

C2: Education

Ecosystem Service Definition

Provision of green and blue spaces that can provide educational benefit.

Baseline Methods & Rationale

A primary dataset gathered from questionnaires distributed to natural visitor sites within the county of Gloucestershire and surrounding area. Questionnaires sought to obtain insights into the level of visitor infrastructure present at each site, for example, visitor centres, interpretation boards, toilet facilities, and car parks.

The locations of natural visitor sites were then analysed in conjunction with road and footpath infrastructure to identify areas within a 10-minute (0.8km) walk and 10-minute drive (4km) from site. This analysis aimed to quantify natural visitor centres accessibility and identify where access is most limited. Network analysis of these pathways was used to create three tiers within the modifier layer, summarised in Table C1.2, below.

Table C1.2: Weights assigned for modification of the education baseline dataset

Natural Visitor Site Access Class	Modifier
> 10-minute walk or drive	0.50
<= 10-minute drive	0.80
<= 10-minute walk	1.00

A lower modifying value for a 10-minute drive reflects driving generally being a less accessible transportation medium than walking, due to training (driving licence) and additional cost (vehicles, insurance, fuel, etc.).

Opportunity, Methods & Rationale

A relational opportunity dataset was produced to map opportunities to improve the education ecosystem service in Gloucestershire. This dataset was produced through multiplying the inverse of the baseline dataset by index of multiple deprivation (IMD) data at the lowerlayer super output area (LSOA) level. The rationale for using IMD data is that in areas of high deprivation individuals are likely to be less able to travel to access areas where the interaction with nature ecosystem service is provided.

The weighting factor applied to the IMD dataset was calculated by dividing the decile of IMD within a given LSOA by 10 and adding this value to one to produce a range of values from 1.0 to 1.9. Deciles scored 10 for the most deprived LSOAs, and 1 for the least deprived. These deciles were calculated based on data for the whole of England to ensure the outputs are compatible on a national scale, should these methods be applied elsewhere.

Table C3.2: Weights assigned for modification of the interaction with nature opportunity dataset (1st decile is least deprived, 10th most)

IMD Decile	Multiplier
1	1.0
2	1.1
3	1.2
4	1.3
5	1.4
6	1.5
7	1.6
8	1.7
9	1.8
10	1.9

Limitations and Further Development

Currently the extents of natural visitor sites are not included within the data, with each visitor centre represented by points. Inclusion of this data would increase the accuracy and allow analysis of habitats within or around each natural visitor site. In addition, analysis of the number of natural visitor sites accessible from a given area may provide further insights and allow analysis of the diversity of highly accessible natural visitor sites, where the education ecosystem service can be captured. Future work here could also explore fees of access for the centres to allow further insights into accessibility to be gained. Public transport data could also be used to further develop insights into the accessibility of natural visitor sites.

The natural visitor centre dataset is also not an exhaustive list of such centres within the county and consists of those which were identified through a data search who responded to the survey. The outputs should be viewed in recognition of this limitation and as future work is developed, this dataset should be updated to ensure data remains current and expanded to include additional centres.

The network analysis undertaken assumes a 50km per hour driving speed and 5km per hour walking speed. Driving speeds are not based on actual speed limits and are based on an average speed limit of 30 mph, in addition to time associated with parking, for example. Further work could consider parking infrastructure data (obtained through the natural visitor sites dataset) to further assess accessibility to adjust the network analysis for specific natural visitor sites.

The use of IMD data assumes that the demand for interaction with nature is greatest in LSOAs where deprivation is highest. However, there are also likely to be additional factors that impact this accessibility alongside deprivation. These may include demographic and public transportation data.

References

Ministry of Housing, Communities & Local Government, 2019. English indices of deprivation 2019.

Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Figure C2.1: Education Baseline

C2: Education (baseline, relational)

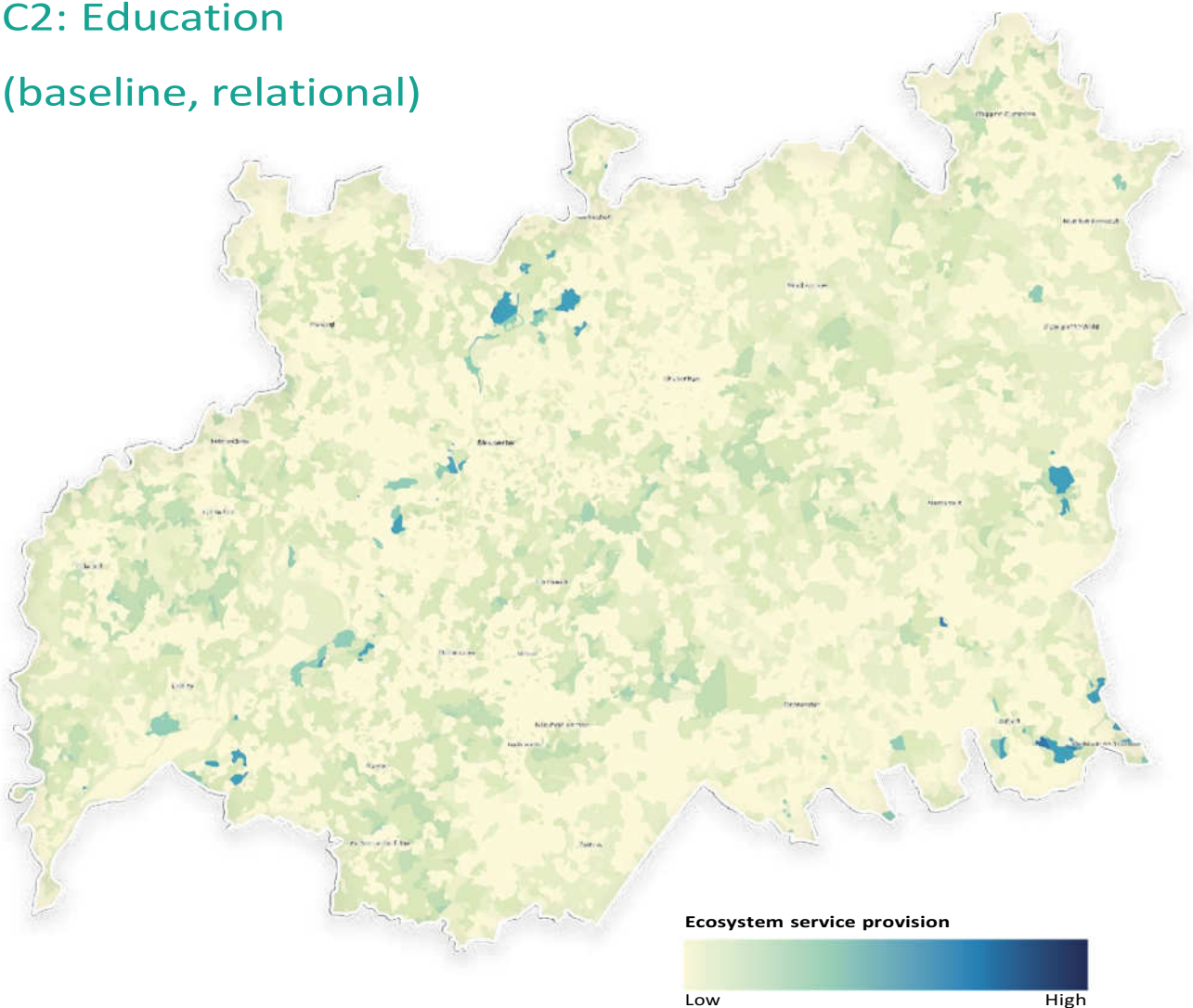


Figure C2.2: Education Opportunity (relational)

C2: Education (opportunity, relational)

