



# **The Footprint of Exurban Development**

## **A US/UK Comparison**



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## Findings/Conclusions

- Containment tends to be higher in the US
- Rural clustering tends to be higher in the UK
- Footprint of development is frequently smaller and more consistent among counties in the UK
- Land utilization within the footprint is generally higher in the UK
- Overall: UK counties are able to accommodate more housing on less land leaving a greater amount of rural land as countryside

**Table 1:**

**Housing Units  
Outside a Community's  
Urban Growth Boundary  
Containment Area**

**The initial US research**

| <b>Location</b>                | <b>% of<br/>Area's<br/>Total<br/>Housing<br/>in Rural<br/>Area</b> | <b>% of<br/>Area's<br/>Housing<br/>Built in<br/>'90's in<br/>Rural<br/>Area</b> | <b>% of<br/>Area's<br/>Single<br/>Family<br/>Detached<br/>Housing<br/>in Rural<br/>Area</b> | <b>Number of<br/>Housing<br/>Units<br/>Found in<br/>the Rural<br/>Area</b> | <b>Rural<br/>Area<br/>Housing<br/>Units per<br/>Square<br/>Mile of<br/>Private<br/>Land</b> |
|--------------------------------|--|---|---|--|---|
| <b>Lexington, KY</b>           | <b>3</b>   | <b>6</b>  | <b>5</b>  | <b>3,816</b>   | <b>21</b>   |
| <b>Sacramento, CA</b>          | <b>3</b>   | <b>7</b>  | <b>3</b>  | <b>11,916</b>  | <b>26</b>   |
| <b>Baltimore, MD</b>           | <b>4</b>   | <b>8</b>  | <b>13</b>   | <b>26,395</b>  | <b>78</b>   |
| <b>Seattle, WA</b>             | <b>5</b>   | <b>7</b>  | <b>8</b>  | <b>39,128</b>  | <b>47</b>   |
| <b>Montgomery County, MD</b>   | <b>5</b>   | <b>12</b>   | <b>10</b>   | <b>18,332</b>  | <b>78</b>   |
| <b>Minn/St.Paul Region, MN</b> | <b>5</b>   | <b>8</b>  | <b>7</b>  | <b>51,294</b>  | <b>42</b>   |
| <b>Portland Region, OR</b>     | <b>8</b>   | <b>8</b>  | <b>10</b>   | <b>47,584</b>  | <b>32</b>   |
| <b>Boulder, CO</b>             | <b>14</b>  | <b>16</b>   | <b>20</b>   | <b>7,380</b>   | <b>65</b>   |
| <b>Pinelands Region, NJ</b>    | <b>14</b>  | <b>14</b>   | <b>15</b>   | <b>25,673</b>  | <b>38</b>   |
| <b>Ft. Collins, CO</b>         | <b>15</b>  | <b>16</b>   | <b>19</b>   | <b>15,640</b>  | <b>15</b>   |
| <b>Burlington, VT</b>          | <b>19</b>  | <b>24</b>   | <b>28</b>   | <b>10,992</b>  | <b>32</b>   |
| <b>Charlottesville, VA</b>     | <b>29</b>  | <b>27</b>   | <b>43</b>   | <b>14,654</b>  | <b>24</b>   |
| <b>Petaluma, CA</b>            | <b>34</b>  | <b>28</b>   | <b>39</b>   | <b>61,378</b>  | <b>45</b>   |

**Table 2**

**US/UK Comparison**

**Expectation was that England would have contained a greater share of area housing than US**

**but.....**

| <b>UK Location</b> | <b>% of Housing in Rural Setting</b> |
|--------------------|--------------------------------------|
| Hertfordshire      | 12                                   |
| Staffordshire      | 18                                   |
| Lancashire         | 18                                   |
| Nottinghamshire    | 20                                   |
| Kent               | 25                                   |
| Dorset             | 25                                   |
| Gloucestershire    | 34                                   |
| Bedfordshire       | 36                                   |
| Buckinghamshire    | 36                                   |
| Oxfordshire        | 40                                   |
| Cambridgeshire     | 50                                   |
| Northumberland     | 50                                   |
| North Yorkshire    | 57                                   |

| <b>US Location</b>     | <b>% of Housing in Rural Setting</b> |
|------------------------|--------------------------------------|
| Montgomery County,MD   | 2                                    |
| Sacramento, CA         | 3                                    |
| Baltimore, MD          | 3                                    |
| Seattle, WA            | 4                                    |
| Lexington, KY          | 4                                    |
| Minn/St Paul Region,MN | 6                                    |
| Portland Region, OR    | 7                                    |
| Pinelands Region, NJ   | 8                                    |
| Boulder, CO            | 11                                   |
| Ft. Collin, CO         | 17                                   |
| Petaluma, CA           | 17                                   |
| Burlington, VT         | 27                                   |
| Charlottesville, VA    | 31                                   |

**Table 3**

**US/UK Comparison**

**Expectation was that England would have contained a greater number of housing units than US**

**but.....**

| <b>UK Location</b> | <b># in Rural Setting</b> |
|--------------------|---------------------------|
| Hertfordshire      | 53,493                    |
| Bedfordshire       | 56,512                    |
| Northumberland     | 69,520                    |
| Buckinghamshire    | 70,658                    |
| Dorset             | 80,034                    |
| Staffordshire      | 81,269                    |
| Gloucestershire    | 82,768                    |
| Nottinghamshire    | 90,466                    |
| Oxfordshire        | 99,349                    |
| Lancashire         | 108,656                   |
| Cambridgeshire     | 115,975                   |
| North Yorkshire    | 143,830                   |
| Kent               | 168,735                   |

| <b>US Location</b>      | <b># in Rural Setting</b> |
|-------------------------|---------------------------|
| Lexington, KY           | 4,324                     |
| Montgomery County, MD   | 8,054                     |
| Sacramento, CA          | 11,703                    |
| Boulder, CO             | 13,561                    |
| Charlottesville, VA     | 15,856                    |
| Burlington, VT          | 16,156                    |
| Ft. Collins, CO         | 18,223                    |
| Baltimore, MD           | 18,731                    |
| Seattle, WA             | 26,545                    |
| Petaluma, CA            | 31,874                    |
| Portland Region, OR     | 45,212                    |
| Minn/St.Paul Region, MN | 59,251                    |
| Pinelands Region, NJ    | 87,990                    |

**Table 4**

**Rural housing in UK categorized by type of location**

**The vast majority of UK housing units are found in towns or villages not in the open countryside**

**How does the US compare in this regard.....**

| <b>UK Location</b> | <b>Total Rural Housing Units</b> | <b>% in Towns</b> | <b>% in Villages</b> | <b>Combined Villages and Towns</b> |
|--------------------|----------------------------------|-------------------|----------------------|------------------------------------|
| Nottinghamshire    | 90,466                           | 64                | 29                   | 93                                 |
| Cambridgeshire     | 115,975                          | 57                | 36                   | 93                                 |
| Bedfordshire       | 56,512                           | 53                | 40                   | 93                                 |
| Oxfordshire        | 99,349                           | 45                | 46                   | 90                                 |
| North Yorkshire    | 143,830                          | 40                | 46                   | 86                                 |
| Hertfordshire      | 53,493                           | 47                | 38                   | 85                                 |
| Dorset             | 80,034                           | 46                | 39                   | 85                                 |
| Lancashire         | 108,656                          | 53                | 29                   | 83                                 |
| Gloucestershire    | 82,768                           | 38                | 46                   | 83                                 |
| Buckinghamshire    | 70,658                           | 42                | 41                   | 82                                 |
| Kent               | 168,735                          | 45                | 36                   | 81                                 |
| Northumberland     | 69,520                           | 54                | 26                   | 80                                 |
| Staffordshire      | 81,269                           | 44                | 35                   | 79                                 |

**Table 5 Dwelling Units per Square Mile**

| <b>UK Location</b> | <b>Gte 300</b> | <b>100-299</b> | <b>Combined</b> |
|--------------------|----------------|----------------|-----------------|
| Lancashire         | 64             | 14             | 78              |
| Bedfordshire       | 61             | 16             | 77              |
| Nottinghamshire    | 66             | 10             | 76              |
| Kent               | 59             | 17             | 76              |
| Cambridgeshire     | 61             | 13             | 74              |
| Buckinghamshire    | 56             | 17             | 73              |
| Hertfordshire      | 60             | 12             | 72              |
| Northumberland     | 62             | 9              | 71              |
| Staffordshire      | 57             | 13             | 70              |
| Dorset             | 54             | 14             | 68              |
| Oxfordshire        | 52             | 16             | 68              |
| Gloucestershire    | 50             | 12             | 62              |
| North Yorkshire    | 48             | 11             | 57              |

| <b>US Location</b>       | <b>Gte 300</b> | <b>100-299</b> | <b>Combined</b> |
|--------------------------|----------------|----------------|-----------------|
| Seattle, WA              | 20             | 33             | 53              |
| Petaluma, CA             | 15             | 31             | 46              |
| Pinelands Region, NJ     | 21             | 25             | 46              |
| Boulder, CO              | 23             | 17             | 40              |
| Sacramento, CA           | 17             | 22             | 39              |
| Baltimore, MD            | 11             | 26             | 37              |
| Ft. Collins, CO          | 16             | 21             | 37              |
| Portland Region, OR      | 12             | 24             | 36              |
| Lexington, KY            | 17             | 18             | 35              |
| Montgomery County, MD    | 3              | 31             | 34              |
| Minn/St. Paul Region, MN | 12             | 22             | 34              |
| Burlington, VT           | 5              | 23             | 28              |
| Charlottesville, VA      | 3              | 18             | 21              |

**US has a significantly lower share of rural housing in density settings like towns and villages**

**So, how does the “footprint of rural housing” compare in the US and the UK.....**

**Table 6**

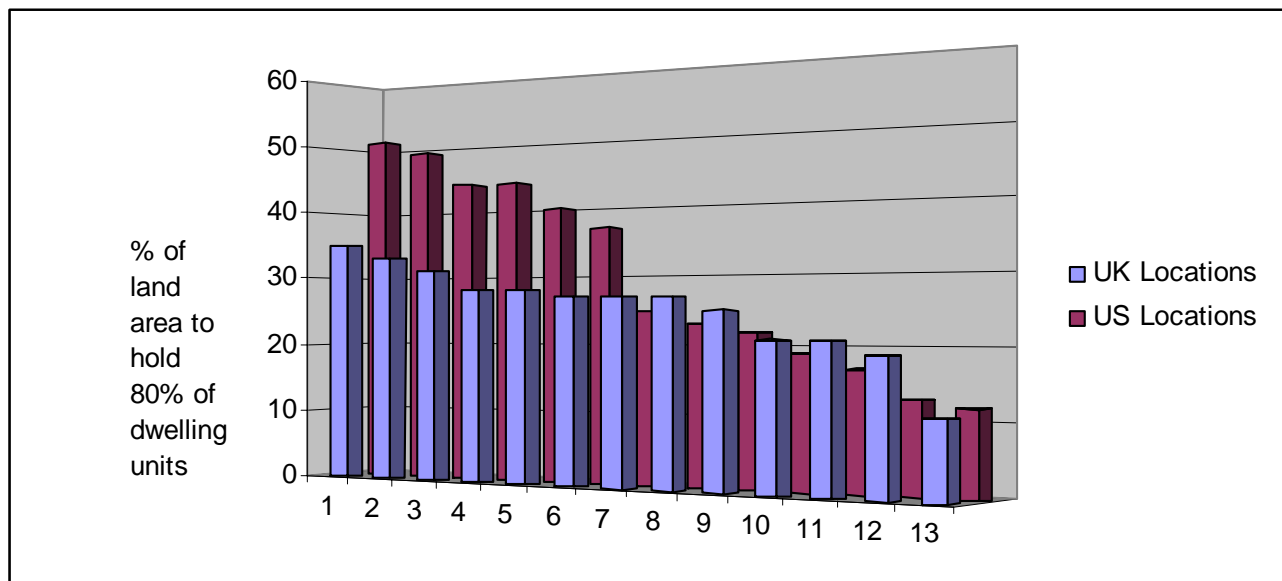
**Rural Land Area to Hold  
80% of Dwellings**

**The footprint in the US  
is more variable and  
exceeds that of the UK  
roughly half the time**

| <b>UK Location</b> | <b>% of land area</b> |
|--------------------|-----------------------|
| Gloucestershire    | 35                    |
| Buckinghamshire    | 33                    |
| Oxfordshire        | 31                    |
| Kent               | 28                    |
| Dorset             | 28                    |
| Hertfordshire      | 27                    |
| Staffordshire      | 27                    |
| North Yorkshire    | 27                    |
| Bedfordshire       | 25                    |
| Nottinghamshire    | 21                    |
| Cambridgeshire     | 21                    |
| Lancashire         | 19                    |
| Northumberland     | 11                    |

| <b>US Location</b>       | <b>% of land area</b> |
|--------------------------|-----------------------|
| Burlington, VT           | 51                    |
| Baltimore, MD            | 49                    |
| Minn/St. Paul Region, MN | 44                    |
| Lexington, KY            | 44                    |
| Charlottesville, VA      | 40                    |
| Montgomery County, MD    | 37                    |
| Boulder, CO              | 25                    |
| Pinelands Region, NJ     | 23                    |
| Petaluma, CA             | 22                    |
| Portland Region, OR      | 19                    |
| Sacramento, CA           | 17                    |
| Ft. Collins, CO          | 13                    |
| Seattle, WA              | 12                    |

**Figure 1: Development Footprint of 13 US and UK Locations**



**Table 7**

**Number of Dwelling Units by Footprint of Development**

**Within the footprint of rural development a greater number of dwelling units are accommodated in the UK than in the US**

| Footprint                 | Number of Dwelling Units in the Rural Area   |   |   |                                   |
|---------------------------|--|---|---|-----------------------------------|
|                           | Very High<br>(gte 70,000)  | High<br>(40,000 – 69,999)   | Medium<br>(12,001 – 39,999)   | Low<br>(lte 12,000)               |
| <b>High</b><br>(gte 40%)  |  | Twin Cities<br>(59,521/ 41%)  | Albemarle<br>(15,856/ 40%)<br>Burlington/Chittenden<br>(16,156/ 51%)<br>Baltimore<br>(18,731/ 49%)          | Lexington/Fayette<br>(4,324/ 44%) |
| <b>Medium</b><br>(26-39%) | Buckinghamshire<br>(70,658/ 33%)<br>Dorset<br>(80,034/ 28%)<br>Staffordshire<br>(81,269/ 27%)<br>Gloucestershire<br>(82,768/ 35%)<br>Oxfordshire<br>(99,349/ 31%)<br>North Yorkshire<br>(143,830/ 27%)<br>Kent<br>(168,735/ 28%) | Hertfordshire<br>(53,493/ 27%)  |   | Montgomery<br>(8,054/ 37%)        |
| <b>Low</b><br>(lte 25%)   | Pinelands<br>(87,990/ 23%)<br>Nottinghamshire<br>(90,446/ 21%)<br>Lancashire<br>(108,656/ 19%)<br>Cambridgeshire<br>(115,975/ 21%)   | Portland Metro<br>(45,212/ 19%)<br>Bedfordshire<br>(56,512/ 25%)<br>Northumberland<br>(69,520/ 11%) | Boulder<br>(13,561/ 25%)<br>Larimer<br>(18,223/ 13%)<br>Seattle<br>(26,545/ 12%)<br>Sonoma<br>(31,874/ 22%) | Sacramento<br>(11,703/ 17%)       |

**Table 8**

**Land utilization within the footprint**

**Density (gte 100) within the footprint**

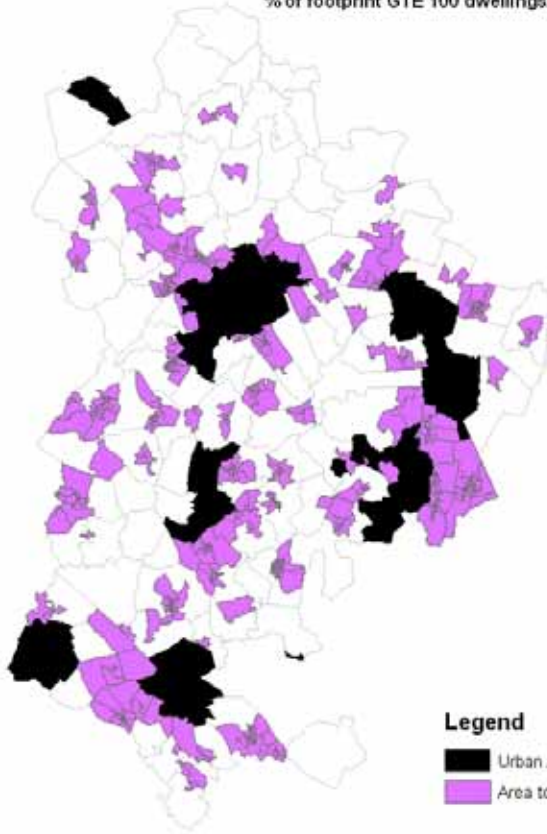
**Rural land committed to development is utilized more efficiently in the UK than in the US**

| <b>UK Location</b> | <b>% of footprint</b> |
|--------------------|-----------------------|
| Bedfordshire       | 85                    |
| Lancashire         | 84                    |
| Kent               | 75                    |
| Buckinghamshire    | 66                    |
| Cambridgeshire     | 65                    |
| Nottinghamshire    | 61                    |
| Hertfordshire      | 54                    |
| Oxfordshire        | 48                    |
| Staffordshire      | 47                    |
| Dorset             | 38                    |
| Gloucestershire    | 31                    |
| Northumberland     | 31                    |
| North Yorkshire    | 17                    |

| <b>US Location</b>       | <b>% of footprint</b> |
|--------------------------|-----------------------|
| Seattle, WA              | 37                    |
| Pinelands Region, NJ     | 26                    |
| Montgomery County, MD    | 25                    |
| Petaluma, CA             | 24                    |
| Baltimore, MD            | 23                    |
| Sacramento, CA           | 17                    |
| Portland Region, OR      | 15                    |
| Burlington, VT           | 12                    |
| Minn/St. Paul Region, MN | 12                    |
| Boulder, CO              | 12                    |
| Ft. Collins, CO          | 10                    |
| Charlottesville, VA      | 8                     |
| Lexington, KY            | 7                     |

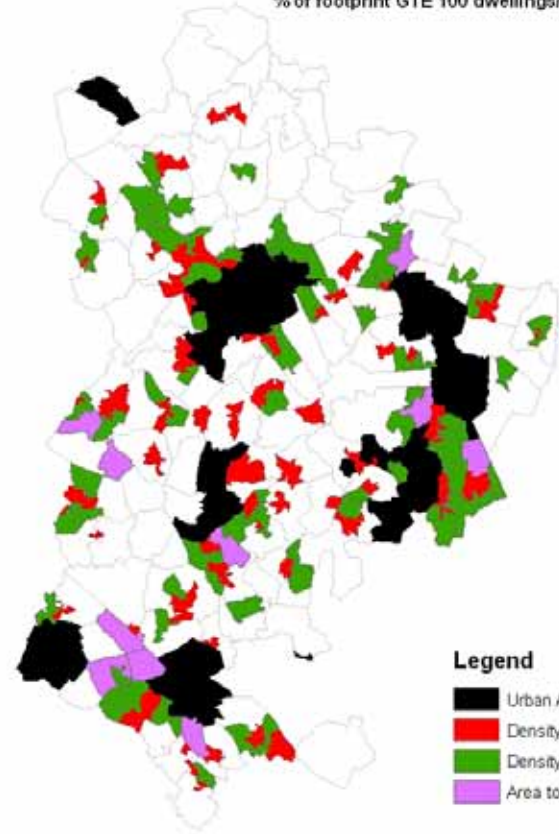
## Bedfordshire

Rural Dwelling Units = 56,512  
Rural Area = 396 square miles  
Footprint (area to hold 80%) = 101 square miles  
% of footprint GTE 100 dwellings/square mile = 85%



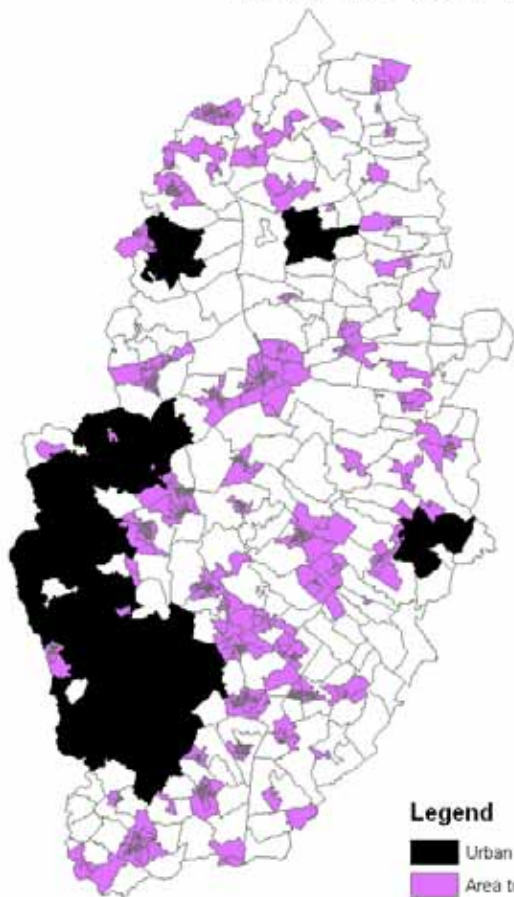
## Bedfordshire

Rural Dwelling Units = 56,512  
Rural Area = 396 square miles  
Footprint (area to hold 80%) = 101 square miles  
% of footprint GTE 100 dwellings/square mile = 85%



## Nottinghamshire

Rural Dwelling Units = 90,466  
Rural Area = 675 square miles  
Footprint (area to hold 80%) = 153 square miles  
% of footprint GTE 100 dwellings/square mile = 61%

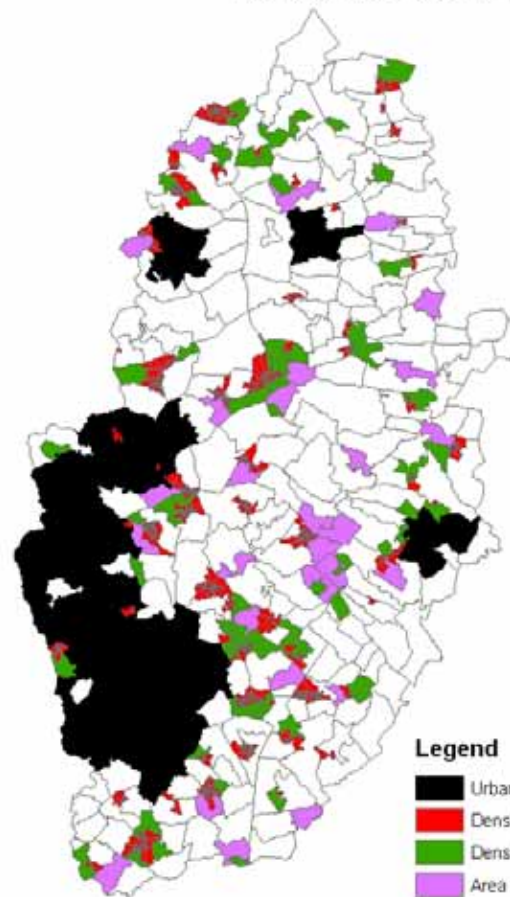


### Legend

- Urban Areas
- Area to hold 80% of dwellings

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% of footprint GTE 100 dwellings/square mile = 61%

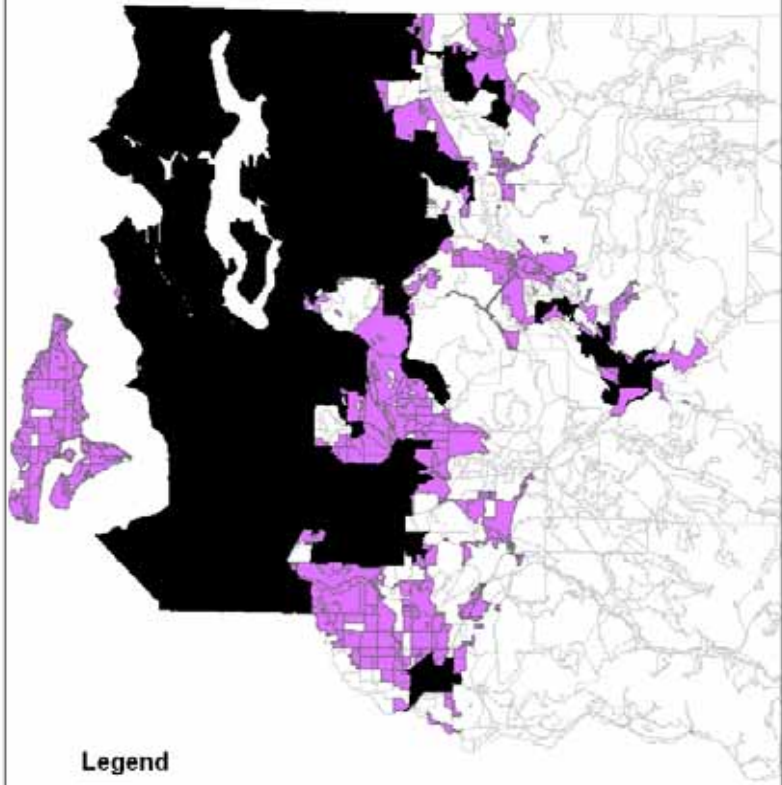


### Legend

- Urban Areas
- Density 300 or greater
- Density 100-299
- Area to hold 80% of dwellings

### Seattle/King County (portion)

Rural Dwelling Units = 26,545  
Rural Area = 1607 square miles  
Footprint (area to hold 80%) = 187 square miles  
% of footprint GTE 100 dwellings/square mile = 37%

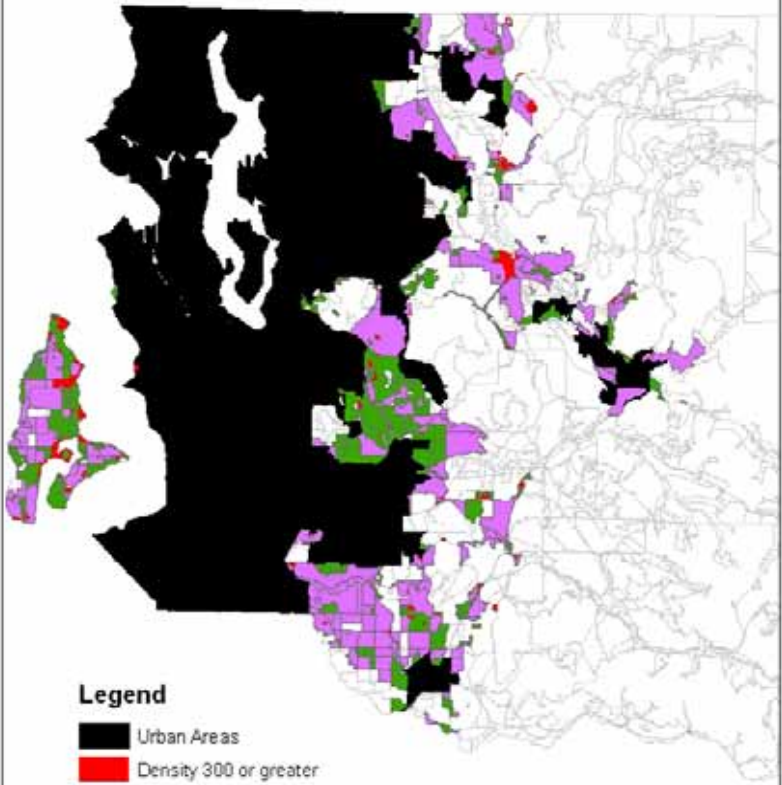


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Rural Dwelling Units = 26,545  
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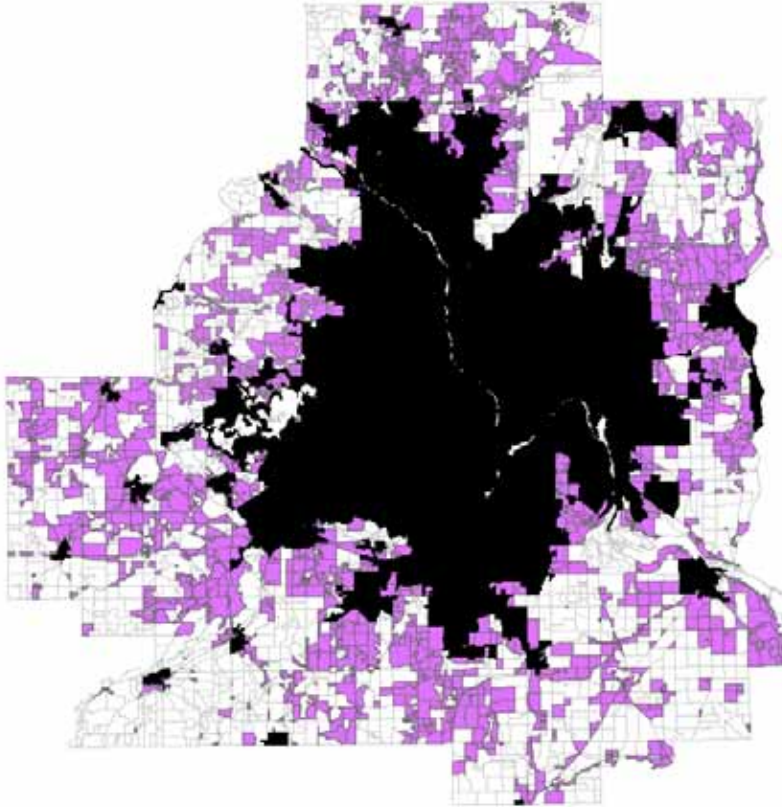


#### Legend

- Urban Areas
- Density 300 or greater
- Density 100-299
- Area to hold 80% of dwellings

## Minneapolis/St. Paul

Rural Dwelling Units =  
Rural Area = 1875 square miles  
Footprint (area to hold 80%) = 773 square miles  
% of footprint GTE 100 dwellings /square mile = 12%

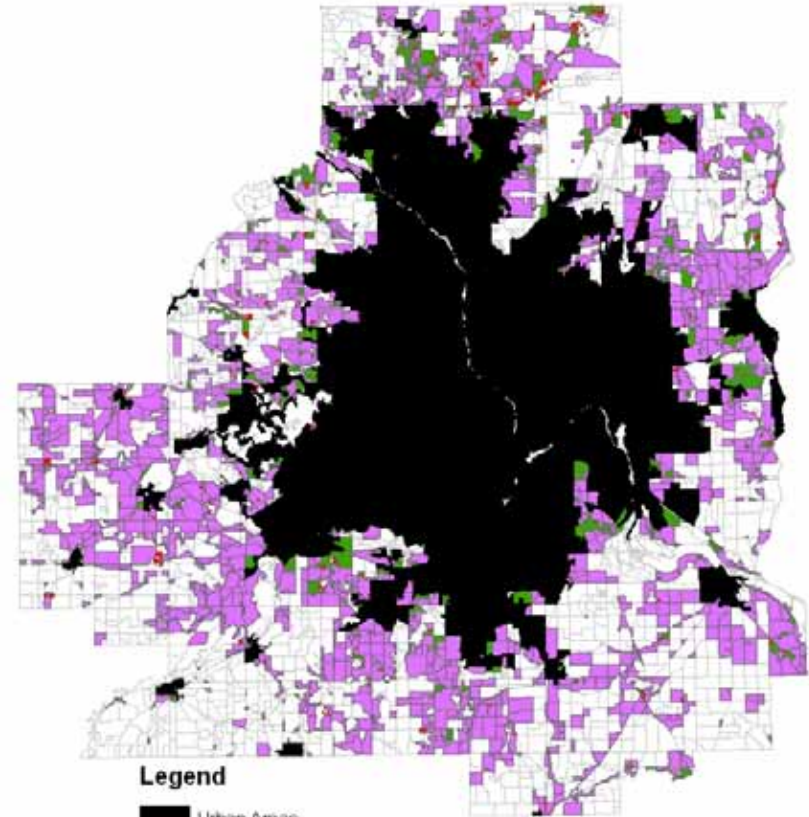


### Legend

- Urban Areas
- Area to hold 80% of dwellings

## Minneapolis/St. Paul

Rural Dwelling Units =  
Rural Area = 1875 square miles  
Footprint (area to hold 80%) = 773 square miles  
% of footprint GTE 100 dwellings /square mile = 12%

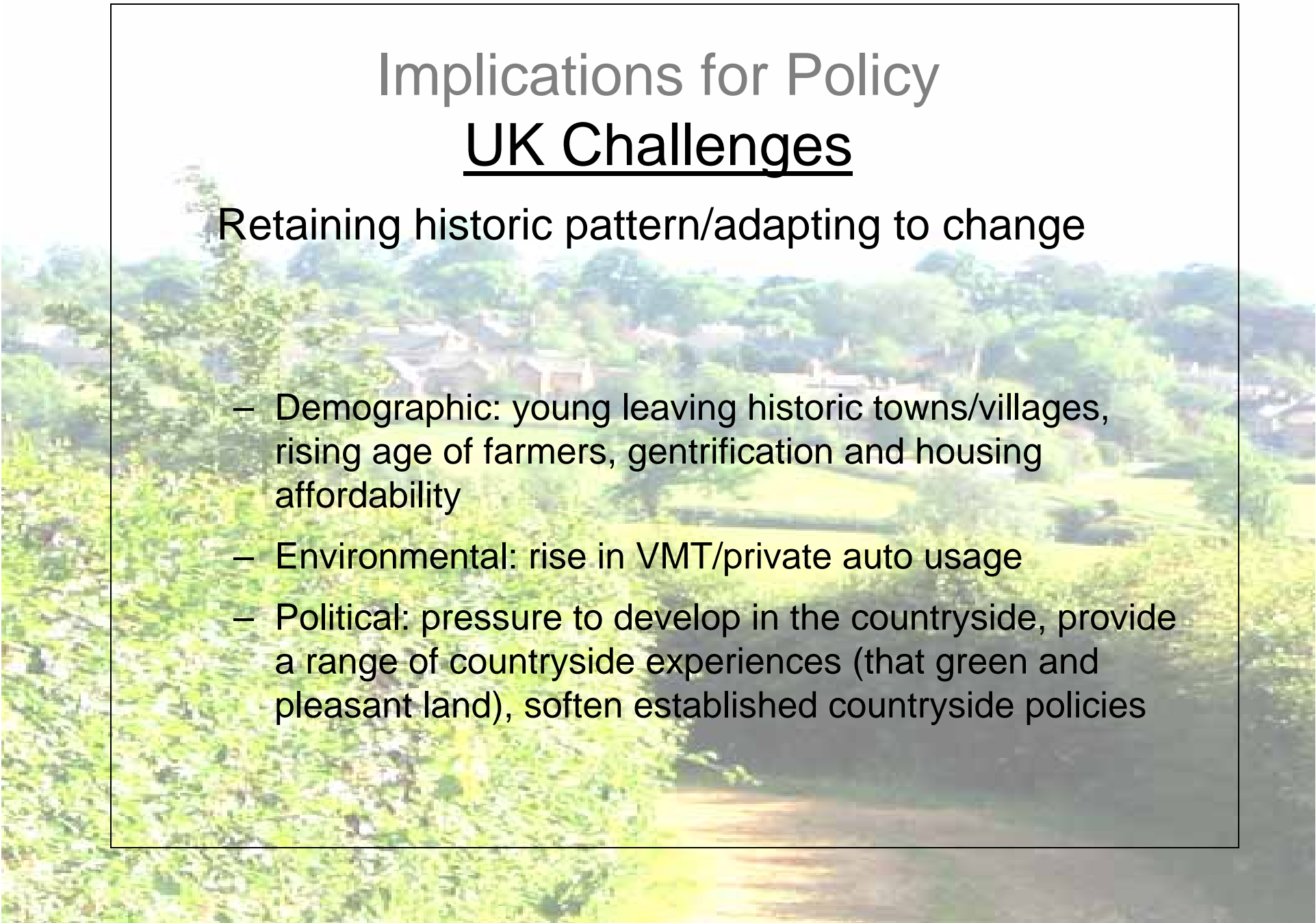


### Legend

- Urban Areas
- Density 300 or greater
- Density 100-299
- Area to hold 80% of dwellings

## Findings/Conclusions

- Containment tends to be higher in the US
- Rural clustering tends to be higher in the UK
- Footprint of development is frequently smaller and more consistent among counties in the UK
- Land utilization within the footprint is generally higher in the UK
- Overall: UK counties are able to accommodate more housing on less land leaving a greater amount of rural land as countryside



## Implications for Policy

# UK Challenges

Retaining historic pattern/adapting to change

- Demographic: young leaving historic towns/villages, rising age of farmers, gentrification and housing affordability
- Environmental: rise in VMT/private auto usage
- Political: pressure to develop in the countryside, provide a range of countryside experiences (that green and pleasant land), soften established countryside policies

An aerial photograph of a rural town, showing a cluster of houses with various roof colors (red, grey, blue) and green lawns. The town is surrounded by rolling green hills and fields. In the background, there are some industrial structures, possibly a power plant or refinery, with tall chimneys. The overall scene is a mix of residential and industrial development in a rural setting.

## Implications for Policy US Challenges

### Reducing sprawl/establishing rural policies

- Demographic: inevitability of rural housing growth, popular interest in reinstating traditional neighborhood design principles
- Environmental: absence of infrastructure to support rural towns/villages, impacts of village vs corridor vs contiguous
- Political: shift in attitude, declaring the area outside urban growth boundaries “off limits” does not make it so, fear that rural growth will be spurred rather than just re-patterned, alternative is not to do nothing