Are There Links Between Poor Local Environmental Quality and Crime?

Introduction

Issues such as litter, dog fouling, graffiti and fly-tipping, which lie at the core of Keep Wales Tidy's work, really matter to people. In Wales, litter and dog fouling in particular are perceived to have a big impact on local environmental quality[1].

These issues are *'...highly visible, deeply resented and have a significant impact on community and personal wellbeing'*[2]. The Joseph Rowntree Foundation's 'Cleaning Up Neighbourhoods' report supports this view. It says that neighbourhoods with environmental problems are *'...depressing, both emotionally and because extensive problems depress levels of care, as well as standards and expectations'*[3]. There are concerns that bus stops severely covered with graffiti in the Llynfi Valley of Bridgend are discouraging local residents from using the local bus services and damaging the service's image[4]. This in itself highlights the importance of these issues, but do their impacts go even deeper than that?

Anecdotal evidence and independent research linked to the work of Keep Wales Tidy[5] suggests a link between these issues and the perception or fear of crime. This is in line with other independent sources[6,7,8]. Indeed, the Signal Crime Theory says that the presence of crime signals to residents that there's a problem in their area. This means that a problem such as fly-tipping *'...affects not only the specific victims, but also the community at large who may become fearful of what is happening in their community'*[9]. This paper goes a step further by trying to establish whether there is a link between these issues and actual crime.

The 'Broken Windows Theory'

In 1982, an article by Kelling and Wilson entitled 'Broken Windows' appeared in *The Atlantic* Magazine. It stated that disorder is a real source of fear. For example, surveys undertaken in the USA[1] indicated that, in:

- Portland: three quarters of people cross to the other side of the street if they saw a gang of teenagers;
- Baltimore: nearly half of people cross the street in order to avoid a single youth; and
- Boston: the greatest fear was shown by people living in buildings where disorder, (as opposed to crime) was greatest.

These findings put into perspective the significance of issues such as litter, graffiti and fly-tipping. However, the article went further than that by suggesting that disorder and crime are linked in a developmental sequence. This is illustrated by means of the presence of a broken window: *'...if a window in a building is broken and is left unrepaired, all the rest of the windows will soon be broken...serious street crime flourishes in areas in which disorderly behaviour goes unchecked'*[1].

Although influential, this theory has also proved to be controversial. It has gained support from US Police forces but also criticism from some academics. This paper aims to highlight Keep Wales Tidy and other research to establish whether or not our findings support the theory that there is a link between issues such as litter and graffiti with other crime.

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[1] Beaufort Research (2010) Litter in Wales: Understanding Littering and Litterers.
[2] White, D. (2012) Pride in Places: Tackling Environmental Incivilities (p 15).
[3] Hastings *et al.* (2005) Cleaning Up Neighbourhoods: Environmental Problems and Service Provision in Deprived Areas (p 24).
[4] Bridgend County Borough Council (2003) Local Area Bus Strategy.
[5] Griffiths, E. (2010) Evaluation of the Local Environmental Quality (LEQ) Improvement Projects Grant Scheme.
[6] White, D. (2012) Pride in Places: Tackling Environmental Incivilities.
[7] Website: http://www.info4security.com/story.asp?storycode=4128557 (Visited: 20-11-12).
[8] Moon *et al.* (2011) Perceptions of crime, engagement with the police, authorities dealing with anti-social behaviour and Community Payback: Findings from the 2010/11 British Crime Survey.
[9] Webb et al. (2006) Fly-tipping: Causes, Incentives and Solutions (p 8).

Testing the Theory

1.   Dutch Experiments

In 2008, a group of researchers led by Kees Keizer at the University of Groningen in the Netherlands went about testing the Broken Windows Theory. They wanted to determine whether environmental crime such as litter, graffiti and vandalism could change the way people behave. For their experiments, the researchers created two contrary conditions, one of order and one of disorder.

a)   Testing the Effect of Graffiti

This experiment took place in an alley which was regularly used to park bicycles. In the alley. they erected a large sign saying that graffiti was prohibited. They attached an advertising flyer to the handlebars which had to be removed before the bicycle could be ridden. There were no rubbish bins, so cyclists returning to their bikes had 3 options – they could:

- Take the flyer with them;
- Hang it on another bicycle (researchers counted this as littering); or
- Throw it on the ground.

To remove bias that litter attracts litter, researchers picked up each flyer which was castaway. The results were quite significant: when the alley was free of graffiti, 33% littered, compared to 69% when the alley was covered with graffiti tagging[10].

b)   Testing the Effect of Litter

In this experiment, researchers left a windowed envelope clearly displaying a €5 note sticking out of a post box. Passers-by had 3 options – they could:

- Leave the envelope as it was;
- Push it into the post box; or
- Take it.

The result showed that during a condition of order, where the surrounding area was clean, 13% took the envelope, compared to 25% when the surrounding area was covered by litter (and 27% when the box was covered in graffiti)[11].

The experiments conclude that *'The tendency for people to behave in a particular way can be strengthened or weakened depending on what they observe others to be doing'*[12]. These results therefore support Kelling and Wilson's theory.

[10] Website: http://www.economist.com/node/12630201 (Visited: 31:01:13).
[11] Website: http://www.economist.com/node/12630201 (Visited: 31:01:13).
[12] Website: http://www.economist.com/node/12630201 (Visited: 31:01:13).

2. Keep Wales Tidy Research

In 2010, the Welsh Government funded Keep Wales Tidy to commission research to gain a deeper insight into littering and litterers in Wales.

Figure 1: Welsh Litterers Agreeing with Statements

Percentage of Welsh Litterers Agreeing with Statements
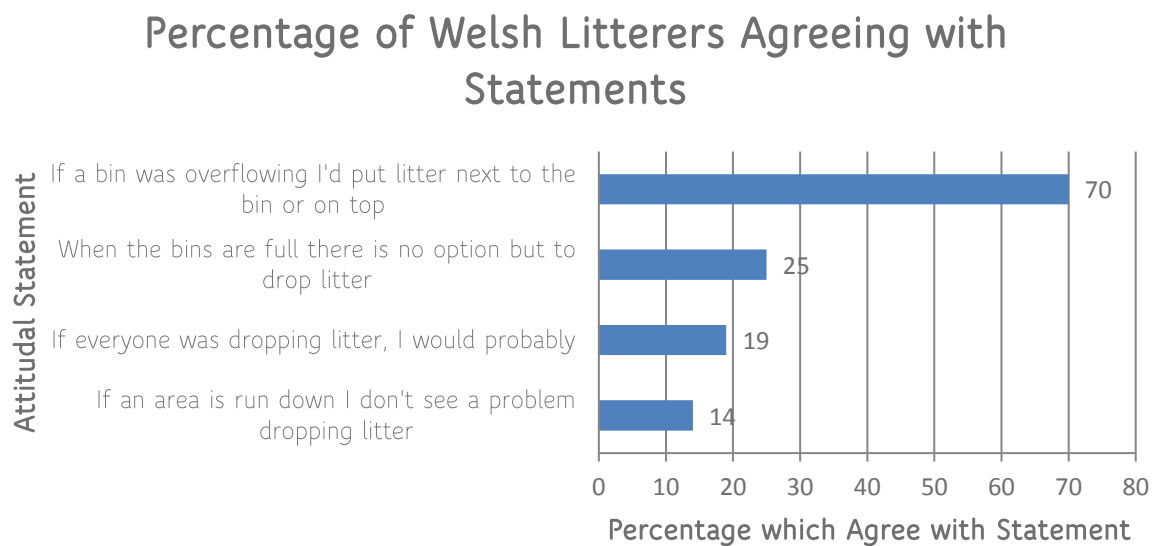
Source: Beaufort Research (2010) Litter in Wales: Understanding Littering and Litterers (p22)

The above information is based on 809 face-to-face face interviews with a sample of Welsh litterers. The high percentage agreeing with the first statement is perhaps not surprising as putting litter on top or next to a bin if it was overflowing could be perceived as the 'right' thing to do. However, the results of the second statement show that a quarter of Welsh litterers are not willing to take their litter home with them. Almost a fifth would be happy to drop litter if others are doing so, suggesting the importance of good role models who dispose of their litter responsibly.

It's the last statement which most closely mirrors the argument put forward in the Broken Windows Theory. Whilst the percentage of litterers agreeing with the statement 'if an area was run down I don't see a problem dropping litter' is lowest, amongst Litter Louts (the litterers most likely to believe littering is acceptable and excusable and who make up 17% of Welsh litterers), this figure increases to 57%[13]. The findings of this research support Keep Wales Tidy's view that litter attracts litter and in identifying that disorder begins a downward spiral in irresponsible behaviour, it broadly supports the theory.

[13] Beaufort Research (2010) Litter in Wales: Understanding Littering and Litterers (p 26).

3. Other Research Studies

Over the past few years the Welsh Government has made funding available through a variety of programmes to fund local projects to improve local environmental quality across Wales. One such programme (the Local Environmental Quality Improvement Projects Grant Scheme) was evaluated in 2010. The evaluation report states that 58% of projects identified that actual instances of crime (as well as the fear of crime) had been reduced as a result[14]. Moreover, *'In the case of one of the projects interviewed, reports of anti-social behaviour had reduced by 65% in an area where an LEQ project had been active'*[15].

According to the Joseph Rowntree Foundation's 'Cleaning Up Neighbourhoods' report, issues such as litter, dog fouling and graffiti have a number of affects including how people feel about their local area, their behaviour towards the environment and their expectations[16]. *'Residents in problematic neighbourhoods...were overwhelmed by the scale of the problems, confused about why they were so severe and crucially felt powerless to resolve them'*[17]. It goes on to describe how improving a local environment can reverse these affects with improving environments being cared for and expectations raised. For example, in Glasgow, within a year of introducing additional Police patrols to reduce anti-social behaviour *'...complaints about antisocial behaviour had fallen by 40% and...vandalism in the area had fallen by a third'*[18]. Environmental improvements in Leeds coincided with a reduction in burglaries[19]. People think twice before defacing something that's clean. What is more, in areas which don't suffer from these problems, local people fight to safeguard the high standards, are more likely to take action and report problems and have high expectations.

In January 2013, the BBC suggested that one reason for the reduction in vandalism (which includes graffiti) in recent years in the UK is that councils have become smarter in tackling the problem by using the 'broken windows' strategy. They *'...aim to deal with minor vandalism rapidly to stop neighbourhoods falling into disrepair and becoming breeding grounds for more serious crime'*[20].

These research sources therefore support the flip side of the Broken Windows Theory, i.e. that as areas improve, crime is reduced, and that cleaner areas are cared for to a greater extent. They therefore indirectly support the theory.

[14] Griffiths, E. (2010) Evaluation of the Local Environmental Quality (LEQ) Improvement Projects Grant Scheme.

[15] Griffiths, E. (2010) Evaluation of the Local Environmental Quality (LEQ) Improvement Projects Grant Scheme (p 18).

[16] Hastings *et al.* (2005) Cleaning Up Neighbourhoods: Environmental Problems and Service Provision in Deprived Areas.

[17] Hastings *et al.* (2005) Cleaning Up Neighbourhoods: Environmental Problems and Service Provision in Deprived Areas (p 24).

[18] Hastings *et al.* (2005) Cleaning Up Neighbourhoods: Environmental Problems and Service Provision in Deprived Areas (p 49).

[19] House of Commons Environmental Audit Committee (2004) Environmental Crime: Fly–tipping, Fly–posting, Litter, Graffiti and Noise - Ninth Report of Session 2003–04.

[20] Website: http://www.bbc.co.uk/news/magazine-21041160 (Visited: 23/01/13).

The Presence of Glass

Up to 12% of violent offences in the UK involve the use of glass and bottles as weapons - most of which result in long term disfigurement and dental trauma, injuries which cost the taxpayer over £4million per year[21]. Therefore it would seem that the risk of injury from glass relates to its availability.
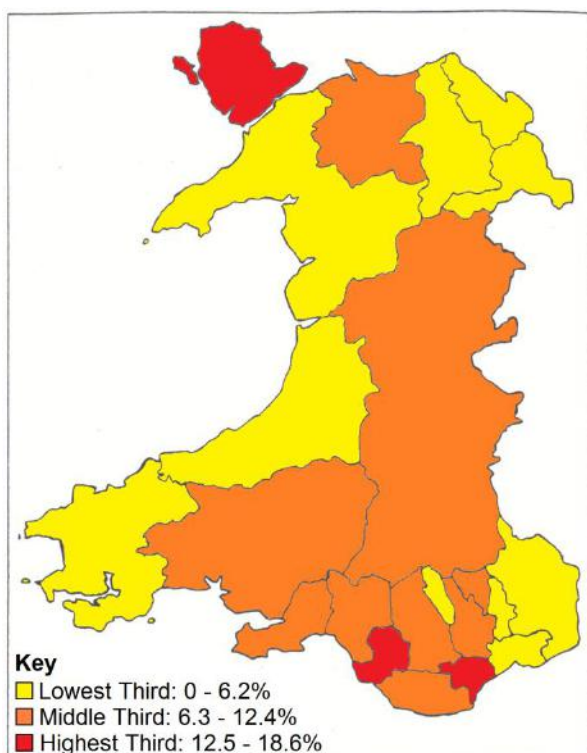

Figure 2: Presence of Glass per Local Authority
(Source: Keep Wales Tidy LEAMS Data)

Since 2011-12, Keep Wales Tidy has been collecting data on glass litter as part of its street cleanliness surveys (although not exclusively glass bottles). Glass was found on an average of 8.2% of streets, ranging from 1.1% to 18.6%, please see Figure 2.

This map shows that during 2011-12, glass was seen most on the streets of Anglesey, Bridgend and Cardiff. Overall, the presence of glass was higher in the more populous Local Authorities. However, this isn't true of all areas, with low levels recorded in Merthyr Tydfil, Newport and Torfaen.

In 2010, students at Cardiff's School of Dentistry compared the availability of bottles and other glass and the risk of injuries from their presence in Cardiff and Helsinki, which are similar in terms of licensed premises in the city centre and alcohol consumption. Photographic surveys found that glass bottles were commonplace around Cardiff, and were always seen around bars and clubs. On the other hand, almost no glass bottles were observed in Helsinki. The two capitals were found to have vastly different numbers of bottle/glass-related injuries which were treated in A&E; with 133 recorded in Cardiff, compared to just 1 in Helsinki in 2003. This study therefore also supports the Broken Window Theory.

Interestingly, many recycling points were seen in Helsinki, and people were even observed removing glassware from bins and then going on to recycle them. As these points are money-back schemes, they provide financial

[21] Rogerson N. and Kerr L. (2003) Risk Factors for Glass Assault in the United Kingdom and Scandinavia: A Tale of Two Capital Cities.

incentives for people to partake in informal disposal of glass litter, which in turn reduces the availability of glassware as weapons, thus violent crime also. recent years in the UK is that councils have become smarter in tackling the problem by using the 'broken windows' strategy. They *'...aim to deal with minor vandalism rapidly to stop neighbourhoods falling into disrepair and becoming breeding grounds for more serious crime'*[22].

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Crime Data

Crime in the UK is measured in the following two ways[23]:

- Police records of the crimes reported to them; and
- the public's experience of crime is captured in the British Crime Survey, a household survey by the government.

In February 2011, the UK Government launched a crime website (www.police.uk) to map crime data in England and Wales on a monthly basis (Northern Ireland has since been added). The website provides street-level crime maps, with the crime broken down into the following 11 categories:

- Anti-social Behaviour
- Burglary
- Criminal Damage and Arson

- Drugs
- Other Crime
- Other Theft
- Public Disorder and Weapons
- Robbery
- Shoplifting
- Vehicle Crime
- Violent Crime

1. Street Level Crime Data

When using this street-level crime data against Keep Wales Tidy's street cleanliness survey data, we found varying degrees of correlation. For some areas, no clear pattern was seen, however, in others there was a very strong link between crime and the presence of litter – please see examples below.

a)   Local Authority 1

Here we used a Local Authority which had a variety of cleanliness grades in 2011-12 and then looked at the crime data for the very clean streets (the A and B+ grades) and the very dirty ones (C and D grades). The street cleanliness surveys were undertaken during June and November 2011.

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[22] Website: http://www.bbc.co.uk/news/magazine-21041160 (Visited: 23/01/13).
[23] Website: http://www.direct.gov.uk/en/CrimeJusticeAndTheLaw/Crimestatistics/DG_181520 (Visited: 13:08:12).

**Table 1: Number of Streets of Each Grade for Which Data was Available**

Cleanliness Grade[24]	Number of Streets
A: No Litter or refuse	7
B+: No more than 3 small items of litter or refuse	14
C: Widespread distribution of litter and/or refuse with minor accumulations	10
D: Heavily affected by litter and/or refuse with significant accumulations	1*

*Since there was only 1 D grade street, for the purposes of this exercise, the C and D grade streets have been combined.

b)   Local Authority 2

This is data from a different Local Authority, but this time we compared 3 A grade streets with 3 D grade streets. Although the number of streets is smaller, this allows for a more direct comparison.

Figure 5: Total Reported Crime Numbers on Streets that were Surveyed to be Very Clean and Very Dirty
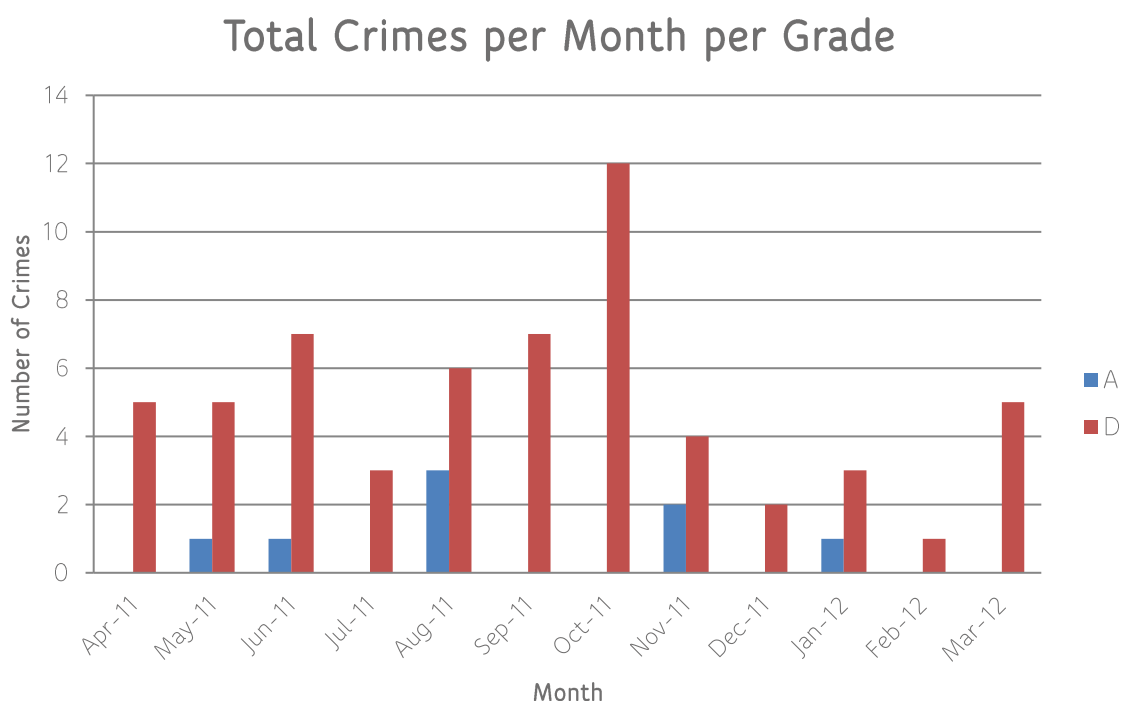
(Source: www.police.uk and Keep Wales Tidy LEAMS Data)

A similar pattern is evident here, with far more crimes recorded each month on the heavily littered streets than the litter free streets, and no crimes recorded on the A grade streets during 7 months. This survey was undertaken in September 2011, with no crimes recorded on the A grade streets, compared to 7 crimes on the D grade streets. Over the year, 60 crimes were recorded on the D grade streets, compared to just 8 on the A grade streets. Once again, anti-social behaviour crimes accounted for the majority of crimes recorded (54%).

These examples seem to suggest a link between clean streets and low crime at one end of the scale and littered streets and high crime rates at the other. However, this wasn't the case on every street and as described above, this

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[24] Cleanliness Grade Definitions taken from Keep Wales Tidy's 'Litter and the Law' Leaflet (2008).

wasn't evident in every area where we correlated Keep Wales Tidy cleanliness data against Police crime data. This leads one to ask whether the above examples are merely a coincidence.

No clear or significant pattern was found when we compared Keep Wales Tidy graffiti and dog fouling data to the crime data. This may be because there are only a small number of streets across Wales where graffiti is clearly visible or extensive in nature and where dog fouling has a significant or severe presence.

2. Local Authority Level Crime Data

Whereas at a street level, there isn't always a clear pattern between cleanliness and crime data, when we move to a Local Authority level, the data appears to be very clearly correlated, see Figure 5 below.

Figure 5: Crime Rate and % of C and D Grade per Local Authority for 2009-10

Crime Rate Versus C and D Grade Level Per Local Authority 2009-10
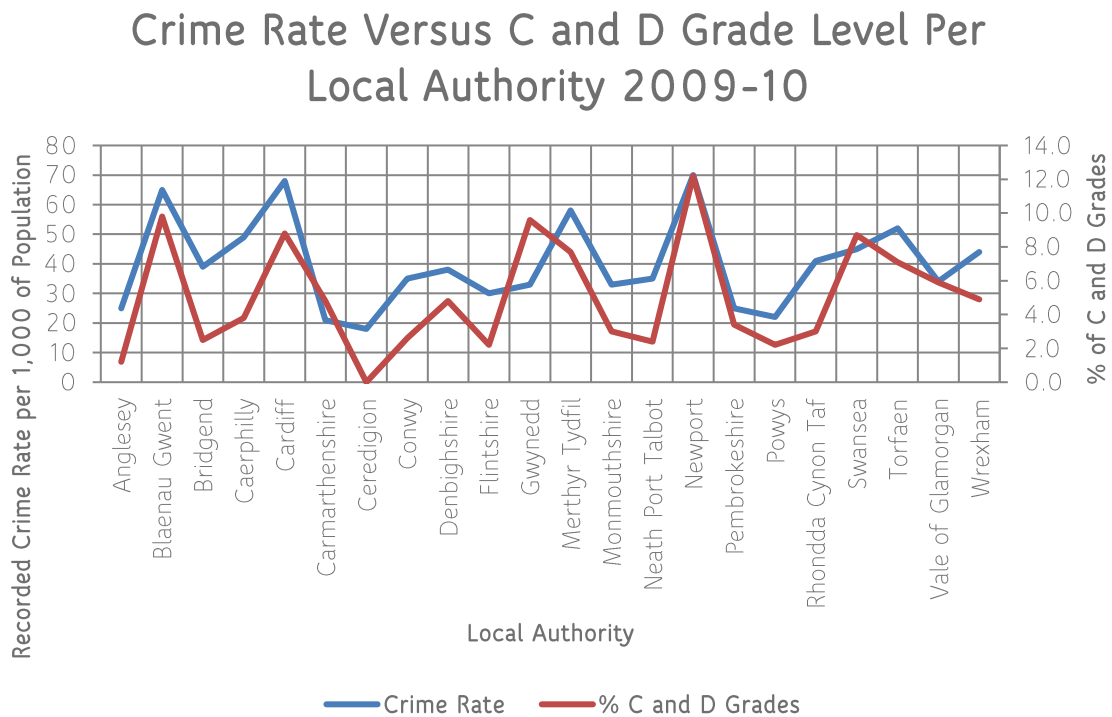
(Source: Crime in England and Wales 2009-10 Report (2010) and Keep Wales Tidy LEAMS Data)

This time, the same is the case when using Keep Wales Tidy graffiti data too (although the pattern isn't quite as closely correlated), see Figure 6, below.

Figure 6: Crime Rate and % presence of Graffiti per Local Authority for 2009-10

Crime Rate Versus Graffiti Level Per Local Authority 2009-10
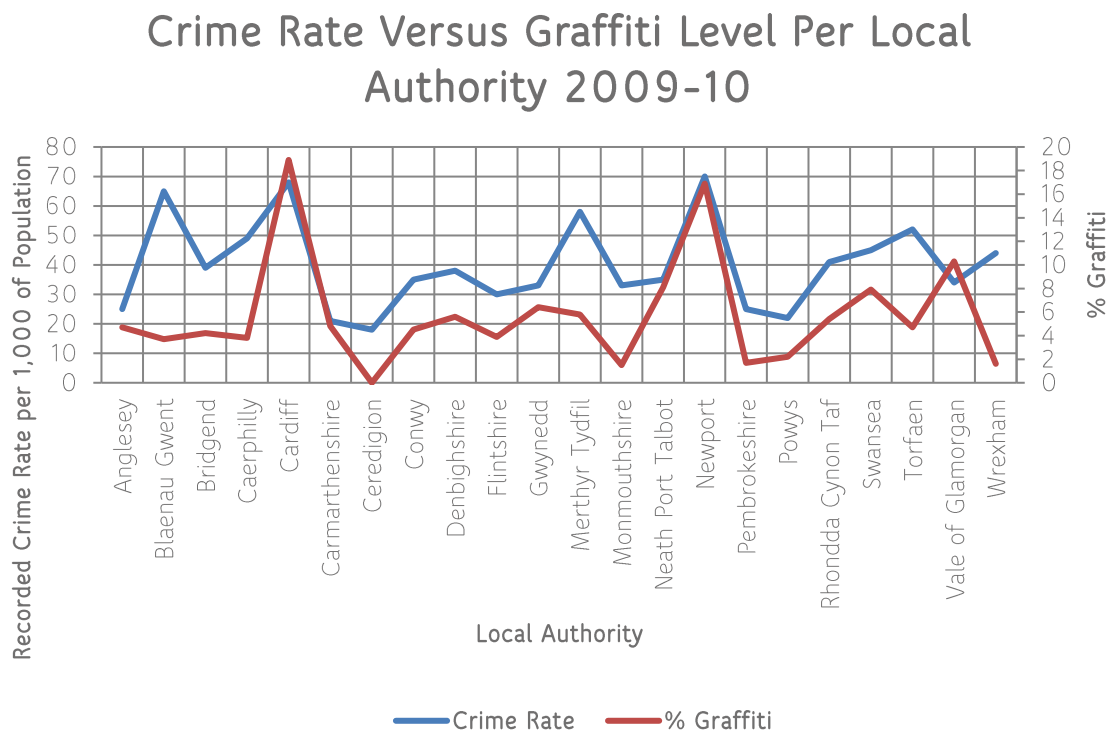
(Source: Crime in England and Wales 2009-10 Report (2010) and Keep Wales Tidy LEAMS Data)

The main anomalies above are Blaenau Gwent, Merthyr Tydfil and Torfaen, where the crime rate is high considering the presence of graffiti.

There are also correlations when looking exclusively at burglary and theft crime data (although the pattern is not so clear when comparing the data to graffiti levels).

There was not much of a correlation between the crime data and Keep Wales Tidy dog fouling data or between the crime data and the number of fly-tipping incidents per Local Authority. The latter could be because the fly-tipping data is based on the Fly-Capture database, which is not only widely recognised to be inconsistently completed by Local Authorities, but also only records fly-tipping incidents on public land (and is therefore incomplete).

Other Considerations

Although overall the data above shows a correlation between poor local environmental quality and high levels of crime, it is important to recognise that there are some limitations with these data sources.

For example:

- Keep Wales Tidy street cleanliness data considers a random 50m length of one side of a street during the daytime on a week day. On the other hand, Police crime data provides recorded crime figures for a whole street over a period of a month.

- Many crimes go unreported[25]. It is estimated that only approximately 40% of crimes are reported to the Police[26], so the crime maps do not give a complete picture of crimes committed.

Another consideration is that for many people, *'There is no clear...distinction made between 'crime' and 'anti-social behaviour'*[27]. It is, therefore important to establish whether the litter recorded by Keep Wales Tidy cleanliness surveys is potentially also included in the Police crime data, (under the anti-social behaviour category).

One way of defining anti-social behaviour (as was included in a 2004 Home Office report) is through the use of the following 4 sub-categories:

Table 3: Defining Anti-Social Behaviour

Misuse of Public Space	Disregard for Community/Personal Well-being	Acts Directed at People	Environmental Damage
- drug/substance misuse and dealing - street drinking - begging - prostitution - kerb crawling - sexual acts - abandoned cars and vehicle-related nuisance - inappropriate vehicle use	- noise - rowdy behaviour - nuisance behaviour - hoax calls - animal-related problems	- intimidation/ harassment	- criminal damage/vandalism - litter/rubbish

(Source: Ipsos MORI (2004) Defining and Measuring Anti-Social Behaviour (p4)

The Police data's anti-social behaviour crime category covers crimes of personal, environmental and nuisance nature.

The 'Policing Anti-Social Behaviour – The Public Perspective' report shows what type of activities people considered as anti-social behaviour. The most frequent behaviours mentioned by those who had reported anti-social behaviour to the Police were '...*street drinking and underage drinking; teenagers and kids loitering in the streets; and vandalism and graffiti'*[28] (these cover 3 of the strands in Table 4).

The same report goes on to state that tolerance and likelihood of reporting will vary from place to place. Whilst *'...around 9 in 10 respondents...say they would report vandalism/graffiti/damage to property...fewer than half say they would report rubbish/litter'*[29]. Indeed, it appears that figures for reporting litter are low, with *'...most calls made to the Police in September 2009 (recorded by the Police as 'anti-social behaviour') related to rowdy/inconsiderate behaviour (56%), followed by vehicle nuisance (13%) and nuisance neighbours (12%)'*[30].

This clearly shows that crimes reported to the Police under the anti-social behaviour category do not tend to be litter. Therefore, the link between Keep Wales Tidy's data on litter and the Police's crime data is not distorted by double-counting. This supports the correlation between poor local environmental quality and crime.

[25] Home Office (2012) Putting Victims First – More Effective Responses to Anti-social Behaviour.
[26] Website: http://www.direct.gov.uk/en/CrimeJusticeAndTheLaw/Crimestatistics/DG_181520 (Visited: 13:08:12).
[27] Ipsos Mori (2010) Policing Anti Social Behaviour. The Public Perspective (p 3).
[28] Ipsos Mori (2010) Policing Anti Social Behaviour. The Public Perspective (p 2).
[29] Ipsos Mori (2010) Policing Anti Social Behaviour. The Public Perspective (p 5).
[30] Ipsos Mori (2010) Policing Anti Social Behaviour. The Public Perspective (p 5).
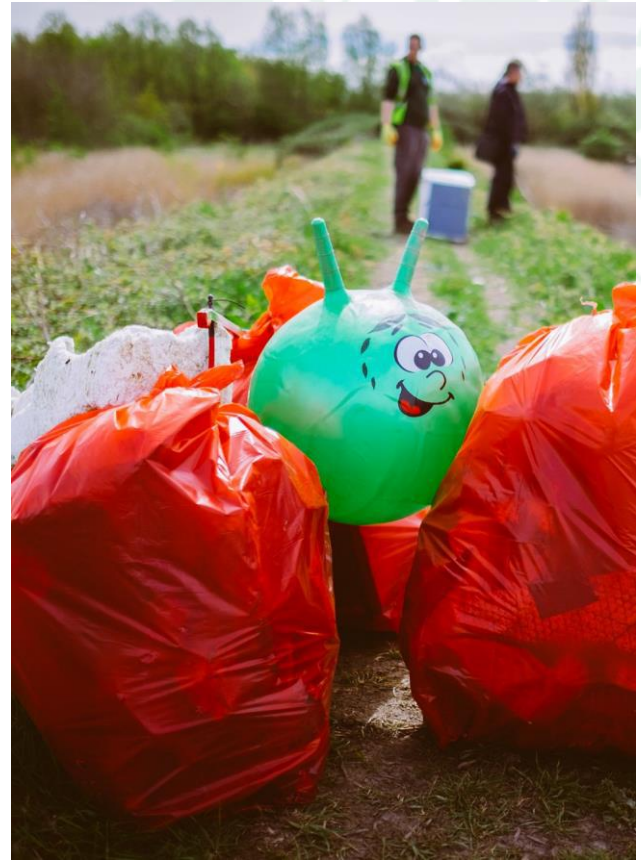
Crime Cycle

All of the research considered in this paper support the Broken Window's Theory. 'While increasing levels of litter and graffiti lead at first, through complacency, to more of the same and to augmented levels of general anti-social behaviour and low-level crime, it seems well understood that continuing local degradation of the environment will lead ineluctably to more serious crime... the "broken windows theory"...is seen clearly to correspond to reality as seen by local authorities, Police forces and people across the country' . However, Joseph Rowntree Foundation's 'Cleaning Up Neighbourhoods'

report goes a step further. It argues that in areas affected by crime, informal social control is broken down as people withdraw into their homes. This in turn allows those not involved in serious crimes to partake in other, more minor forms of irresponsible behaviour. It seems that this is a vicious circle as '...in neighbourhoods with serious problems of criminality, a more general climate of fear and hostility and affect more mundane interpersonal relations and further weaken residents' control over 'normal' misdemeanours'.

Conclusion

The research put forward in this paper strongly demonstrates that there is a link between poor local environmental quality and crime. Moreover, previous research considered in this paper has suggested that poor local environmental quality actually permits further crime.

It is fair to say that the original research based on Keep Wales Tidy's data presented in this paper has reaffirmed that there is a correlation between poor local environmental quality and crime. However, both local environmental quality issues and crime are complex subject areas with multiple influences, and our data does not conclusively prove that poor local environmental quality is the cause of this crime. There is therefore scope for further research, to explore for example which causes which and to consider other factors which have an influence on these issues.
By clearly demonstrating that there is a link between poor local environmental quality and crime, what this paper stresses is the wider significance of the environmental issues which are at the heart of Keep Wales Tidy's work, and why tackling them are so important. Keep Wales Tidy will use this information to prompt action which will benefit both the environment and communities all over Wales.

Contact

Hanna Jones, Policy and Research Officer
leq@keepwalestidy.cymru

cadwch keep
gymru'n wales
daclus tidy