**Summary**

My project is to show how house prices have changed from 1996 to 2012.

**Preparation**

I was expecting to find that house prices increased a lot over the years, by approximately double for lower priced houses and by 5x for higher priced houses.

I first got the data from the Data.gov1 website after trying to find a non-private unclean data set that could be manipulated. After finding this dataset, I converted it from an xls file to a csv file for ease of use. I then changed all the non-integer values into zeros to make the coding process easier.

**Process**

I first imported all the libraries and the slightly cleaned data set. I then summed up all the values per year to get the overall value of house prices across the England and Wales. It included cheaper houses and more expensive houses, and therefore included a good range.

I then removed all the zero values so that it would not affect my graphs. I first graphed all the summed data together over all the years; however, it looks a bit chaotic so I would most likely not use it unless I had to. I then printed all the summed house prices and also the percentage changes from year to year, which can be found in the code. I then graphed each summed year on their own graphs, and then created a subplot of each year side by side with a y limit of 1.8 million, so as to compare them.

**Results**

It was found that house prices overall increased by almost 240% from 1996 to 2012. As seen from the graphs, the cheaper house prices almost tripled over the time period, and the expensive houses quintupled in price. The main graphs included in this show how over the time period, only around 2008 to 2009 did house prices fall; however, it was mainly only for the more expensive houses that the prices fell (approx. 5.3% decrease).

Overall, the subplot diagram is the most representative, as it shows the rise in prices the most clearly. You can clearly see how the house prices for the more expensive houses have increased the most, whilst although the house prices for the cheaper houses have rose, it is not by as large an amount.

1. Dataset - <https://www.data.gov.uk/dataset/cace4ffc-e6f0-4577-8a2c-3e6fd2881909/mean-house-prices-land-registry>

**The summary of the output of the code without graphs**

**Total house prices across the England and Wales (1996 to 2012):**

26047850 29797619 32851215 36211934 41715490 46003623 53856134 62345858 70226392 74162079 79082976 85632137 85791248 81301567 87933864 86857194 88411032

**Average house prices across England and Wales (1996 to 2012):**

67307.10594315245 76996.4315245478 84886.86046511628 93570.88888888889 107791.9638242894 118872.41085271318 139163.1369509044 161100.40826873385 181463.54521963824 191633.27906976745 204348.77519379844 221271.67183462533 221682.81136950906 210081.5684754522 227219.28682170543 224437.19379844962 228452.27906976745

**Average percentage increase of house prices:**

Average increase 1996 to 1997 is 14.395694846215715%

Average increase 1997 to 1998 is 10.247785234115518%

Average increase 1998 to 1999 is 10.230120864631644%

Average increase 1999 to 2000 is 15.198183007844873%

Average increase 1996 to 2000 is 60.14945571323545%

Average increase 2000 to 2001 is 10.279474123401164%

Average increase 2001 to 2002 is 17.069331691549596%

Average increase 2002 to 2003 is 15.763708549893312%

Average increase 2003 to 2004 is 12.640028147499391%

Average increase 2004 to 2005 is 5.604284782279573%

Average increase 2005 to 2006 is 6.6353277393963035%

Average increase 1996 to 2006 is 203.60653950326034%

Average increase 2006 to 2007 is 8.281379041678957%

Average increase 2007 to 2008 is 0.18580757829271505%

Average increase 2008 to 2009 is -5.23326225537598%

Average increase 2009 to 2010 is 8.157649655141332%

Average increase 2010 to 2011 is -1.22440883525828%

Average increase 2011 to 2012 is 1.788957170317982%

Average increase 1996 to 2012 is 239.41777152432925%

**Wales**

**Average house prices across Wales (1996 to 2012):**

0.0 3054.6295336787566 3245.098445595855 3453.5880829015546 3719.5699481865286 4005.7305699481867 4681.852331606217 5775.279792746114 7209.854922279793 8056.875647668394 8622.012953367876 9177.422279792747 8884.458549222798 8479.886010362694 8687.60621761658 8527.209844559586 8547.90414507772

**Total house prices per year (1996 to 2012):**

0.0 1179087 1252608 1333085 1435754 1546212 1807195 2229258 2783004 3109954 3328097 3542485 3429401 3273236 3353416 3291503 3299491

**Average percentage increase of house prices (excluding 1996):**

Average total increase 1997 to 1998 is 6.235417742711098%

Average total increase 1998 to 1999 is 6.424755390353567%

Average total increase 1999 to 2000 is 7.701609424755361%

Average total increase 1997 to 2000 is 21.768283426074582%

Average total increase 2000 to 2001 is 7.693379227917875%

Average total increase 2001 to 2002 is 16.878862665662922%

Average total increase 2002 to 2003 is 23.354590954490245%

Average total increase 2003 to 2004 is 24.8399243156243%

Average total increase 2004 to 2005 is 11.748096661018094%

Average total increase 2005 to 2006 is 7.014348122190875%

Average total increase 1997 to 2006 is 182.2605117349271%

Average total increase 2006 to 2007 is 6.441759359778276%

Average total increase 2007 to 2008 is -3.1922224088457676%

Average total increase 2008 to 2009 is -4.553710691750542%

Average total increase 2009 to 2010 is 2.4495636733801045%

Average total increase 2010 to 2011 is -1.8462666129105365%

Average total increase 2011 to 2012 is 0.24268548441244014%

Average total increase 1997 to 2012 is 179.83439729214214%

**England**

**Total house prices in England from 1996 to 2012**

26047850 28618532 31598607 34878849 40279736 44457411 52048939 60116600 67443388 71052125 75754879 82089652 82361847 78028331 84580448 83565691 85111541

**Average house prices in England per year:**

67481.47668393783 74141.27461139897 81861.6761658031 90359.71243523316 104351.64766839378 115174.63989637306 134841.81088082903 155742.48704663213 174723.8031088083 184072.8626943005 196256.16321243523 212667.49222797927 213372.66062176166 202145.93523316062 219120.33160621763 216491.4274611399 220496.22020725388

**Average percentage increase of house prices (including 1996):**

Average total increase 1996 to 1997 is 9.869075566697443%

Average total increase 1997 to 1998 is 10.413095262887698%

Average total increase 1998 to 1999 is 10.380970275050416%

Average total increase 1999 to 2000 is 15.484705358253079%

Average total increase 1996 to 2000 is 54.6374691193323%

Average total increase 2000 to 2001 is 10.371654372312669%

Average total increase 2001 to 2002 is 17.075956132488237%

Average total increase 2002 to 2003 is 15.500144969333574%

Average total increase 2003 to 2004 is 12.187628708210378%

Average total increase 2004 to 2005 is 5.35076470357628%

Average total increase 2005 to 2006 is 6.618738003965399%

Average total increase 1996 to 2006 is 190.8296807606002%

Average total increase 2006 to 2007 is 8.362198030835744%

Average total increase 2007 to 2008 is 0.33158259703671294%

Average total increase 2008 to 2009 is -5.26155757531761%

Average total increase 2009 to 2010 is 8.397100022554628%

Average total increase 2010 to 2011 is -1.1997536357338756%

Average total increase 2011 to 2012 is 1.8498620444603275%

Average total increase 1996 to 2012 is 226.7507337457794%

**Average percentage increase of house prices (excluding 1996):**

Average total increase 1997 to 1998 is 10.413095262887698%

Average total increase 1998 to 1999 is 10.380970275050416%

Average total increase 1999 to 2000 is 15.484705358253079%

Average total increase 1997 to 2000 is 40.74703761884083%

Average total increase 2000 to 2001 is 10.371654372312669%

Average total increase 2001 to 2002 is 17.075956132488237%

Average total increase 2002 to 2003 is 15.500144969333574%

Average total increase 2003 to 2004 is 12.187628708210378%

Average total increase 2004 to 2005 is 5.35076470357628%

Average total increase 2005 to 2006 is 6.618738003965399%

Average total increase 1997 to 2006 is 164.70567742608182%

Average total increase 2006 to 2007 is 8.362198030835744%

Average total increase 2007 to 2008 is 0.33158259703671294%

Average total increase 2008 to 2009 is -5.26155757531761%

Average total increase 2009 to 2010 is 8.397100022554628%

Average total increase 2010 to 2011 is -1.1997536357338756%

Average total increase 2011 to 2012 is 1.8498620444603275%

Average total increase 1997 to 2012 is 197.40009375742963%