



University of HUDDERSFIELD

University of Huddersfield Repository

Armitage, Rachel, Rogerson, Michelle and Pease, Ken

What is good about good design? Exploring the link between housing quality and crime

Original Citation

Armitage, Rachel, Rogerson, Michelle and Pease, Ken (2013) What is good about good design? Exploring the link between housing quality and crime. *Built Environment*, 39 (1). pp. 140-161. ISSN 0263-7960

This version is available at <http://eprints.hud.ac.uk/id/eprint/17019/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

Table One: Summary of Literature - Impact of Property Type on Crime

| Design Feature | Impact on Crime | Author(s) |
|---|--|---|
| Detached property | Increased risk of burglary | Winchester and Jackson (1982); Hillier and Sahbaz (2009) |
| Property being set at a distance from the nearest house | Increased risk of burglary | Winchester and Jackson (1982) |
| Being located in a multi-dwelling unit | Perceived by burglars, planners, police and young adults to be more vulnerable to burglary | Cozens <i>et al</i> (2001a, 2001b, 2002a, 2002b, 2002c) |
| High-rise housing | Perceived by burglars, planners, police and young adults to be more vulnerable to burglary | Cozens <i>et al</i> (2001a, 2001b, 2002a, 2002b, 2002c) |
| Greater number of apartments serving an entrance-way | Increased risk of burglary and fear of crime | Newman and Franck (1980, 1982) |
| Greater number of storeys per development | Increased risk of burglary and fear of crime | Newman (1973); Newman and Franck (1980, 1982) |
| Flats | Decreased risk of burglary | Hillier and Sahbaz (2009) |
| Property being located on a corner plot | Increased risk of burglary | Groff and La Vigne (2001), Armitage <i>et al</i> , (2011) |
| Property being located on a corner plot | Perceived by offenders to be more vulnerable to burglary | Taylor and Nee (1988); Cromwell <i>et al</i> (1991) |

Table Two: Summary of Literature – Impact of Parking Provision on Crime

| Design Feature | Impact on Crime | Author(s) |
|---|---|------------------------------|
| Property without garage or with open carport | Perceived by offenders to be more vulnerable to burglary | Cromwell <i>et al</i> (1991) |
| Property without garage | More likely to have experienced a burglary | Brown and Altman (1983) |
| Developments which included allocated visitor parking | Experienced lower levels of total crime and vehicle crime | Armitage <i>et al</i> (2011) |
| Developments with communal parking provision | Experienced higher levels of vehicle crime | Armitage <i>et al</i> (2011) |

Table Three: Summary of Literature – Impact of Surveillance and Visibility on Crime

| Design Feature | Impact on Crime | Author(s) |
|--|--|--|
| Property with less visual access to neighbouring properties. | More attractive to offenders. | Repetto (1974) |
| Property with poor visual access to immediately neighbouring properties. | More likely to have experienced a burglary. | Brown and Altman (1983) |
| Flats where entrance faces inside of estate and/or is set back from the road. | More likely to experience social and physical decay. | Coleman (1986) |
| Property is isolated. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property is located in an area with less than five other houses in sight. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property is set at a distance from the road on which it stands. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property is not overlooked at the front or on either side by other houses. | More likely to experience burglary. | Winchester and Jackson (1982); Armitage (2006a) |
| The majority of sides of the house are not visible from a public area. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property is set at a distance from the nearest house. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property's frontage is obscured from roadside view. | More likely to experience burglary. | Winchester and Jackson (1982) |
| Property is located on the nearest main road. | More likely to experience burglary. | Winchester and Jackson (1982); Groff and La Vigne (2001); Armitage (2006a) |
| Property adjoins a four-lane road. | More likely to experience burglary. | Taylor and Gottfredson (1987) |
| Property is close to an exit from a major thoroughfare. | More likely to experience burglary. | Taylor and Gottfredson (1987) |
| Property located within close proximity to a stop sign, traffic lights, commercial business establishment, park, church or four-lane street. | More attractive to offenders. | Cromwell <i>et al</i> (1991) |
| Property in dark (as opposed | More likely to experience | Van der Voordt |

| | | |
|--|--|---|
| to illuminated) area. | burglary. | and Van Wegen (1990); Groff and La Vigne (2001) |
| Property is visible from traffic lights | More likely to have experienced victimisation. | Armitage (2006a) |
| Property is visible from nearby footpath | More likely to have experienced victimisation. | Armitage (2006a; Armitage <i>et al</i> , 2011) |
| Poor visual contact between buildings, amenities and outside spaces. | Properties experience higher levels of burglary. | Van der Voordt and Van Wegen (1990) |

Table Four: Summary of Literature – Impact of Territoriality on Crime

| Design Feature | Impact on Crime | Author(s) |
|--|--|---|
| Properties showing signs of territorial concern | Perceived by burglars to be less vulnerable to burglary | Brown and Bentley (1993) |
| Properties with real or symbolic barriers | Less likely to have experienced a burglary | Brown and Altman (1983); Armitage (2006a) |
| Properties considered to be architecturally defensible | Just as vulnerable to crime than those considered not architecturally defensible | Merry (1981) |

Table Five: Summary of Literature – Impact of Management and Maintenance on Crime

| Design Feature | Impact on Crime | Author(s) |
|---|--|---|
| Well-maintained option of five housing designs - detached, semi-detached, terraced, low-rise flats and high rise flats. | Perceived by elderly residents, convicted burglars, planning professionals, police and young adults to be less vulnerable to burglary. | Cozens <i>et al</i> (2001a, 2001b, 2002a, 2002b, 2002c) |
| Properties showing brief and long term desertion, heavy litter/graffiti and some or many signs of disrepair. | More likely to have experienced prior victimisation. | Armitage (2006a) |
| Presence of physical incivilities. | Offender perceives residents as less likely to intervene if an offence takes place. | Taylor and Gottfredson (2007) |

Table Six: Summary of Literature – Impact of Road Layout on Crime

| Design Feature | Impact on Crime | Author(s) |
|----------------|-----------------|-----------|
|----------------|-----------------|-----------|

| | | |
|--|--------------------------|---|
| Being located on a development with high levels of connectivity. | Increases risk of crime | Bevis and Nutter (1977); Rubenstein <i>et al</i> (1980); Taylor and Gottfredson (1987); White (1990); Van der Voordt and Van Wegen (1990); Poyner and Webb (1991); Beavon <i>et al</i> (1994); Mirlees Black <i>et al</i> (1998); Rengert and Hakim (1998); Hakim <i>et al</i> (2001); Taylor (2002); Nubani and Wineman (2005); Yang (2006); Armitage (2006a); Armitage <i>et al</i> (2011). |
| Being located on a travel path. | Increases risk of crime. | Letkemann (1973); Brantingham and Brantingham (1984); Feeney (1986); Gabor <i>et al</i> (1987); Poyner and Webb (1991); Rengert and Wasilchick (2000); Wiles and Costello (2000). |
| Being located on a cul-de-sac | Reduces risk of crime | Bevis and Nutter (1977); Armitage <i>et al</i> (2011); Johnson and Bowers (2010). |
| Closing off streets | Reduces risk of crime | Matthews (1992); Atlas and LeBlanc (1994); Newman (1995, 1996); Lasley |

| | | |
|---|-----------------------|---|
| | | (1998); Zavoski <i>et al</i> (1999); Eck (2002). |
| Being located on a development with high levels of connectivity | Reduces risk of crime | Rudlin and Falk (1995); Jones and Fanek (1997); Hillier and Shu (1998); Hillier and Shu (2000); Shu and Huang (2003); Hillier (2004). |

Table Seven: Correlation between CABE Housing Audit Score and Crime Rates per 1000 Households (Macro Sample n=34)

| | Total Crime | Burglary (inc. Burglary Other) | Vehicle Crime | Crimes against the Person | Criminal Damage |
|--------------------------|-------------|--------------------------------|---------------|---------------------------|-----------------|
| CABE Housing Audit Score | -0.071 | -0.108 | -0.375* | -0.088 | -0.109 |

*= Spearman rho correlation is significant at p<0.05

Table Eight: Crime Rates per 1000 Dwellings, Macro Housing Developments January 2007- December 2009

| Rate per 1000 Households* | | | | | |
|---------------------------|--|---|------------------------------|----------------------------|--|
| Mean (sd) | | | | | |
| | All Crime (Key Crime Types) ¹ | Domestic Burglary inc Burglary Other ² | Criminal Damage ³ | Vehicle Crime ⁴ | Violence Against the Person ⁵ |
| Sample (N=34) | 194.95 (139.16) | 43.65 (43.04) | 46.8 (47.63) | 62.89 (52.21) | 41.62 (44.9) |

Table Notes

*The number of households was used as a denominator against all crime types as population and car ownership data were not available.

¹Crimes against non-residential and outlier properties such as children's homes have been excluded.

²All domestic burglaries including attempts, distraction and aggravated burglary.

³Includes damage to vehicles

⁴Theft from and of motor vehicles, including Taking Without Owners Consent

⁵Assault, Theft from the Person and Robbery

Table Nine: Relative Crime Rates per 1000 Households Jan 2007-Dec 2009 (Micro Sample BfL/Comparator ratios n=12)

| Pair | All crime | Burglary | Criminal Damage | Vehicle Crime | Crimes against Person |
|------------------------|-----------|----------|-----------------|---------------|-----------------------|
| 1 _(51,181) | 2.4 | 1.2 | 2.4 | 5.9 | Comp>BfL |
| 2 _(179,96) | 2.1 | BfL>comp | 1.3 | 0.4 | BfL>comp |
| 3 _(237,73) | 1.6 | BfL>comp | 1.7 | 0.6 | 2.0 |
| 4 _(513,158) | 0.6 | 0.4 | 0.8 | 1.1 | 0.4 |
| 5 _(361,176) | 0.9 | 0.4 | 1.6 | 0.5 | 1.8 |
| 6 _(88,79) | 0.4 | Comp>BfL | 1.3 | Comp>BfL | Comp>BfL |

Table notes:

Ratios are not calculated where there are no crimes of a type in one or other of the areas. The relevant text cell entries indicate whether the relevant BfL or comparator areas hosted no crime of the type (i.e. BfL>comp = no crime in the comparison development; Comp>BfL = no crime in the BfL development).

The subscript numbers in parentheses in column 1 represent the numbers of dwellings in the BfL and comparator sites, in that order.

Table Ten: CABE versus Design Expert Scores

| | Number of Developments | | | |
|---------------------|------------------------|-----------|-----|-------|
| | Design Expert Score | | | Total |
| | | 50 to 69% | 70+ | |
| CABE BfL Assessment | 50 to 69 | 1 | 0 | 1 |
| | 70+ | 2 | 4 | 6 |
| | U/K | 5 | 0 | 5* |
| Total | | 8 | 4 | 12 |

Table notes:

*This figure is five as opposed to six as one of the comparator developments had been included in the CABE level housing audit providing a score for comparison.

Table Eleven: Correlation between Design Expert Score and Crime Rates per 1000 Households (Micro sample N=12)

| | Total Crime | Burglary (inc. Burglary Other) | Vehicle Crime | Crimes against the Person | Criminal Damage |
|---------------------------|-------------|---|------------------|---------------------------------|--------------------|
| Design Expert Score | -0.352 | -0.298 | -0.683* | -0.035 | -0.162 |

*= Spearman's rho correlation is significant at $p < 0.05$

Table Twelve: Development Level Design Features

| | Design Feature | Score* |
|---|----------------------------------|--------|
| What is the modal street type within the development | Through Road | -1.4 |
| | Linear Cul-de-Sac | 1 |
| | Sinuuous Cul-de-Sac | 2 |
| Does the street layout, signage and house numbering make it easy to find your way around? | Yes | 0.9 |
| | No | -3 |
| Are there gateways or other symbolic features defining the entrance to the development? | Yes | 0.4 |
| | No | -0.4 |
| If there are footpaths within the development, do the footpaths lead to: | Open land: Yes | -0.3 |
| | No | 0.3 |
| | Shops: Yes | -0.4 |
| | No | 10.5 |
| | Other Residential area:Yes | -1.8 |
| | No | 1.3 |
| | Maze of Footpaths.....Yes | -10.4 |
| | No | 1.6 |

Table notes:

*These scores originate from the Burgess scoring system - see Armitage (2006a)

Table Thirteen: Correlation between Environmental Features Checklist Score and Crime Rates per 1000 Households (Micro sample N=12)

| | Total Crime | Burglary (inc. Burglary Other) | Vehicle Crime | Crimes against the Person | Criminal Damage |
|----------------------------------|-------------|--------------------------------|---------------|---------------------------|-----------------|
| Environmental Features Checklist | -0.581* | -0.437 | -0.634* | -0.159 | -0.403 |

*= Spearman's rho correlation is significant at $p < 0.05$

Table Fourteen: A Comparison between Correlations between Housing Audit Score, Design Expert Score and Environmental Features Checklist Score and Crime Rates per 1000 Households.

| | Total Crime | Burglary (inc. Burglary Other) | Vehicle Crime | Crimes against the Person | Criminal Damage |
|----------------------------------|-------------|--------------------------------|---------------|---------------------------|-----------------|
| CABE Housing Audit Score | -0.071 | -0.108 | -0.375* | -0.088 | -0.109 |
| Design Expert Score | -0.352 | -0.298 | -0.683* | -0.035 | -0.162 |
| Environmental Features Checklist | -0.581* | -0.437 | -0.634* | -0.159 | -0.403 |

*= Spearman's rho correlation is significant at $p < 0.05$