Analysis of full demolition permits by the City of Austin

In this notebook, we explore "construction" permits for demolitions of residential (single-family or duplex) homes.

- This analysis starts with a file that has been downloaded and processed in another notebook, `01_Download_Process.ipynb` .

Set up and configurations

In [1]:
```
import pandas as pd
import altair as alt
import matplotlib.pyplot as plt
pd.options.display.max_colwidth = 60
```

Import file

Imports the file that was processed in another notebook.

In [2]:
```
# Column data type fixes
column_types = {
    'ApplicantPhone': pd.np.str,
    'ContractorPhone': pd.np.str,
    'CalendarYearIssued': pd.np.str,
    'OriginalZip': pd.np.str,
}

# import raw data
data_raw = pd.read_csv(
    '../data-processed/demolitions_full.csv',
    index_col=None,
    dtype=column_types,
    parse_dates=['IssuedDate']
)

demolitions = data_raw

demolitions.shape
```

Out[2]: (3160, 68)

Total cases

In [3]:
```
print('Number of full demolitions from Jan. 2008 to July 2018 be additions:\n
\n{}'.format(len(demolitions)))
```

```
Number of full demolitions from Jan. 2008 to July 2018 be additions:

3160
```

How the number of demolition permits have changed over time

How many demolition permits have been been issued in past years?

Permits per year

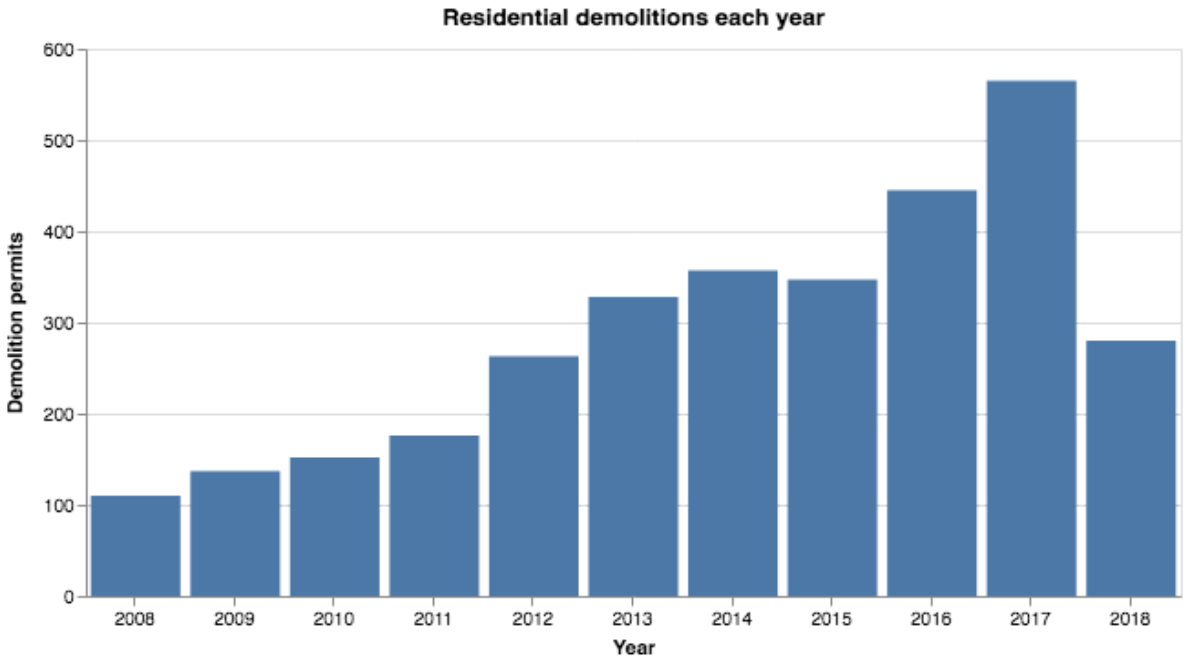
In [4]:
```
# create dataframe from pivot of permits per year
demos_by_year = demolitions.CalendarYearIssued.value_counts().reset_index()
demos_by_year.columns = ['Year', 'Count']
demos_by_year.sort_values('Year')
```

Out[4]:

	Year	Count
10	2008	110
9	2009	137
8	2010	152
7	2011	176
6	2012	263
4	2013	328
2	2014	357
3	2015	347
1	2016	445
0	2017	565
5	2018	280

In [5]:
```
# Chart based on dataframe above
alt.Chart(
    demos_by_year.reset_index(),
    title="Residential demolitions each year"
).mark_bar().encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Demolition permits")),
).properties(width=600)
```

Out[5]:



Permits in first half of year

If we want to see the pace of demolition permits in 2018, we need to look at the first six months of each year and compare them.

In [6]:
```
# Filter demolitions to only those before July in any given year
six_months_filtered = demolitions[demolitions.IssuedDate.dt.month < 7]
six_months_filtered.shape
```

Out[6]: (1658, 68)

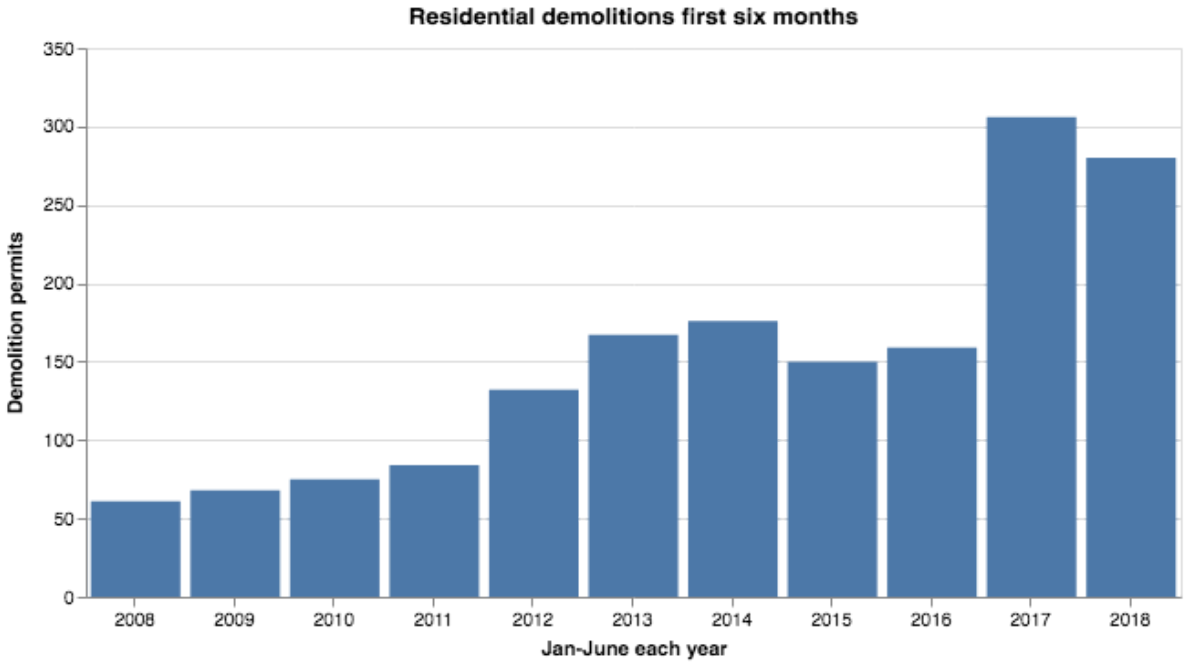
In [7]:
```
# make dataframe based on pivot of permits per year
six_months_data = six_months_filtered.CalendarYearIssued.value_counts().reset_
index()
six_months_data.columns = ['Year', 'Count']
six_months_data
```

Out[7]:

	Year	Count
0	2017	306
1	2018	280
2	2014	176
3	2013	167
4	2016	159
5	2015	150
6	2012	132
7	2011	84
8	2010	75
9	2009	68
10	2008	61

In [8]:
```
# Build chart based on dataframe above
alt.Chart(
    six_months_data.reset_index(),
    title="Residential demolitions first six months"
).mark_bar().encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Jan-June each year", labelAngle=0
)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Demolition permits")),
).properties(width=600)
```

Out[8]:



Square footage of residential homes demolished

A look in case there is some change in the type or style of homes being demolished.

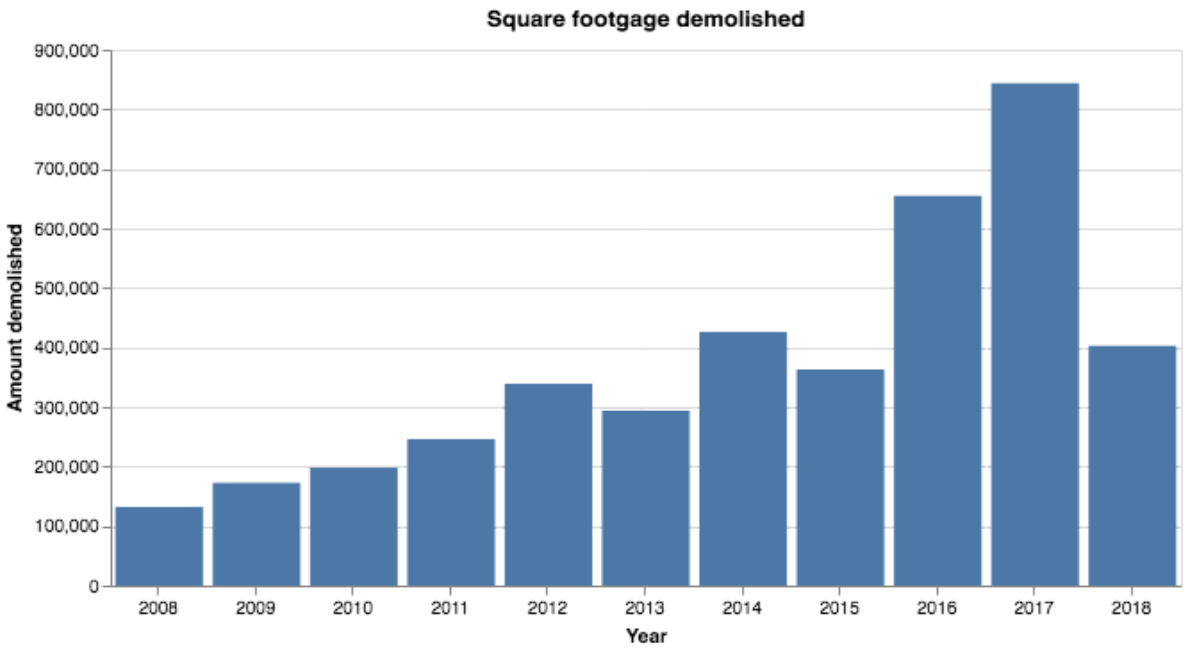
In [9]:
```
demos_spft = demolitions.groupby('CalendarYearIssued').sum().TotalExistingBldgSQFT.reset_index()
demos_spft.columns = ['Year', 'SqFt']
demos_spft
```

Out[9]:

	Year	SqFt
0	2008	131987.0
1	2009	172399.0
2	2010	197725.0
3	2011	245702.0
4	2012	339043.0
5	2013	294329.0
6	2014	425708.0
7	2015	362767.0
8	2016	654906.0
9	2017	843899.0
10	2018	402593.0

In [10]:
```
alt.Chart(demos_spft.reset_index(), title="Square footgage demolished").mark_bar().encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("SqFt:Q", axis=alt.Axis(title="Amount demolished")),
).properties(width=600)
```

Out[10]:



The total square footage pretty much tracks with the number of permits, and isn't very revealing.

Pace by square footage first half of year

It looks like the pace for 2018, is a bit less than 2017.

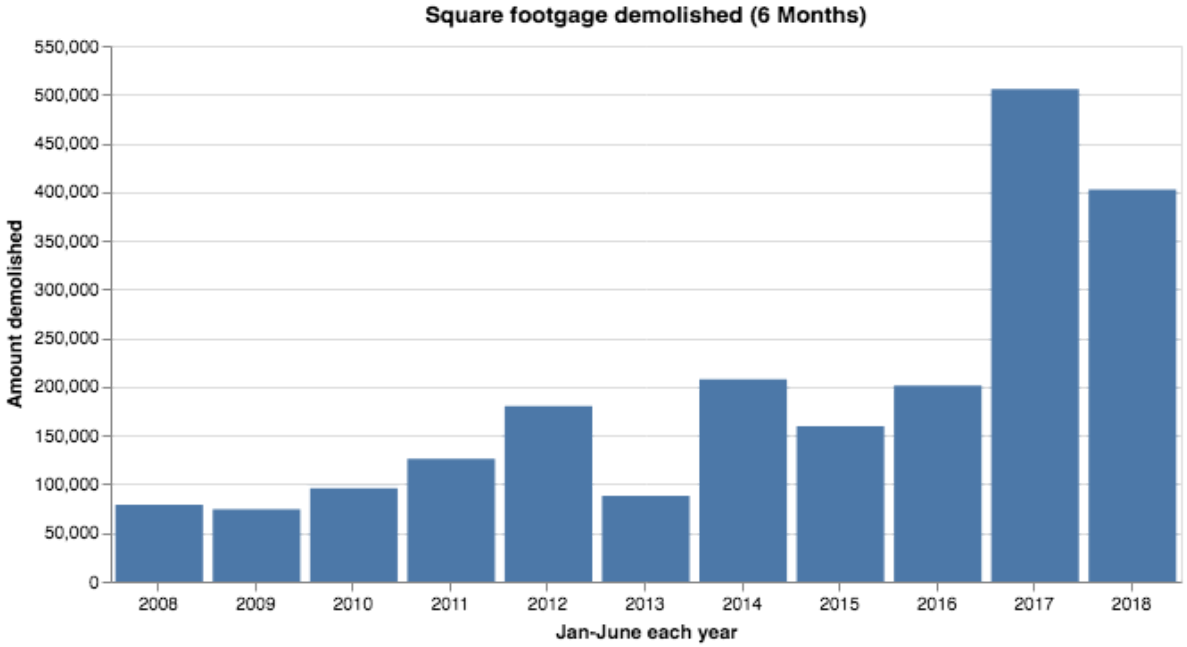
In [11]:
```
# group by year, sqft totals for first six months
demos_spft_6mo = six_months_filtered.groupby(
    'CalendarYearIssued'
).sum().TotalExistingBldgSQFT.reset_index()
demos_spft_6mo.columns = ['Year', 'SqFt']
demos_spft_6mo
```

Out[11]:

	Year	SqFt
0	2008	78621.0
1	2009	74045.0
2	2010	95895.0
3	2011	126032.0
4	2012	180176.0
5	2013	87939.0
6	2014	207848.0
7	2015	159388.0
8	2016	201239.0
9	2017	505389.0
10	2018	402593.0

In [12]:
```
# chart based on dataframe above
alt.Chart(
    demos_spft_6mo.reset_index(),
    title="Square footgage demolished (6 Months)"
).mark_bar().encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Jan-June each year", labelAngle=0
)),
    y=alt.Y("SqFt:Q", axis=alt.Axis(title="Amount demolished")),
).properties(width=600)
```

Out[12]:



Average square feet by year

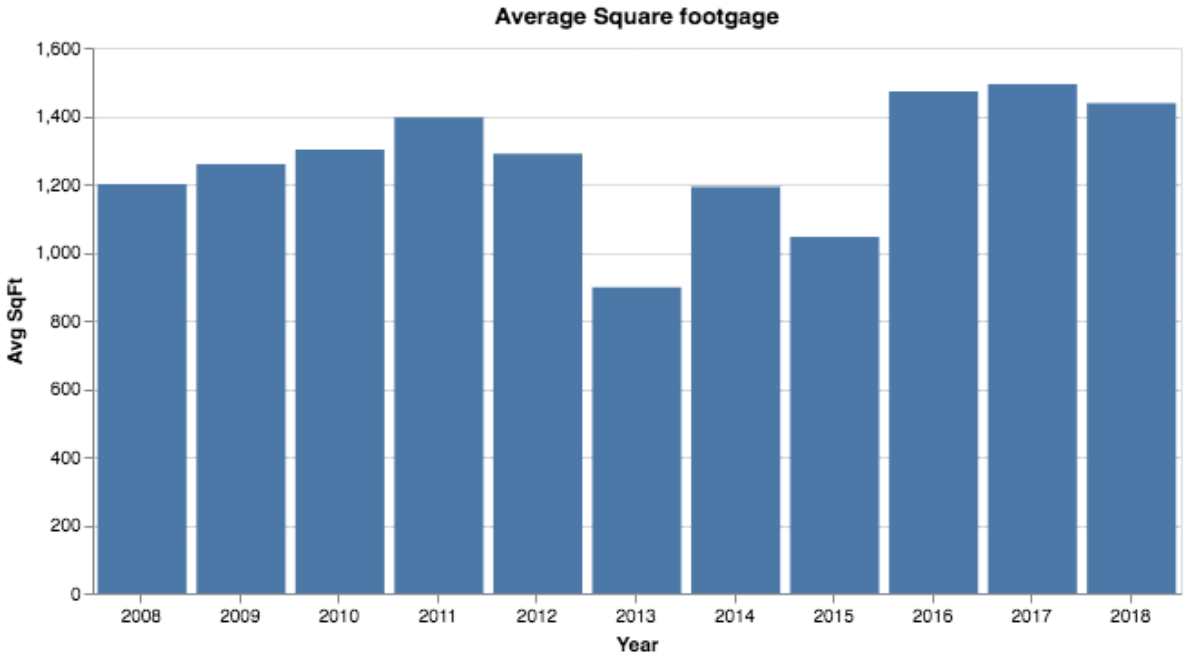
In [13]:
```
# group by year, sqft totals for first six months
demos_spft_avg = demolitions.groupby(
    'CalendarYearIssued'
).mean().TotalExistingBldgSQFT.reset_index()
demos_spft_avg.columns = ['Year', 'Avg SqFt']
demos_spft_avg
```

Out[13]:

	Year	Avg SqFt
0	2008	1199.881818
1	2009	1258.386861
2	2010	1300.822368
3	2011	1396.034091
4	2012	1289.136882
5	2013	897.344512
6	2014	1192.459384
7	2015	1045.438040
8	2016	1471.698876
9	2017	1493.626549
10	2018	1437.832143

In [14]:
```
# chart based on dataframe above
alt.Chart(
    demos_spft_avg.reset_index(),
    title="Average Square footgage"
).mark_bar().encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Avg SqFt:Q", axis=alt.Axis(title="Avg SqFt")),
).properties(width=600)
```

Out[14]:



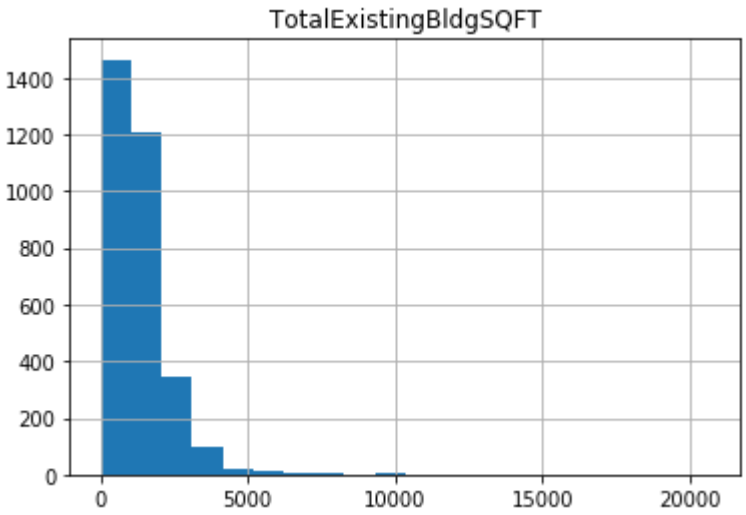
Also not particularly revealing.

Distribution of square footage

To get an idea on the sizes of homes that are demolished. This chart could use some more work to show how the bins are defined. It's offering few insights as-is.

In [15]:
```
demolitions.hist(column='TotalExistingBldgSQFT', bins=20)
```

Out[15]:
```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x10a735320>]],
      dtype=object)
```



Demolitions by ZIP code

ZIP code is probably the most recognizable geographic reference we have in the data, and allows us to see the pace of demolitions differs throughout the city.

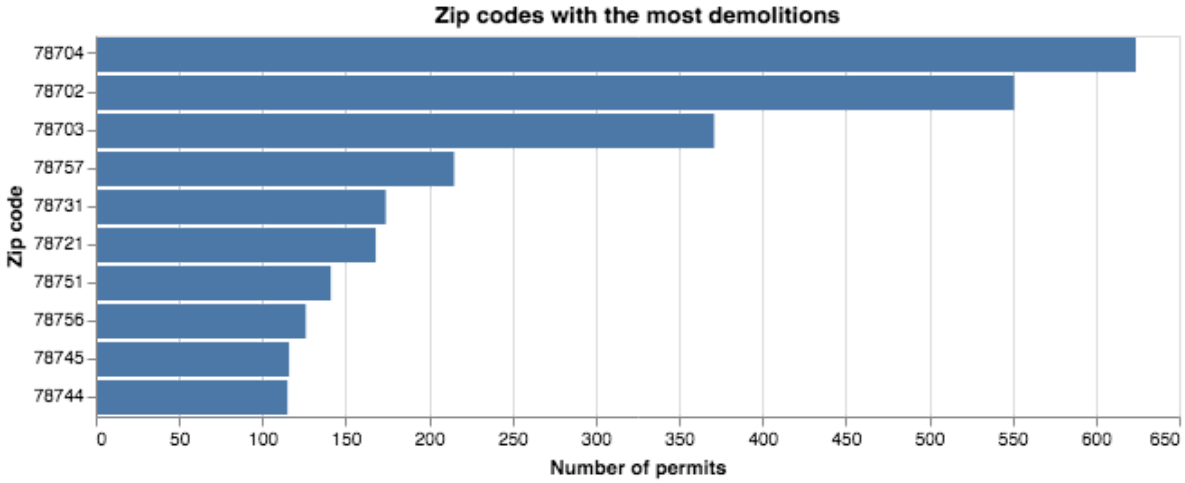
In [16]:
```
# make a dataframe with counts of permits by zip code
demos_by_zip = demolitions.OriginalZip.value_counts().reset_index()
demos_by_zip.columns = ['Zip', 'Count']
# output to csv for graphic
demos_by_zip.to_csv(
    '../data-processed/demos_by_zip.csv',
    index=False
)
# peek at result
demos_by_zip.head()
```

Out[16]:

	Zip	Count
0	78704	624
1	78702	551
2	78703	371
3	78757	215
4	78731	174

In [17]:
```
# chart based on first ten items in dataframe above
alt.Chart(
    demos_by_zip.head(10),
    title="Zip codes with the most demolitions"
).mark_bar().encode(
    x=alt.X("Count:Q",
            axis=alt.Axis(title="Number of permits")),
    y=alt.Y("Zip:O",
            # this is the sorting magic
            sort=alt.SortField(
                field="Count",
                order="descending",
                op="sum"
            ),
            axis=alt.Axis(title="Zip code")),
).properties(width=600)
```

Out[17]:



Demolitions by zip code and year

How is the pace of demolitions changing in different parts of the city? Again, we look at ZIP codes for insight.

Build our dataframe

In [18]:
```
# this is all years, then grouped by year, zip and count
demos_yr_zip_all = demolitions.groupby(['CalendarYearIssued','OriginalZip']).a
gg(dict(
    PermitNum='count'
)).reset_index()
demos_yr_zip_all.columns = ['Year', 'Zip', 'Count']
demos_yr_zip_all.shape
```

Out[18]: (284, 3)

In [19]:
```
# Filter out 2018 because it is a partial year
before_2018 = demolitions[demolitions['CalendarYearIssued'] != '2018']

# build a dataframe of yr, zip, count
demos_yr_zip = before_2018.groupby(['CalendarYearIssued','OriginalZip']).agg(d
ict(
    PermitNum='count'
)).reset_index()
demos_yr_zip.columns = ['Year', 'Zip', 'Count']
demos_yr_zip.shape
```

Out[19]: (260, 3)

In [20]:
```
# peek at it
demos_yr_zip.head()
```

Out[20]:

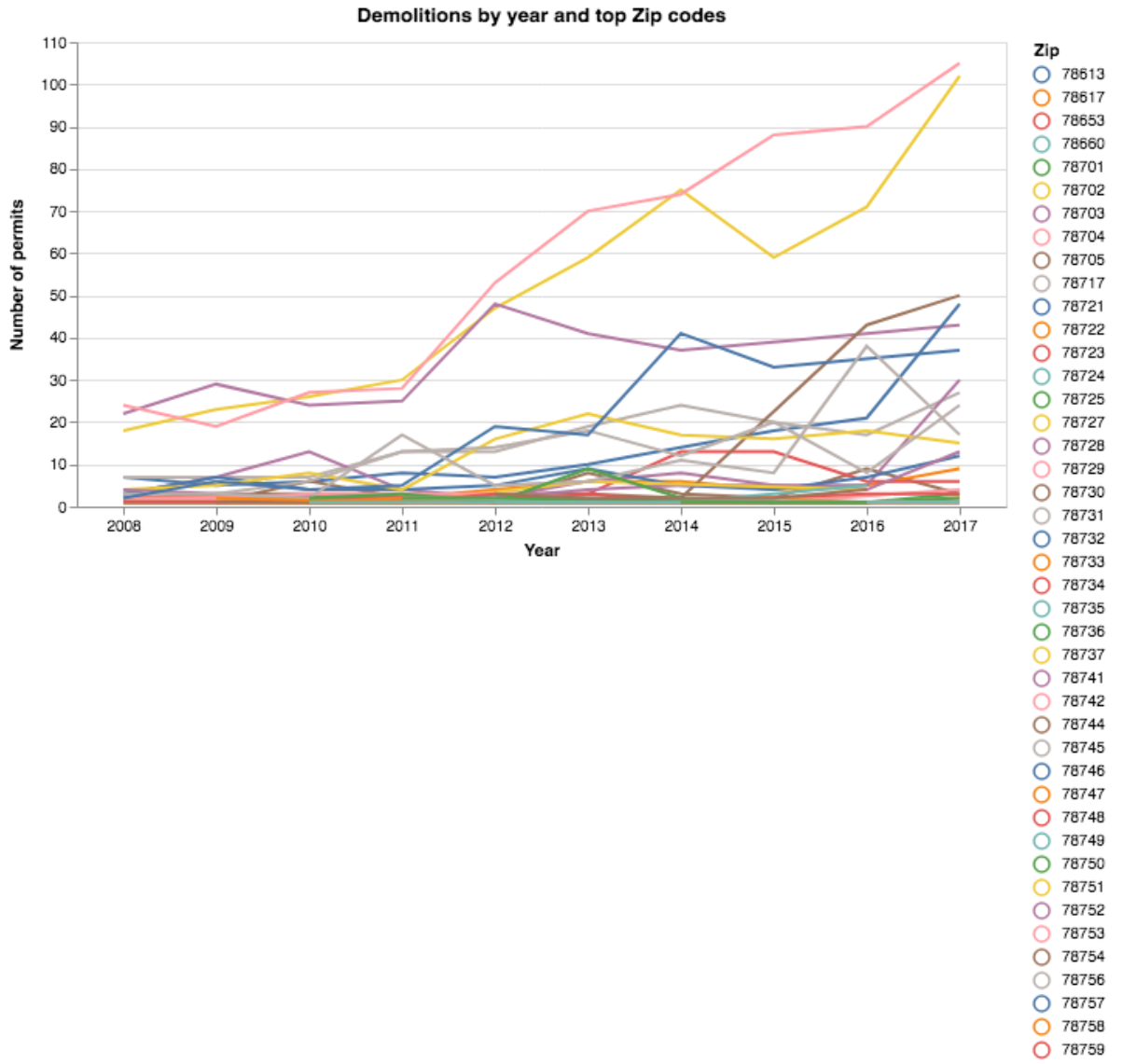
	Year	Zip	Count
0	2008	78702	18
1	2008	78703	22
2	2008	78704	24
3	2008	78705	2
4	2008	78721	7

All Zips over time

Just to see the mess of all demos to see their distribution, of sorts.

In [21]:
```
alt.Chart(demos_yr_zip, title="Demolitions by year and top Zip codes").mark_li
ne().encode(
    x=alt.X("Year:O",
            axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q",
            axis=alt.Axis(title="Number of permits")),
    color="Zip"
).properties(width=600)
```

Out[21]:

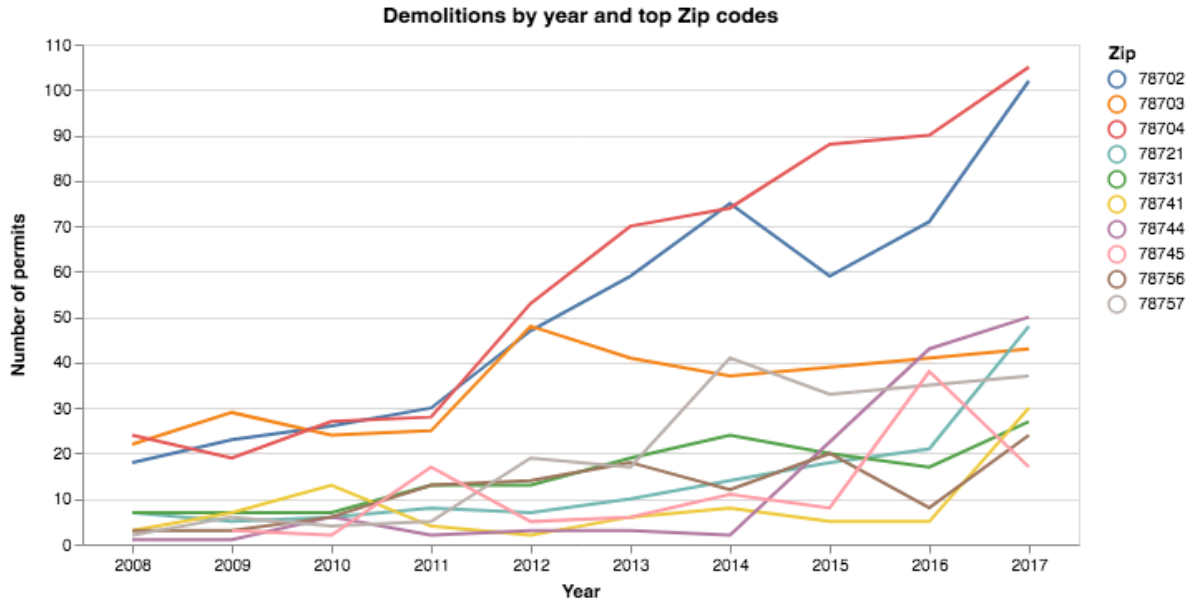


A look at top picks zips

Filtering to zip codes that that had more than 15 demos in 2017.

In [22]:
```
# filter our zip/year datafram to just 2017
zips_2017 = demos_yr_zip[demos_yr_zip['Year'] == '2017']

# filter the 2017 list to zips with 10+ demos
# sort the list by count descending
zips_2017_top = zips_2017[zips_2017.Count > 15].sort_values(
    'Count',
    ascending=False
)

# Use the Zip code column above to filter the original demos_yr_zip datatable
# and create the new dataframe to chart
top_demos_yr_zip = demos_yr_zip[demos_yr_zip['Zip'].isin(zips_2017_top.Zip)]

# output csv for graphic
top_demos_yr_zip.to_csv(
    "../data-processed/top_demos_yr_zip.csv",
    index=False
)

# draw chart based on above dataframe
alt.Chart(
    top_demos_yr_zip,
    title="Demolitions by year and top Zip codes"
).mark_line().encode(
    x=alt.X("Year:O",
            axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q",
            axis=alt.Axis(title="Number of permits")),
    color="Zip"
).properties(width=600)
```

Out[22]:



A look at specific zip codes

What's up with 78744, and is 2015 missing?

Noticing the increase in demolitions in 78744 in the graphic above, let's look a little deeper into them. It looks like the 2016 and 2017 increases are flood buyouts.

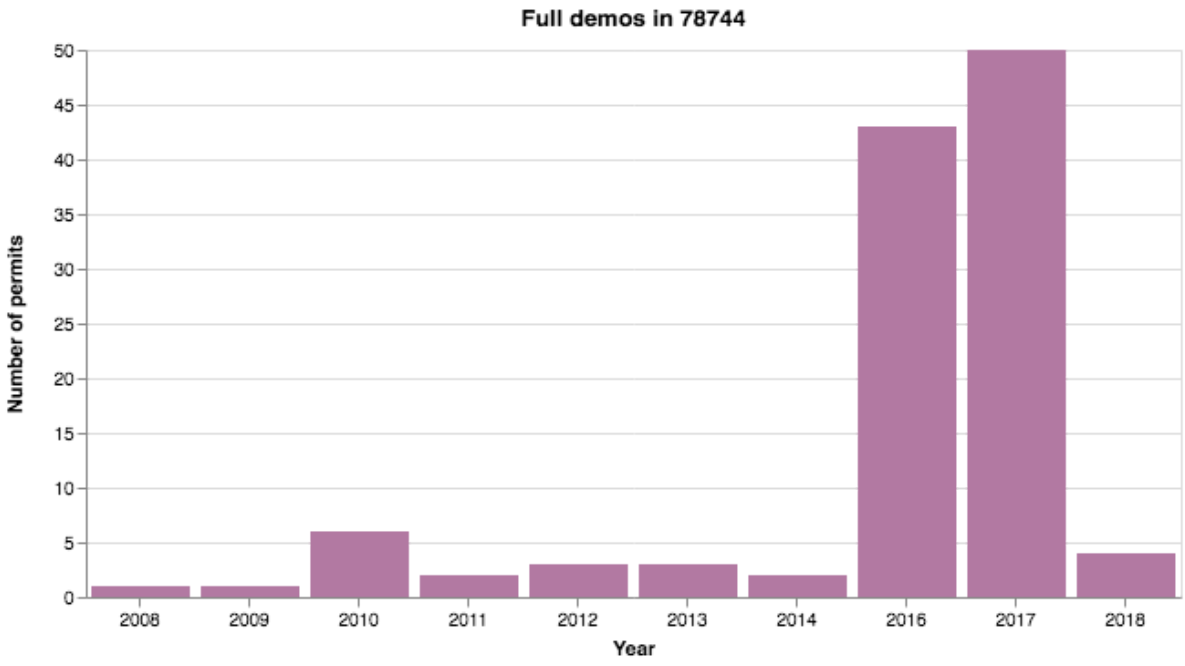
In [23]:
```
# show how many in each year
zip_78744 = demos_yr_zip_all[demos_yr_zip_all['Zip'] == '78744']
zip_78744
```

Out[23]:

	Year	Zip	Count
11	2008	78744	1
33	2009	78744	1
59	2010	78744	6
84	2011	78744	2
113	2012	78744	3
137	2013	78744	3
163	2014	78744	2
218	2016	78744	43
248	2017	78744	50
274	2018	78744	4

In [24]:
```
alt.Chart(zip_78744.reset_index(), title="Full demos in 78744").mark_bar(color
='#b279a2').encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Number of permits")),
).properties(width=600)
# rosybrown
```

Out[24]:



In [25]:
```
# look at the descriptions of these homes
pd.options.display.max_colwidth = 80
permits_78744 = demolitions[demolitions['OriginalZip'] == '78744']
# print csv to desktop
permits_78744[[
    'CalendarYearIssued',
    'ProjectName',
    'Description'
]].to_csv(
    '~/Desktop/permits_78744.csv',
    index=False
)
# show top
permits_78744[['CalendarYearIssued', 'Description']].head(30)
```

Out[25]:

	CalendarYearIssued	Description
92	2018	total demo of sf res flood mitigation
93	2018	total demo of sf res flood mitigation
150	2018	total demo of sf res 1978 flood mitigation
181	2018	Total demolition of existing sf res
316	2017	Total demolition of existing SFR City of Austin Flood BuyOut
371	2017	Total demolition of existing duplex residence Built circa 1973
463	2017	total demo of sf res
526	2017	Total demolition of existing SFR City of Austin Flood BuyOut
527	2017	Total demolition of existing SFR City of Austin Flood BuyOut
543	2017	Total demolition of existing SFR City of Austin Flood BuyOut
544	2017	Total demolition of existing SFR City of Austin Flood BuyOut
545	2017	Total demolition of existing SFR City of Austin Flood BuyOut
554	2017	Total demolition of existing mobile home residence existing freestanding por...
560	2017	Total demolition of existing SFR City of Austin Flood BuyOut
561	2017	Total demolition of existing SFR City of Austin Flood BuyOut
563	2017	Total demolition of existing SFR City of Austin Flood BuyOut
576	2017	Total demolition of existing SFR City of Austin Flood BuyOut
577	2017	Total demolition of existing SFR City of Austin Flood BuyOut
609	2017	Total demolition of existing SFR City of Austin Flood BuyOut
610	2017	Total demolition of existing SFR City of Austin Flood BuyOut
628	2017	Total demolition of existing SFR City of Austin Flood BuyOut
629	2017	Total demolition of existing SFR City of Austin Flood BuyOut
630	2017	Total demolition of existing SFR City of Austin Flood BuyOut
639	2017	Total demolition of existing SFR City of Austin Flood BuyOut
643	2017	Total demolition of existing SFR City of Austin Flood BuyOut
644	2017	Total demolition of existing duplex residence City of Austin Flood BuyOut
645	2017	Total demolition of existing duplex residence City of Austin Flood BuyOut
648	2017	Total demolition of existing SFR City of Austin Flood BuyOut
651	2017	Total demolition of existing SFR City of Austin Flood BuyOut
652	2017	Total demolition of existing SFR City of Austin Flood BuyOut

Is 78741 the new demo target?

There was a big increase in 2017, so what's up with that? 2018 is not keeping pace. There were eight on the same piece of property, which is part of the increase, but others are more spread out.

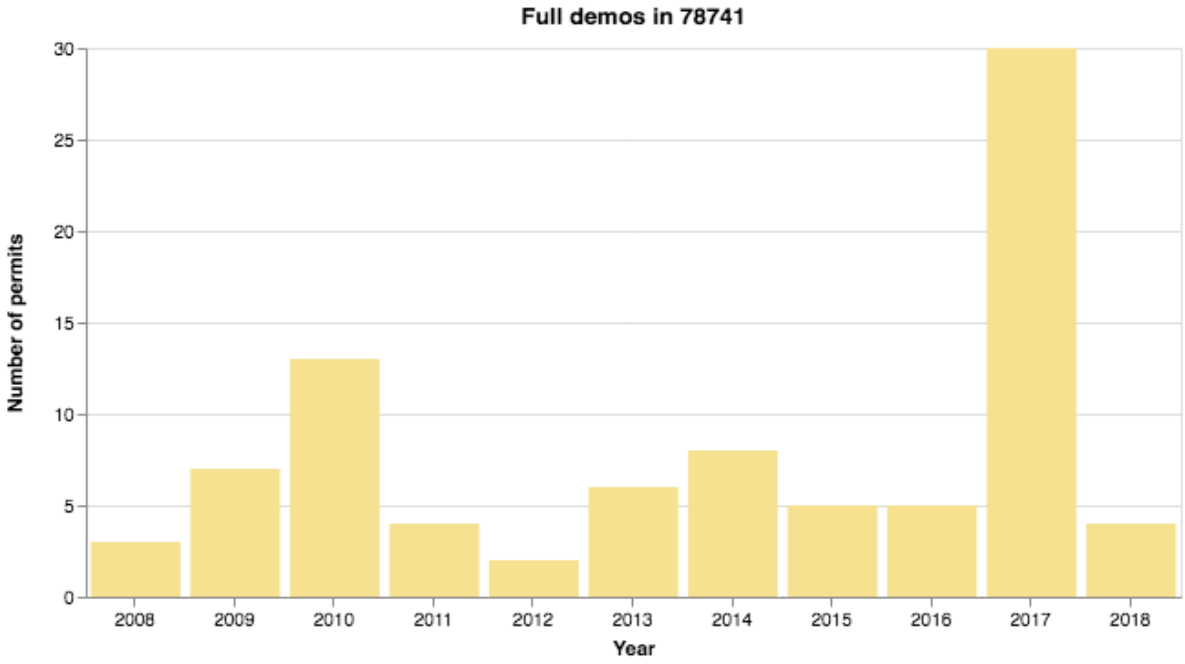
In [26]:
```
# show how many in each year
zip_78741 = demos_yr_zip_all[demos_yr_zip_all['Zip'] == '78741']
zip_78741
```

Out[26]:

	Year	Zip	Count
10	2008	78741	3
31	2009	78741	7
57	2010	78741	13
83	2011	78741	4
111	2012	78741	2
136	2013	78741	6
161	2014	78741	8
188	2015	78741	5
216	2016	78741	5
246	2017	78741	30
273	2018	78741	4

In [27]:
```
alt.Chart(zip_78741.reset_index(), title="Full demos in 78741").mark_bar(color
='#f5e190').encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Number of permits")),
).properties(width=600)
```

Out[27]:



In [28]:
```
pd.options.display.max_colwidth = 60
# look at the descriptions of these homes
permits_78741 = demolitions[demolitions['OriginalZip'] == '78741']

# filter to 2017 to look at descriptions
permits_78741_2017 = permits_78741[permits_78741['CalendarYearIssued'] == '201
7']
permits_78741_2017[['ProjectName', 'Description', 'ContractorCompanyName']]
```

Out[28]:

	ProjectName	Description	ContractorCompanyName
283	919 VALDEZ ST	total demo home circa 1942	Precise Custom Homes Inc***MAIN***
287	904 VASQUEZ ST	total demo of house	Austin Triangle LLC
324	2006 MAXWELL LN	total demo of sf res 1950	NaN
330	6709 PONCA ST	total demo of home circa 1997	DAR Construction
337	500 BASTROP HWY SB	total demo of sf res circa 1957 2417 sq ft	DAR Construction
338	500 BASTROP HWY SB	total demo of sf res circa 1958 780 sq ft	DAR Construction
348	508 THRASHER LN	total demo of house circa 1945	DAR Construction
349	7409 E RIVERSIDE DR	total demo of sf res circa 1955	DAR Construction
350	7405 E RIVERSIDE DR	total demo of home circa 1954	DAR Construction
351	436 BASTROP HWY SB	total demo of sf res 1542 sf	DAR Construction
352	436 BASTROP HWY SB	total demo of sf res 560 sf	DAR Construction
353	436 BASTROP HWY SB	total demo of sf res 560 sf	DAR Construction
354	436 BASTROP HWY SB	total demo of sf res 560 sf	DAR Construction
355	436 BASTROP HWY SB	total demo of sf res 520 sf	DAR Construction
356	436 BASTROP HWY SB	total demo of sf res 520 sf	DAR Construction
357	436 BASTROP HWY SB	total demo of sf res 520 sf	DAR Construction
358	436 BASTROP HWY SB	total demo of sf res 520 sf	DAR Construction
367	6507 SANTOS ST	total demo of home circa 1925	SCV Works, LLC
536	1103 SUMMIT ST	Total demolition of existing SFR built circa 1948	Panton Architects
600	1003 VALDEZ ST	Total demolition of existing SFR built circa 1958	Precise Custom Homes Inc***MAIN***
613	6308 PORTER ST	Total demolition of existing SFR built 1920 moved to lot...	Snap Dragon Construction
623	6703 SANTOS ST	Total demolition of existing SFR built circa 1955	Precise Custom Homes Inc***MAIN***
624	6701 SANTOS ST	Total demolition of existing SFR built circa 1955	Precise Custom Homes Inc***MAIN***
626	6505 PORTER ST	Total demolition of existing SFR built circa 1957	Precise Custom Homes Inc***MAIN***
680	1005 VALDEZ ST	Total demolition of existing SFR built circa 1966	Precise Custom Homes Inc***MAIN***

	ProjectName	Description	ContractorCompanyName
735	6808 CRUZ ST	Total demolition of primary and secondary structures bui...	DAR Construction
779	502 THRASHER LN	Total demolition of existing SFR built circa 1945	Domus Construction
808	6404 PORTER ST	Total demolition of existing SFR built circa 1949	MS 2011 General Contractors, LLC
820	2212 RIVERSIDE FARMS RD	Total demolition of existing SFR built circa 1958	DAR Construction
821	2206 RIVERSIDE FARMS RD	Total demolition of existing SFR built circa 1950	DAR Construction

A look at 78731

78731 saw a noticable increase in 2017 and has almost as many in the first half of 2018.

The biggest changes are north of 45th, south of Hancock, east of MoPac, where there have been 60+ demolitions. There is a similar but smaller area east of Mopac between Perry Lane and Hancock.

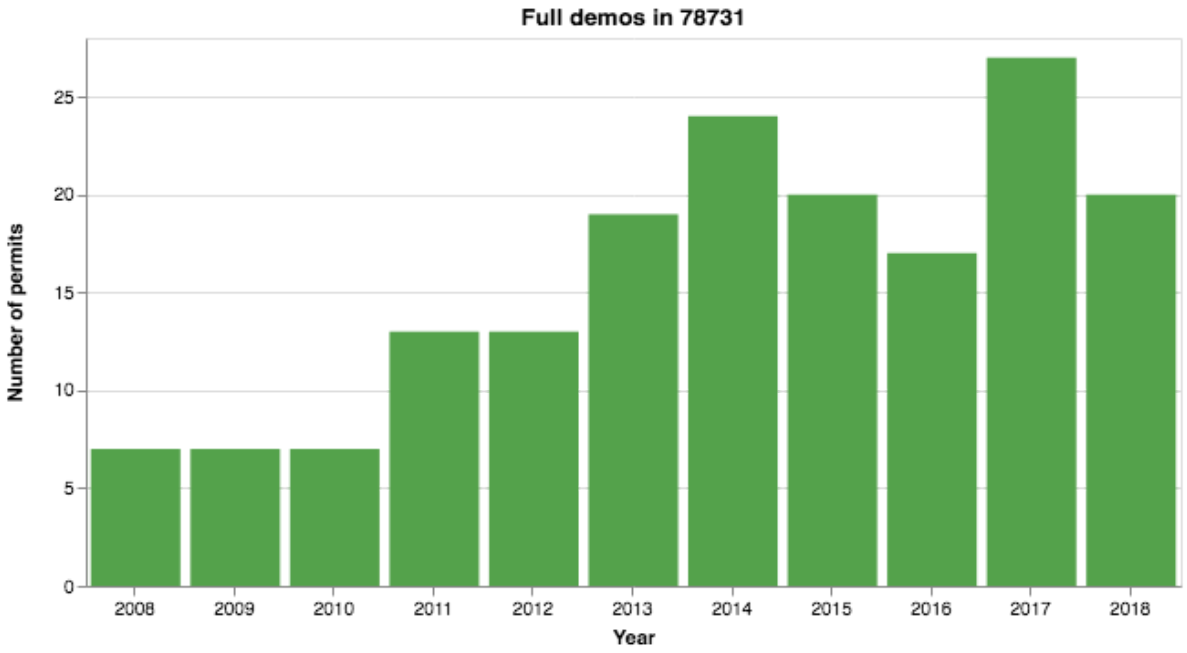
In [29]:
```
# show how many in each year
zip_78731 = demos_yr_zip_all[demos_yr_zip_all['Zip'] == '78731']
zip_78731
```

Out[29]:

	Year	Zip	Count
8	2008	78731	7
28	2009	78731	7
54	2010	78731	7
80	2011	78731	13
106	2012	78731	13
135	2013	78731	19
159	2014	78731	24
185	2015	78731	20
213	2016	78731	17
241	2017	78731	27
270	2018	78731	20

In [30]:
```
# chart based on dataframe above
alt.Chart(
    zip_78731.reset_index(),
    title="Full demos in 78731"
).mark_bar(color='#54a24b').encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Number of permits")),
).properties(width=600)
```

Out[30]:



A look at 78721

This is the area south of MLK between Airport and Ed Bluestein. Demolitions more than doubled in 2017 and is on pace to hold steady there in 2018.

The area on and around PENNSYLVANIA AVE, GRANT ST, FRANKLIN AVE has a pretty heavy concentration of demolitions in 2017, but there are a ton of others around, to. In 2016, there was a strip on COMETA ST that was razed and replaced with a series of new duplexes.

I suspect but can't prove this is just the new hot spot for rebuilding/gentrification.

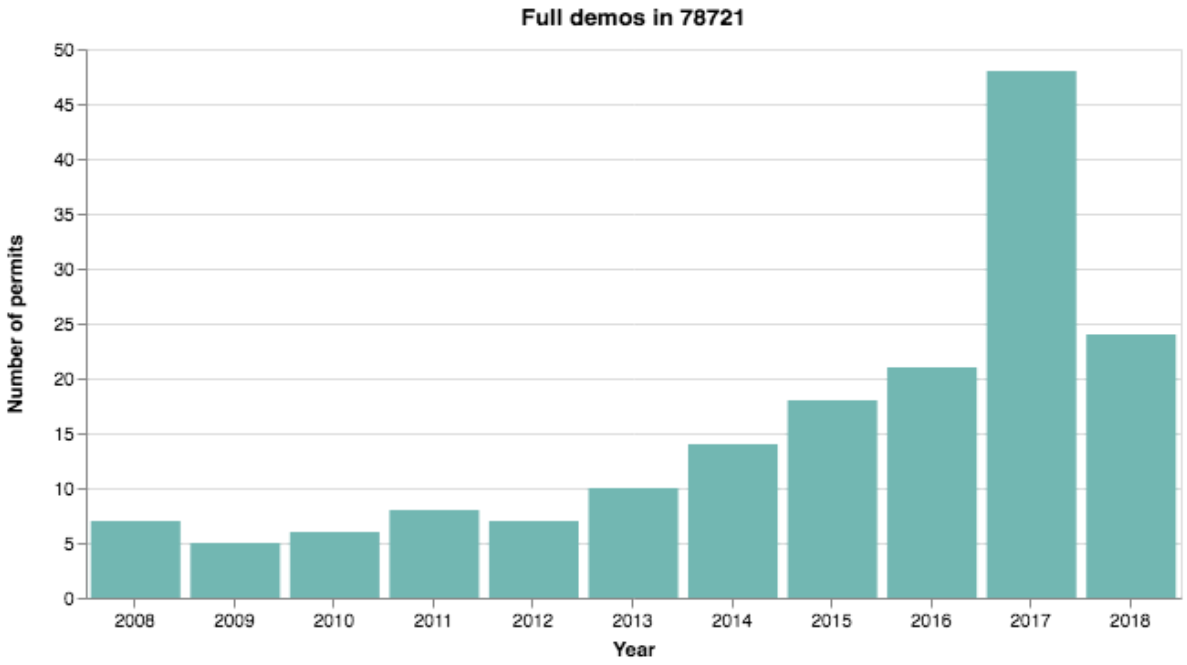
In [31]:
```
# show how many in each year
zip_78721 = demos_yr_zip_all[demos_yr_zip_all['Zip'] == '78721']
zip_78721
```

Out[31]:

	Year	Zip	Count
4	2008	78721	7
24	2009	78721	5
51	2010	78721	6
76	2011	78721	8
101	2012	78721	7
128	2013	78721	10
154	2014	78721	14
181	2015	78721	18
206	2016	78721	21
237	2017	78721	48
265	2018	78721	24

In [32]:
```
# chart based on dataframe above
alt.Chart(
    zip_78721.reset_index(),
    title="Full demos in 78721"
).mark_bar(color='#72b7b2').encode(
    x=alt.X("Year:O", axis=alt.Axis(title="Year", labelAngle=0)),
    y=alt.Y("Count:Q", axis=alt.Axis(title="Number of permits")),
).properties(width=600)
```

Out[32]:



In [33]:
```
permits_78721_2017 = demolitions[
    (demolitions.OriginalZip == "78721")
    & (demolitions.CalendarYearIssued == "2017")
]
permits_78721_2017.OriginalAddress1
```

Out[33]:
```
297       1142 BROOKSWOOD AVE
304             5005 ALF AVE
317            5005 HEFLIN LN
336       1153 WEBBERVILLE RD
341       1110 RICHARDINE AVE
344           1108 GARDNER CV
390           1104 SAUCEDO ST
405            1404 MARCUS PL
408        1101 SPRINGDALE RD
417           4908 LEDESMA RD
427     3501 PENNSYLVANIA AVE
430        4802 SANTA ANNA ST
431             1709 PEREZ ST
433            4704 LOUIS AVE
441     3413 PENNSYLVANIA AVE
442     3409 PENNSYLVANIA AVE
443     3602 PENNSYLVANIA AVE
444     3616 PENNSYLVANIA AVE
445             3601 GRANT ST
446             3607 GRANT ST
473           1102 SAUCEDO ST
501            1107 ESTES AVE
512          1706 OVERHILL DR
566             4601 ALF AVE
570            1300 COMETA ST
573           1142 ELEANOR ST
599            1125 EBERT AVE
615              4609 SARA DR
620        4706 SANTA ANNA ST
627           1130 MASON AVE
637           1119 WALTON LN
670             1412 PEREZ ST
675              1130 SPUR ST
698           5520 STUART CIR
715             1129 LOTT AVE
716             1131 LOTT AVE
719     1807 E M FRANKLIN AVE
722     1190 E M FRANKLIN AVE
745     3412 PENNSYLVANIA AVE
746     3502 PENNSYLVANIA AVE
750             1122 ESTES AVE
751              5207 CHICO ST
756             1711 PEREZ ST
774        1191 GREENWOOD AVE
776           1142 GUNTER ST
782              4602 ALF AVE
807    5205 SAMUEL HUSTON AVE
827             1201 LUNA ST
Name: OriginalAddress1, dtype: object
```

Who is performing the demolitions?

The demolitions company is one who profits from this. Who does the most demolitions?

NOTE: This is just a rough look because the contractor names have not been cleaned. See the `02_Contractors` notebook for a more accurate look.

In [34]:
```
# top 10 by count
demolitions.ContractorCompanyName.value_counts().head(10)
```

Out[34]:
```
DAR Construction                          567
Southwest Destructors****MAIN***          227
Building Abatement Demolition Co Inc      101
AAR Inc.                                   83
MX3 Investments                            72
Absolute Demolition                        67
Heart of Texas Demolition, LLC             39
Pecan Valley Homes LLC***MAIN***           35
Gossett and Jones Homes Inc.               31
Paradisa Homes, LLC                        31
Name: ContractorCompanyName, dtype: int64
```

Demolition contractor details

Printing out list for Phil.

In [35]:
```
# contractors = demolitions.groupby([
#     'ContractorCompanyName',
#     'ContractorAddress1',
#     'ContractorCity',
#     'ContractorZip',
#     'ContractorPhone',
# ]).agg(dict(PermitNum='count'))
# contractors.sort_values(
#     'PermitNum',
#     ascending=False
# ).head(25).to_csv('~/Desktop/contractors.csv')
```

Streets that have significant change

A dirty way to find some example streets that have changed alot. Idea is to strip block number and then count street name counts. Some of these are flooding buyouts.

In [36]:
```
# Create a dataframe of just street names by stripping off numbers
# get value counts
streets = demolitions.ProjectName.replace(
    {r'(\d+) (.*)' : r'\2'},
    regex=True
).value_counts().reset_index()

streets.columns = ['Street', 'Count']
streets.head(16)
```

Out[36]:

	Street	Count
0	HASKELL ST	21
1	E 13TH ST	21
2	HEARTWOOD DR	18
3	S 3RD ST	17
4	HONEYBEE BND	17
5	WESTLAKE DR	17
6	SHOALWOOD AVE	16
7	PASADENA DR	16
8	E 3RD ST	16
9	ONION CREEK DR	16
10	BONNIE RD	15
11	WILLOW ST	15
12	E 14TH ST	15
13	PENNSYLVANIA AVE	15
14	E 9TH ST	15
15	PIEDMONT AVE	14

References

Ignore this. It's for column references.

In [37]:
```
demolitions.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3160 entries, 0 to 3159
Data columns (total 68 columns):
Unnamed: 0                    3160 non-null int64
PermitType                    3160 non-null object
PermitTypeDesc                3160 non-null object
PermitNum                     3160 non-null object
PermitClassMapped             3160 non-null object
PermitClass                   3160 non-null object
WorkClass                     3160 non-null object
Condominium                   3160 non-null object
ProjectName                   3160 non-null object
Description                   3160 non-null object
TCAD_ID                       3146 non-null object
PropertyLegalDescription      2739 non-null object
AppliedDate                   3160 non-null object
IssuedDate                    3160 non-null datetime64[ns]
DayIssued                     3160 non-null object
CalendarYearIssued            3160 non-null object
FiscalYearIssued              3160 non-null int64
IssuedInLast30Days            3160 non-null object
IssuanceMethod                3160 non-null object
StatusCurrent                 3160 non-null object
StatusDate                    3160 non-null object
ExpiresDate                   3160 non-null object
CompletedDate                 2516 non-null object
TotalExistingBldgSQFT         3160 non-null float64
RemodelRepairSQFT             0 non-null float64
TotalNewAddSQFT               0 non-null float64
TotalValuationRemodel         0 non-null float64
TotalJobValuation             3160 non-null float64
NumberOfFloors                3160 non-null float64
HousingUnits                  3160 non-null float64
BuildingValuation             0 non-null float64
BuildingValuationRemodel      0 non-null float64
ElectricalValuation           0 non-null float64
ElectricalValuationRemodel    0 non-null float64
MechanicalValuation           0 non-null float64
MechanicalValuationRemodel    0 non-null float64
PlumbingValuation             0 non-null float64
PlumbingValuationRemodel      0 non-null float64
MedGasValuation               0 non-null float64
MedGasValuationRemodel        0 non-null float64
OriginalAddress1              3160 non-null object
OriginalCity                  3160 non-null object
OriginalState                 3160 non-null object
OriginalZip                   3160 non-null object
CouncilDistrict               3148 non-null float64
Jurisdiction                  3160 non-null object
Link                          3160 non-null object
ProjectID                     3160 non-null int64
MasterPermitNum               3157 non-null float64
Latitude                      3160 non-null float64
Longitude                     3160 non-null float64
Location                      3160 non-null object
ContractorTrade               3147 non-null object
ContractorCompanyName         2829 non-null object
```

```
ContractorFullName            1743 non-null object
ContractorPhone               3134 non-null object
ContractorAddress1            2253 non-null object
ContractorAddress2            2786 non-null object
ContractorCity                3144 non-null object
ContractorZip                 3091 non-null object
ApplicantFullName             1653 non-null object
ApplicantOrganization         2716 non-null object
ApplicantPhone                2996 non-null object
ApplicantAddress1             2144 non-null object
ApplicantAddress2             2672 non-null object
ApplicantCity                 3007 non-null object
ApplicantZip                  2955 non-null object
DemoType                      3160 non-null object
dtypes: datetime64[ns](1), float64(21), int64(3), object(43)
memory usage: 1.6+ MB
```

In [ ]: