HOUSING

Future Housing Units

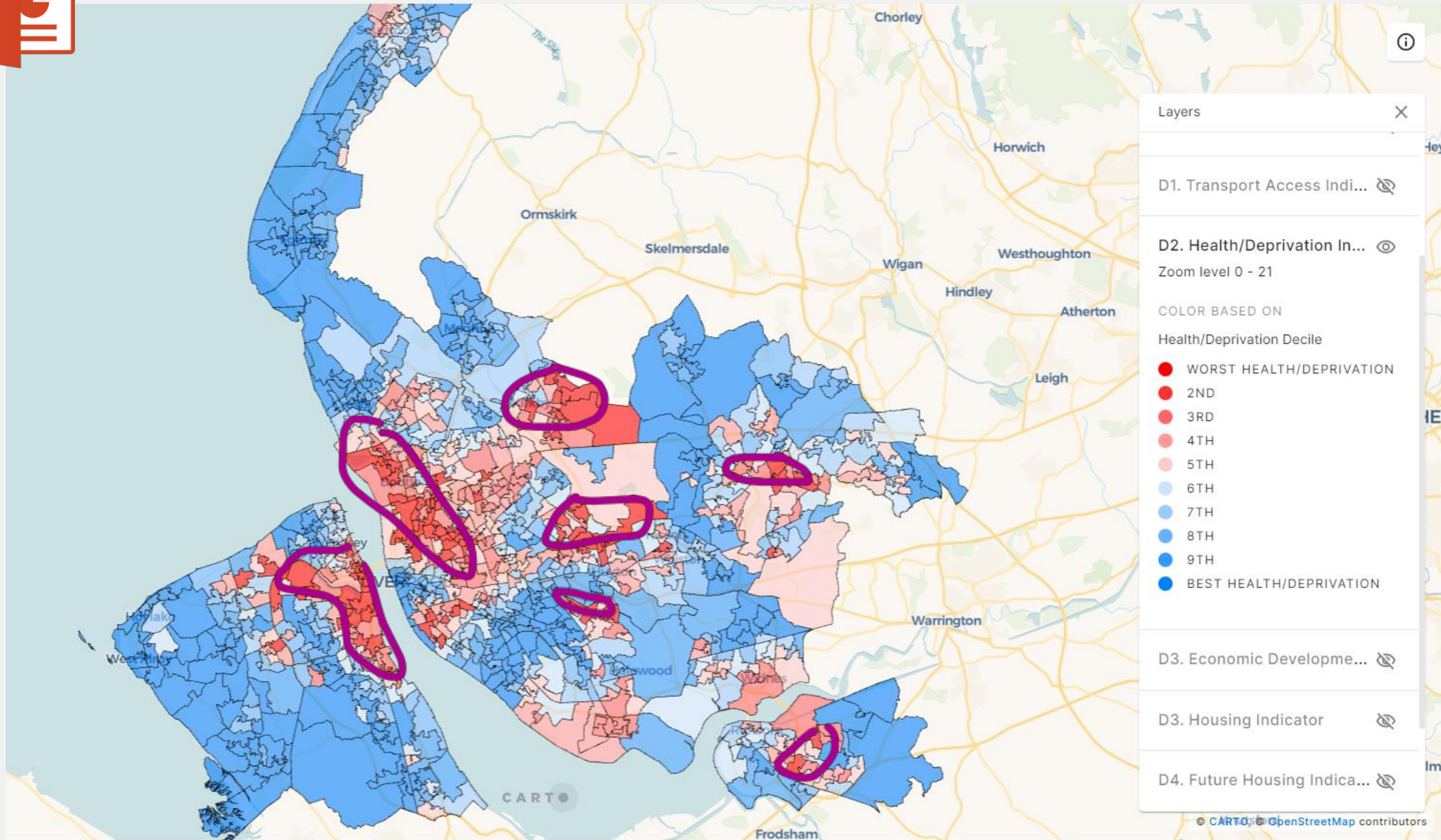
BLF Sites

Intervention Index + H...

MEASURES & INDEX

Domain	Indicator	Source
Domain 1. Access to the Transport Network	Rail station accessibility	Darwin API
	Bus stop accessibility	NaPTAN
	Active travel accessibility	LCRCA
Domain 2. Deprivation and Socioeconomic Status	Deprivation	IMD (2019)
	Socioeconomic status	2021 Census
Domain 3. Economic Development	Innovative populations	Business Register and Employment Survey (BRES)
	Major employer locations	LCRCA
Domain 4. Housing Opportunities	Future housing projects	LCRCA

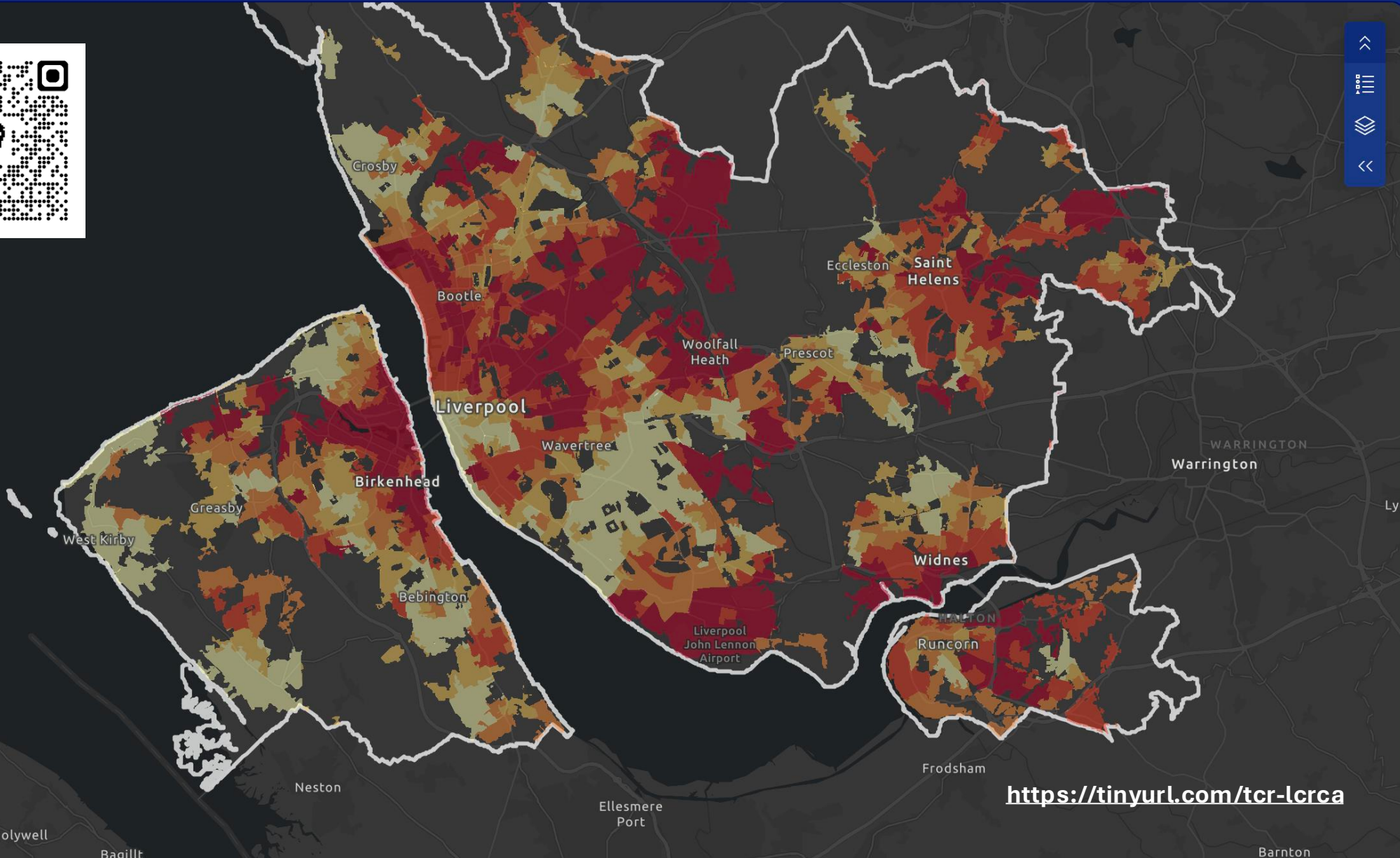




- Workshop with LCRCA
- Manually checked and annotated all maps (in PowerPoint!)
- Agree and index

LCRCA Indicators (Transport for City Regions)

A collaboration between Liverpool City Region Combined Authority, Geographic Data Service and the University of Liverpool



UNIVERSITY OF
LIVERPOOL

EVALUATION PHASE



- Roadshow the maps / indicators with the LADs
- Requests for scheme suggestions that aim to resolve identified issues



- Agree ranking
- Develop Portfolio

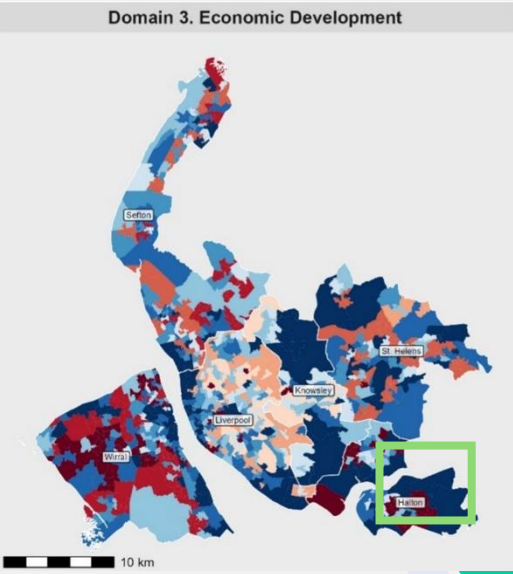
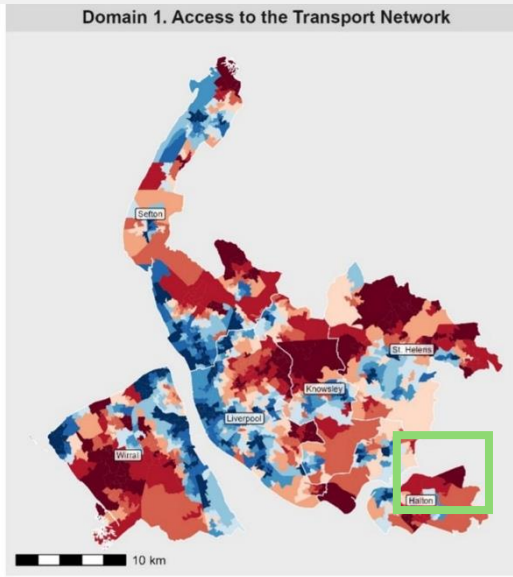


EVALUATION CRITERIA / OUR ROLE

- 1) **Strategic importance:** job creation, government priority alignment, LCR priority alignment
- **2) Economic importance:** regeneration impacts, carbon, environmental and social benefits
- **3) Management dimension:** acceptability, deliverability, dependency
- **4) Financial dimension:** affordability, cost estimates, uncertainty
- **5) Commercial dimension:** funding source, procurement risks



EXAMPLE SCHEME...





Mayor - Steve Rotheram

Liverpool City Region Combined Authority Council Meeting
Friday, 12th December 2025 at 1:00pm

WWW.GEODS.AC.UK

YouTube ^{GB}

Search

£1.6 billion

Putting the public in public transport: £1.6bn will transform transport across Liverpool City Region

Liverpool City Region Combined Authority
554 subscribers

Subscribe

10

Share

Save

...

FINAL THOUGHTS

- It was a fantastic experience working on such an important collaborative project.
- We hope that we brought a lot of value to LCRCA
 - Technical support
 - Independence helps with politics
- Universities love projects like this – we are assessed on “Impact” of our research / activities
- Very happy to speak to anyone who wants to do something similar elsewhere!!



Follow Us
On LinkedIn



<https://tinyurl.com/y8bh82zd>

WWW.GEODS.AC.UK

