

Cartogram with Rivers

* Required

Consent

Before you begin the study, as required by the School of Computer Science Research Ethics Committee (CS REC), University of Nottingham, **please read:**

Information to be Provided to Survey Participants, available at:

https://uniofnottm-my.sharepoint.com/:w:/g/personal/qiru_wang1_nottingham_ac_uk/EWkIjUNIrIRGhO5E84_HZkkBjzSsPhoNGVSE7MqIkjH2Mg?e=aZqD6I

The ethics application ID for this study is **CS-2022-R5**.

Introduction

In this study, we aim to evaluate a novel cartogram design with rivers.

The study consists of the following sections (**you may watch the videos for each session, which include the same text content**):

1. Training, includes introductions to some concepts involved in this study.
2. Demographic, demographic information will be collected to support analysis.
3. Pre-experiment, checks your familiarity with the concepts introduced in Training.
4. Experiment, you are required to perform simple location tasks of this study.
5. Post-experiment, includes some questions regarding the experiment.

The total time required to complete this study is less than 20 minutes.

Cartogram with Rivers - Introduction



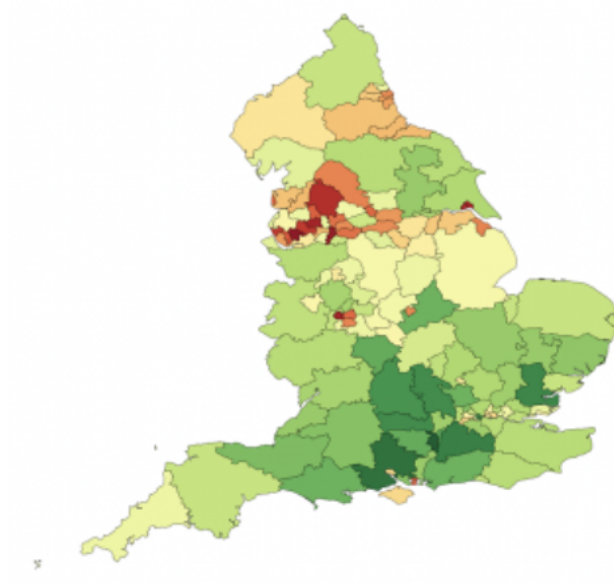
Training - Data

The data used in this study came from NHS Digital, covering various healthcare data collected from Clinical Commissioning Groups (also known as CCGs), the primary administrative--geographic unit set by the NHS in England.

Cartogram with Rivers - Training - Data



Training - Choropleth Map



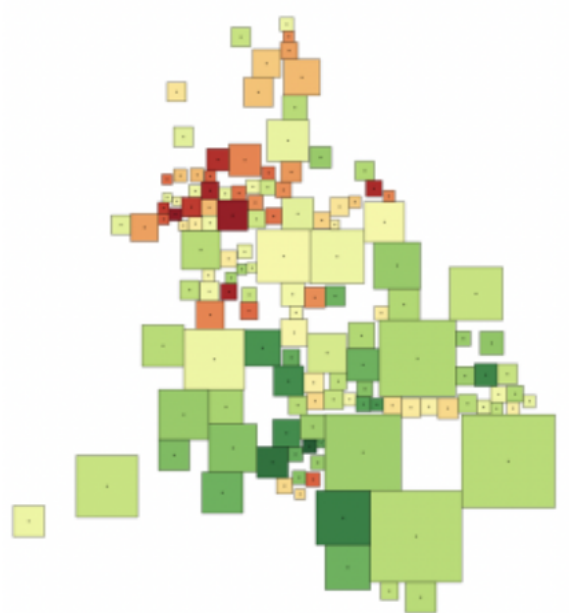
A choropleth map is the representation of scalar data on a geospatial map. Color is often used to encode values in an area, depicting patterns and variations. The choropleth map above shows a map of CCGs in England. Color indicates the mortality rate of cardiovascular diseases in England in this example.

Video version of the instruction - answer not required

Cartogram with Rivers - Training - Choropleth Map



Training - Cartogram



Cartograms are representations of geographical and abstract data, based on a value-by-area mapping technique, combining statistical and geographical information.

Each area is represented by a polygon such as a square (instead of the original shape). Each area varies in size and/or color depending on the data shown on the map. There are many variations of cartograms.

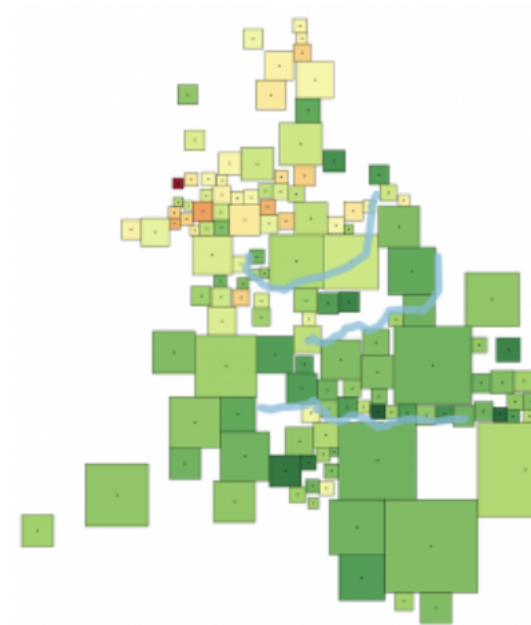
For the purpose of this study we only show examples of a variation called Dorling cartograms here. An example of cartogram depicting the CCGs in England is shown here.

Video version of the instruction - answer not required

Cartogram with Rivers - Training - Cartogram



Training - Cartogram with Rivers



Based on the Dorling, we introduce rivers to cartograms. In the example above, we added the top 3 longest English rivers to the cartogram.

Video version of the instruction - answer not required

Cartogram with Rivers - Training - Cartogram with Rivers



Demographic

Let's begin with some demographic information.

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What is your gender at birth? *

- ☐ Male
- ☐ Female
- ☐ Non-binary
- ☐ Prefer not to say

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What is your age? *

- ☐ 18-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45-49
- ☐ 50 and above

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What level of education do you have? *

- ☐ GCSE
- ☐ A level/BTEC
- ☐ Bachelors
- ☐ Masters
- ☐ PhD

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What is the subject of your degree?

Please include as many details as you can. For example, Computer Science with a specialisation in game design.

If you have multiple degrees, please list them all. *

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Do you have any color vision deficiency (color blindness)? *

- ☐ Yes
- ☐ No

Pre-Experiment

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Familiarity *

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
You are familiar with Choropleths	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You are familiar with Cartograms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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How do you define a cartogram? *

Experiment

In this section, you are required to identify a specific CCG in the our cartogram design. Detailed instructions are available at the beginning of each task, which will be performed on a different webpage.

At the end of each task, you must paste the answer from the webpage in the answer box of this survey.

Watch the video for a demonstration if you are not sure what to do.

To get you familiar with the task, we have prepared 3 practice tasks.

Cartogram with Rivers - Experiment

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Practice Task 1 - Identify **Cambridgeshire and Peterborough**.

Please visit: <https://ghr.wangqiru.com/#/P1> for this practice task.

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Practice Task 2 - Identify **Bath and North East Somerset, Swindon and Wiltshire.**

Please visit: <https://ghr.wangqiru.com/#/P2> for this practice task.

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Practice Task 2 - Identify **Surrey Heartlands.**

Please visit: <https://ghr.wangqiru.com/#/P3> for this practice task.

*

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You are now looking at the actual tasks, start when you are ready.

T1 - Identify **Nottingham and Nottinghamshire.**

Please visit: <https://ghr.wangqiru.com/#/T1> for this task. *

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T2 - Identify **Oxfordshire**.

Please visit: <https://ghr.wangqiru.com/#/T2> for this task. *

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T3 - Identify **Northamptonshire**.

Please visit: <https://ghr.wangqiru.com/#/T3> for this task. *

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T4 - Identify **South East London**.

Please visit: <https://ghr.wangqiru.com/#/T4> for this task. *

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T5 - Identify **Nottingham and Nottinghamshire**.

Please visit: <https://ghr.wangqiru.com/#/T5> for this task. *

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T6 - Identify **Oxfordshire**.

Please visit: <https://ghr.wangqiru.com/#/T6> for this task. *

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T7 - Identify **Northamptonshire**.

Please visit: <https://ghr.wangqiru.com/#/T7> for this task. *

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T8 - Identify **South East London**.

Please visit: <https://ghr.wangqiru.com/#/T8> for this task. *

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T9 - Identify **Nottingham and Nottinghamshire**.

Please visit: <https://ghr.wangqiru.com/#/T9> for this task. *

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T10 - Identify **Oxfordshire**.

Please visit: <https://ghr.wangqiru.com/#/T10> for this task. *

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T11 - Identify **Northamptonshire**.

Please visit: <https://ghr.wangqiru.com/#/T11> for this task. *

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T12 - Identify **South East London**.

Please visit: <https://ghr.wangqiru.com/#/T12> for this task. *

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T13 - Identify **Nottingham and Nottinghamshire**.

Please visit: <https://ghr.wangqiru.com/#/T13> for this task. *

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T14 - Identify **Oxfordshire**.

Please visit: <https://ghr.wangqiru.com/#/T14> for this task. *

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T15 - Identify **Northamptonshire**.

Please visit: <https://ghr.wangqiru.com/#/T15> for this task. *

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T16 - Identify **South East London**.

Please visit: <https://ghr.wangqiru.com/#/T16> for this task. *

Post-experiment

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Feedback.

*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Including rivers is useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rivers increase the legibility of a cartogram	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Including rivers makes cartograms easier to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Including rivers makes CCGs easier to locate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Including rivers adds values to the standard cartogram	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Does adding rivers introduce any disadvantages? *

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How do you think the legibility of cartograms could be increased? *

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