# Exploring indicators of greenspace 'quality' in relation to self-reported general health

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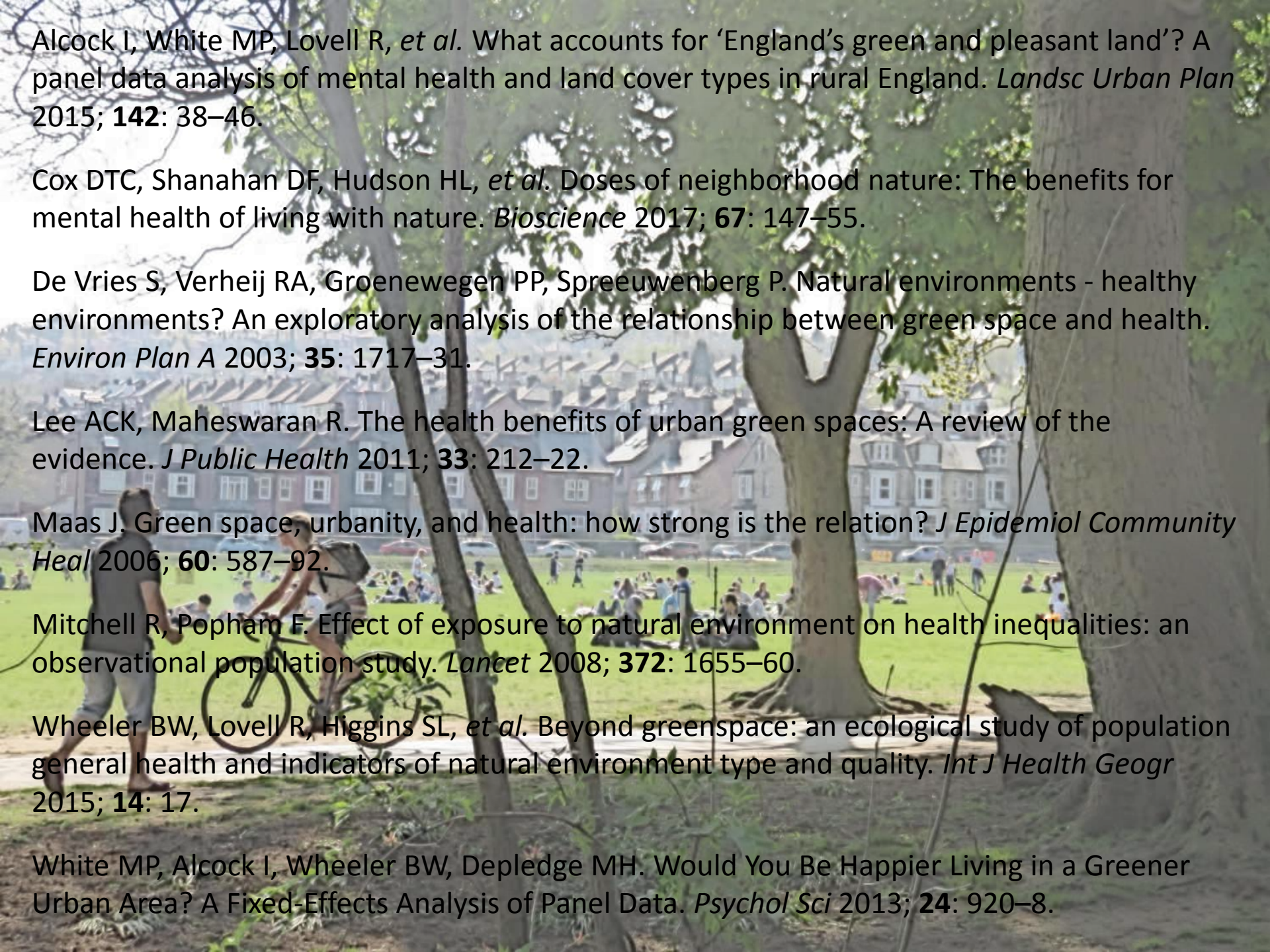


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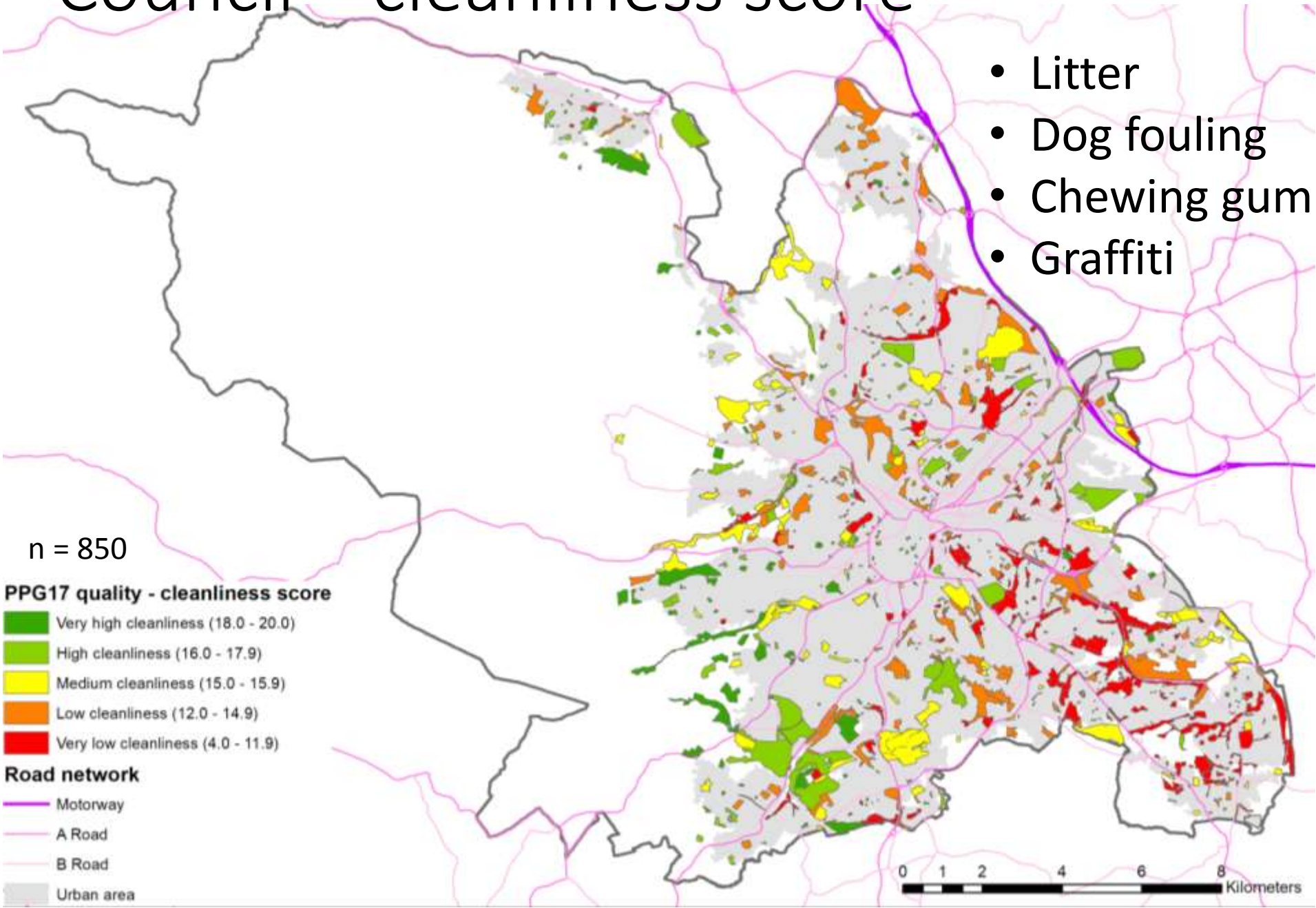
# Council – cleanliness score

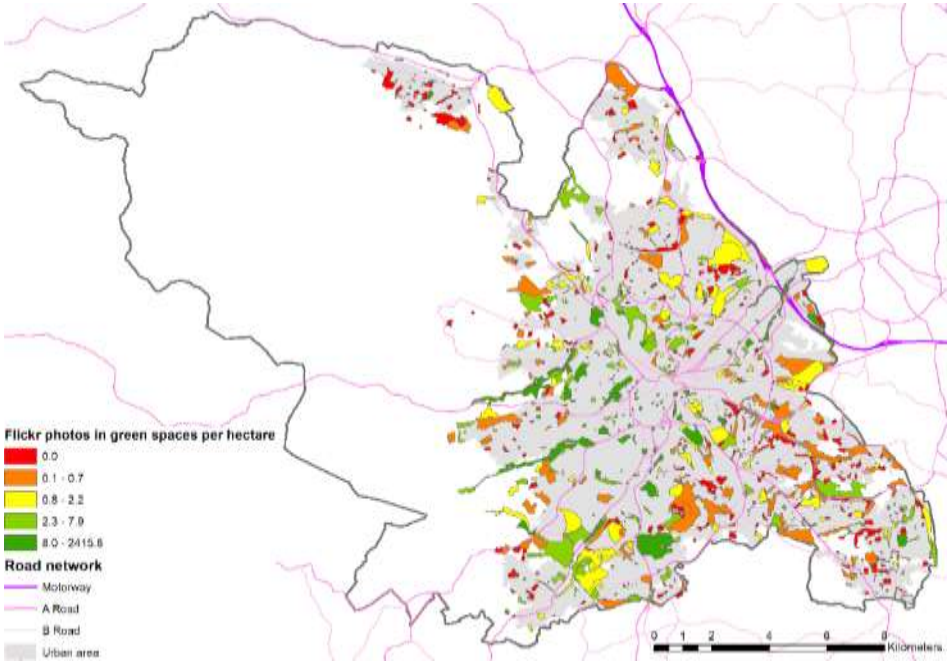


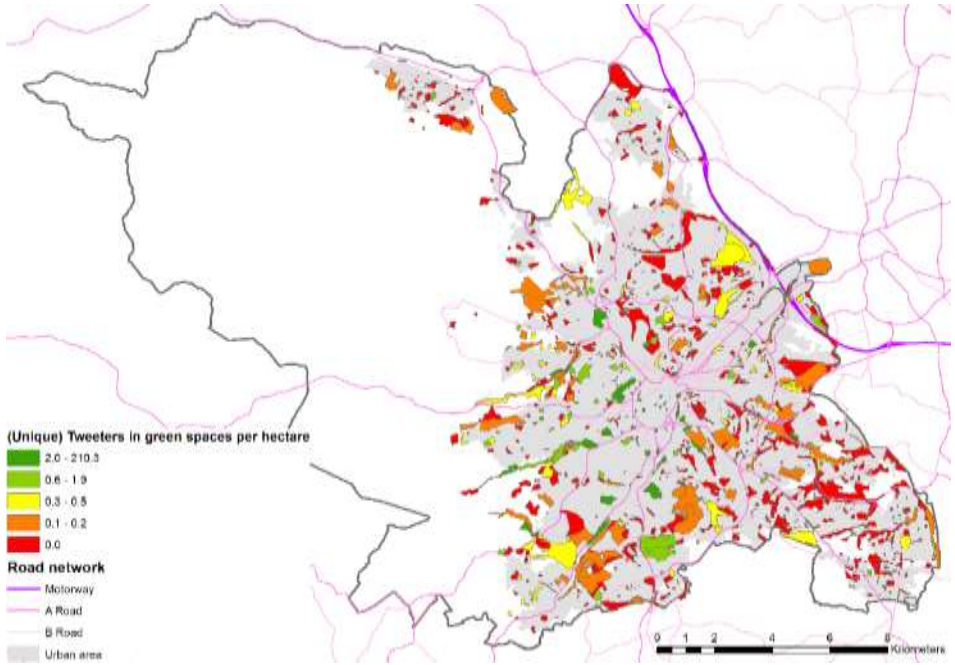

- Litter
- Dog fouling
- Chewing gum
- Graffiti

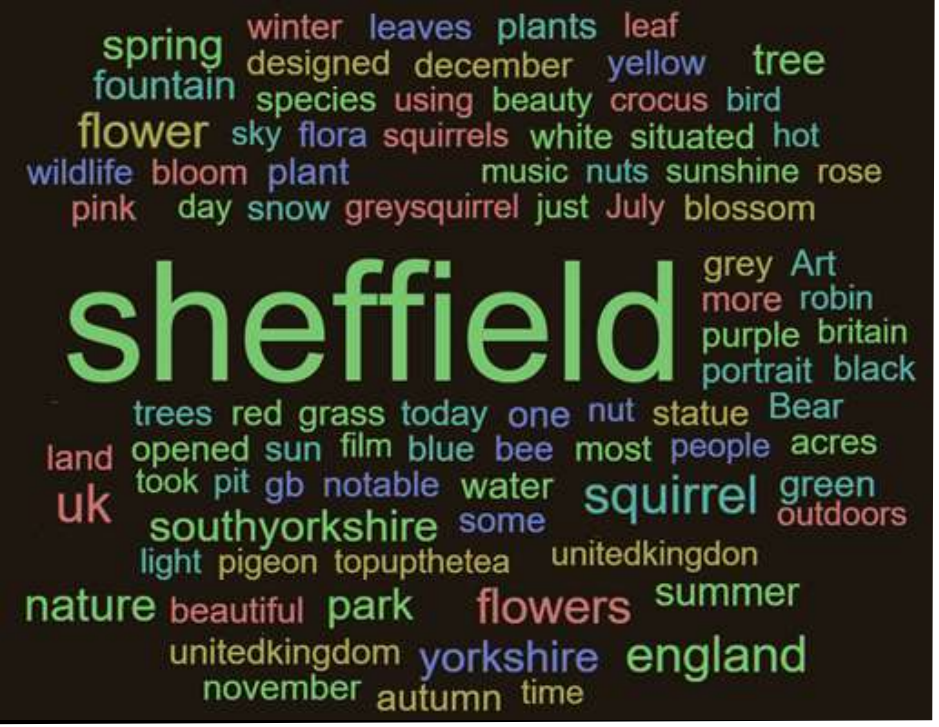
# Alternative measures of quality

Flickr photos in greenspaces: 29,660
Average: 31 photos in each greenspace

1 yrs Tweets in greenspaces: 4,632
(Unique) Tweeters: 2,165
Average: 2.3 tweeters in each greenspace

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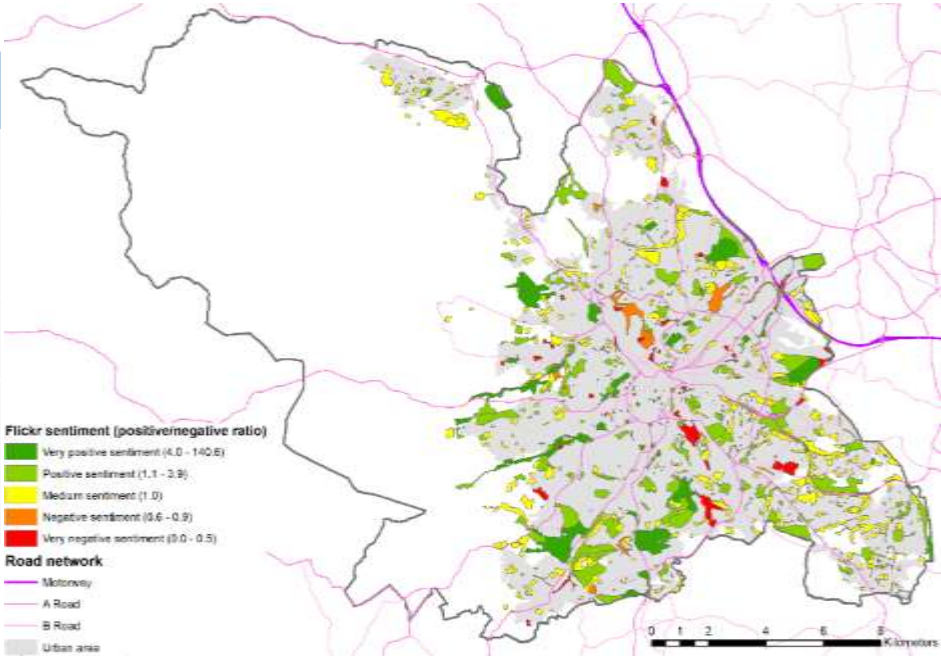
sheffield

# Flickr sentiment analysis

- *VADER (Valence Aware Dictionary and sEntiment Reasoner) Sentiment Analysis (version 2.5)*
- *a lexicon and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media*

| Sentence: | negative | neutral | positive |
|---|---|---|---|
| i love nature | 0.00 | 0.19 | 0.81 |
| i don't love nature | 0.63 | 0.37 | 0.00 |
| i love nature! | 0.00 | 0.18 | 0.82 |
| i LOVE nature! | 0.00 | 0.16 | 0.84 |
| I love nature! :) | 0.00 | 0.12 | 0.88 |

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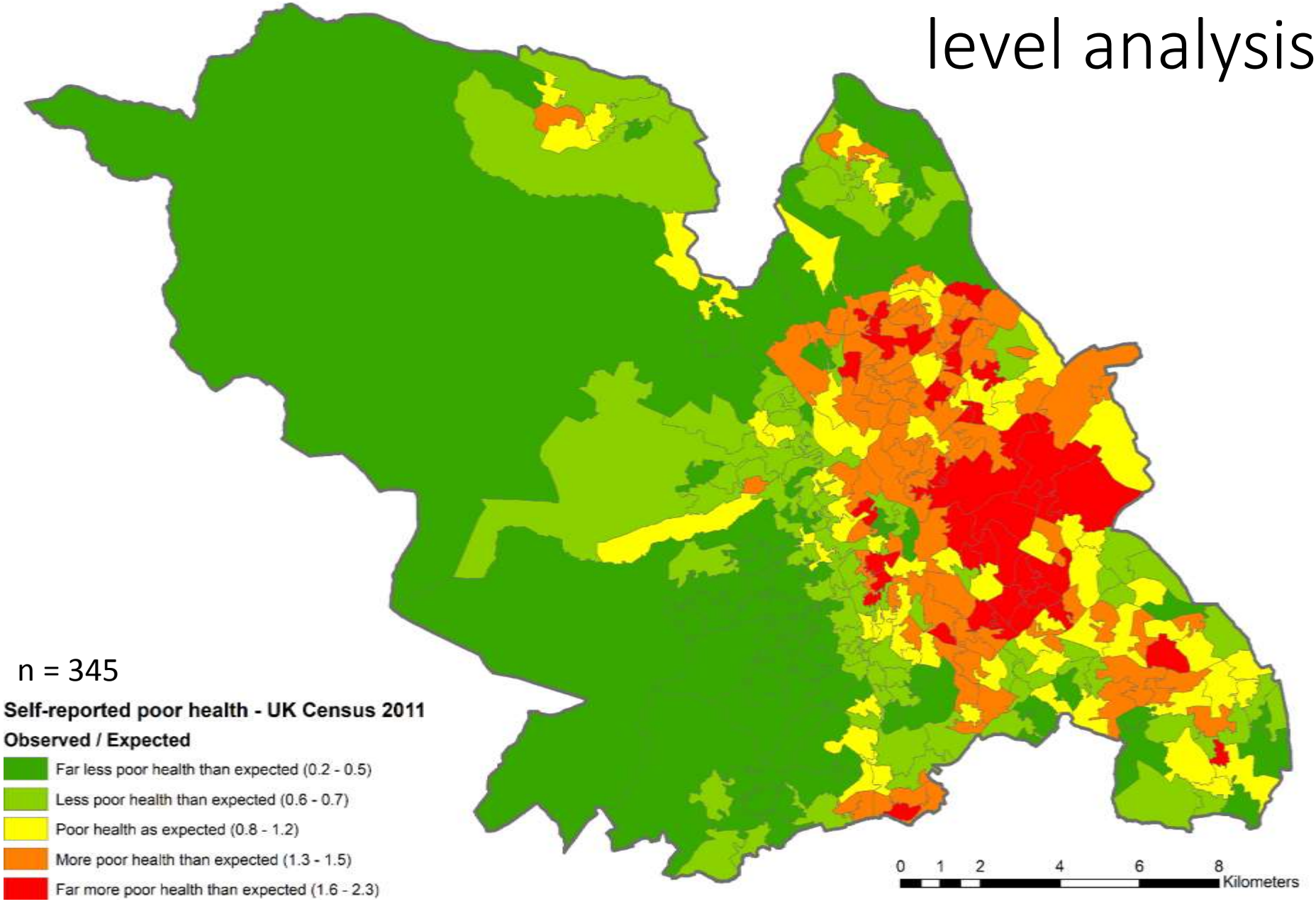
# 1. Greenspace level analysis

| n = 850 | Council - cleanliness score | Total number of Flickr photos | Flickr photos per hectare | Flickr sentiment (∑pos / ∑neg) | Total (unique) twitter users | Twitter users per hectare |
|---|---|---|---|---|---|---|
| Council - cleanliness score | - | 0.06 | 0.08 | 0.03 | 0.08 | 0.08 |
| Total number of Flickr photos | | - | 0.96 | 0.45 | 0.51 | 0.47 |
| Flickr photos per hectare | | | - | 0.39 | 0.44 | 0.42 |
| Flickr sentiment (∑pos / ∑neg) | | | | - | 0.32 | 0.29 |
| Total (unique) twitter users | | | | | - | 0.99 |
| Twitter users per hectare | | | | | | - |

# 2. Relationship with health: Census area level analysis



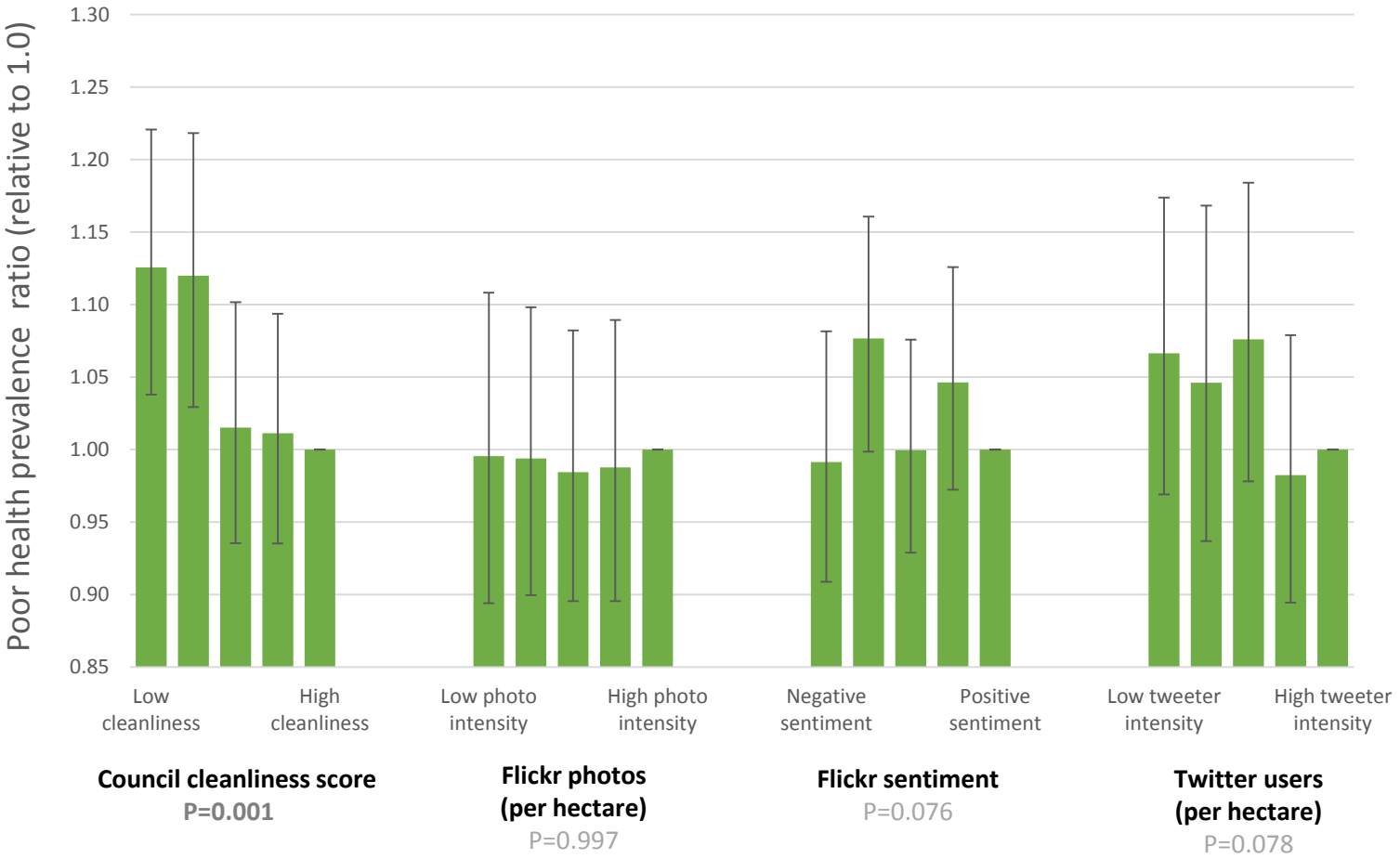
**Confounders:**

- Income deprivation
- Antisocial crimes
- Total green space
- Average garden size

**Negative binomial regression:**

Dependent variable: Standardised poor health

Offset: ln(expected poor health)



# Does quality matter?

Confounders:

| Variable: | Quintile: | PR | 95% CI |
|---|---|---|---|
| Income deprivation | 1 (most deprived) | 2.86 | 2.54, 3.21 |
| | 2 | 2.34 | 2.09, 2.62 |
| | 3 | 1.64 | 1.49, 1.82 |
| | 4 | 1.23 | 1.12, 1.34 |
| | 5 (least deprived) | 1 | . |
| Antisocial crimes | 1 (most crime) | 1.05 | 0.94, 1.17 |
| | 2 | 1.06 | 0.96, 1.18 |
| | 3 | 1.07 | 0.97, 1.18 |
| | 4 | 1.10 | 1.01, 1.20 |
| | 5 (least crime) | 1 | . |
| Total greenspace | 1 (least green space) | 1.09 | 0.99, 1.20 |
| | 2 | 1.04 | 0.97, 1.12 |
| | 3 | 1.02 | 0.95, 1.09 |
| | 4 | 1.00 | 0.93, 1.06 |
| | 5 (most green space) | 1 | . |
| Average garden size | 1 (smallest gardens) | 1.22 | 1.11, 1.34 |
| | 2 | 1.11 | 1.02, 1.21 |
| | 3 | 1.08 | 1.00, 1.17 |
| | 4 | 1.08 | 1.00, 1.16 |
| | 5 (largest gardens) | 1 | . |

Quality measures:

| Variable: | Quintile: | PR | 95% CI |
|---|---|---|---|
| Council cleanliness score | 1 (least clean) | 1.13 | 1.04, 1.22 |
| | 2 | 1.12 | 1.03, 1.22 |
| | 3 | 1.02 | 0.94, 1.10 |
| | 4 | 1.01 | 0.94, 1.09 |
| | 5 (most clean) | 1 | . |
| Flickr photos per hectare | 1 (low number of photos) | 1.00 | 0.89, 1.11 |
| | 2 | 0.99 | 0.90, 1.10 |
| | 3 | 0.98 | 0.90, 1.08 |
| | 4 | 0.99 | 0.90, 1.09 |
| | 5 (high number of photos) | 1 | . |
| Flickr sentiment | 1 (negative sentiment) | 0.99 | 0.91, 1.08 |
| | 2 | 1.08 | 1.00, 1.16 |
| | 3 | 1.00 | 0.93, 1.08 |
| | 4 | 1.05 | 0.97, 1.13 |
| | 5 (positive sentiment) | 1 | . |
| Number of twitter users per hectare | 1 (low number of tweeters) | 1.07 | 0.97, 1.17 |
| | 2 | 1.05 | 0.94, 1.17 |
| | 3 | 1.08 | 0.98, 1.18 |
| | 4 | 0.98 | 0.89, 1.08 |
| | 5 (high number of tweeters) | 1 | . |

# Conclusions

- Association found between greenspace cleanliness and self-reported poor health
- Social media derived measures of ‘quality’ were not similar to survey data derived from Sheffield City Council
- ‘Quality’ measures derived from social media were poorly related to self-reported poor health

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