

# pizza sales analysis

Mehrub Hasan

## 1. Load nessesary library

## 2. Load the dataset

Rows: 48,620

Columns: 12

```
$ order_details_id <dbl> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 1~
$ order_id         <dbl> 1, 2, 2, 2, 2, 2, 3, 3, 4, 5, 6, 6, 7, 8, 9, 9, 9, 9~
$ pizza_id        <chr> "hawaiian_m", "classic_dlx_m", "five_cheese_l", "ita~
$ quantity        <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1~
$ order_date      <dtm> 2015-01-01, 2015-01-01, 2015-01-01, 2015-01-01, 201~
$ order_time      <dtm> 1899-12-31 11:38:36, 1899-12-31 11:57:40, 1899-12-3~
$ unit_price      <dbl> 13.25, 16.00, 18.50, 20.75, 16.00, 20.75, 16.50, 20.~
$ total_price     <dbl> 13.25, 16.00, 18.50, 20.75, 16.00, 20.75, 16.50, 20.~
$ pizza_size      <chr> "M", "M", "L", "L", "M", "L", "M", "L", "M", "M", "S~
$ pizza_category  <chr> "Classic", "Classic", "Veggie", "Supreme", "Veggie",~
$ pizza_ingredients <chr> "Sliced Ham, Pineapple, Mozzarella Cheese", "Pepperon~
$ pizza_name      <chr> "The Hawaiian Pizza", "The Classic Deluxe Pizza", "T~
```

order_details_id	order_id	pizza_id	quantity
Min. : 1	Min. : 1	Length:48620	Min. :1.00
1st Qu.:12156	1st Qu.: 5337	Class :character	1st Qu.:1.00
Median :24310	Median :10682	Mode :character	Median :1.00
Mean :24310	Mean :10701		Mean :1.02
3rd Qu.:36465	3rd Qu.:16100		3rd Qu.:1.00
Max. :48620	Max. :21350		Max. :4.00
order_date	order_time		
Min. :2015-01-01 00:00:00.00	Min. :1899-12-31 09:52:21.00		
1st Qu.:2015-03-31 00:00:00.00	1st Qu.:1899-12-31 13:24:46.00		
Median :2015-06-28 00:00:00.00	Median :1899-12-31 16:33:33.00		

```

Mean      :2015-06-29 11:03:43.60    Mean      :1899-12-31 16:24:51.32
3rd Qu.:2015-09-28 00:00:00.00    3rd Qu.:1899-12-31 18:55:19.00
Max.      :2015-12-31 00:00:00.00    Max.      :1899-12-31 23:05:52.00

  unit_price    total_price    pizza_size    pizza_category
Min.   : 9.75    Min.   : 9.75    Length:48620    Length:48620
1st Qu.:12.75    1st Qu.:12.75    Class :character    Class :character
Median :16.50    Median :16.50    Mode  :character    Mode  :character
Mean   :16.49    Mean   :16.82
3rd Qu.:20.25    3rd Qu.:20.50
Max.   :35.95    Max.   :83.00

pizza_ingredients    pizza_name
Length:48620          Length:48620
Class :character      Class :character
Mode  :character      Mode  :character

```

```
# A tibble: 6 x 12
```

```

  order_details_id order_id pizza_id    quantity order_date
          <dbl>      <dbl> <chr>          <dbl> <dtm>
1                1          1 hawaiian_m          1 2015-01-01 00:00:00
2                2          2 classic_dlx_m          1 2015-01-01 00:00:00
3                3          2 five_cheese_l          1 2015-01-01 00:00:00
4                4          2 ital_supr_l          1 2015-01-01 00:00:00
5                5          2 mexicana_m          1 2015-01-01 00:00:00
6                6          2 thai_ckn_l          1 2015-01-01 00:00:00

```

```

# i 7 more variables: order_time <dtm>, unit_price <dbl>, total_price <dbl>,
#   pizza_size <chr>, pizza_category <chr>, pizza_ingredients <chr>,
#   pizza_name <chr>

```

### 3. clean column names

```
Rows: 48,620
```

```
Columns: 12
```

```

$ order_details_id <dbl> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 1~
$ order_id         <dbl> 1, 2, 2, 2, 2, 2, 3, 3, 4, 5, 6, 6, 7, 8, 9, 9, 9, 9~
$ pizza_id         <chr> "hawaiian_m", "classic_dlx_m", "five_cheese_l", "ita~
$ quantity         <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1~
$ order_date       <dtm> 2015-01-01, 2015-01-01, 2015-01-01, 2015-01-01, 201~
$ order_time       <dtm> 1899-12-31 11:38:36, 1899-12-31 11:57:40, 1899-12-3~

```

```

$ unit_price      <dbl> 13.25, 16.00, 18.50, 20.75, 16.00, 20.75, 16.50, 20.~
$ total_price     <dbl> 13.25, 16.00, 18.50, 20.75, 16.00, 20.75, 16.50, 20.~
$ pizza_size      <chr> "M", "M", "L", "L", "M", "L", "M", "L", "M", "M", "S~
$ pizza_category  <chr> "Classic", "Classic", "Veggie", "Supreme", "Veggie",~
$ pizza_ingredients <chr> "Sliced Ham, Pineapple, Mozzarella Cheese", "Peppero~
$ pizza_name      <chr> "The Hawaiian Pizza", "The Classic Deluxe Pizza", "T~

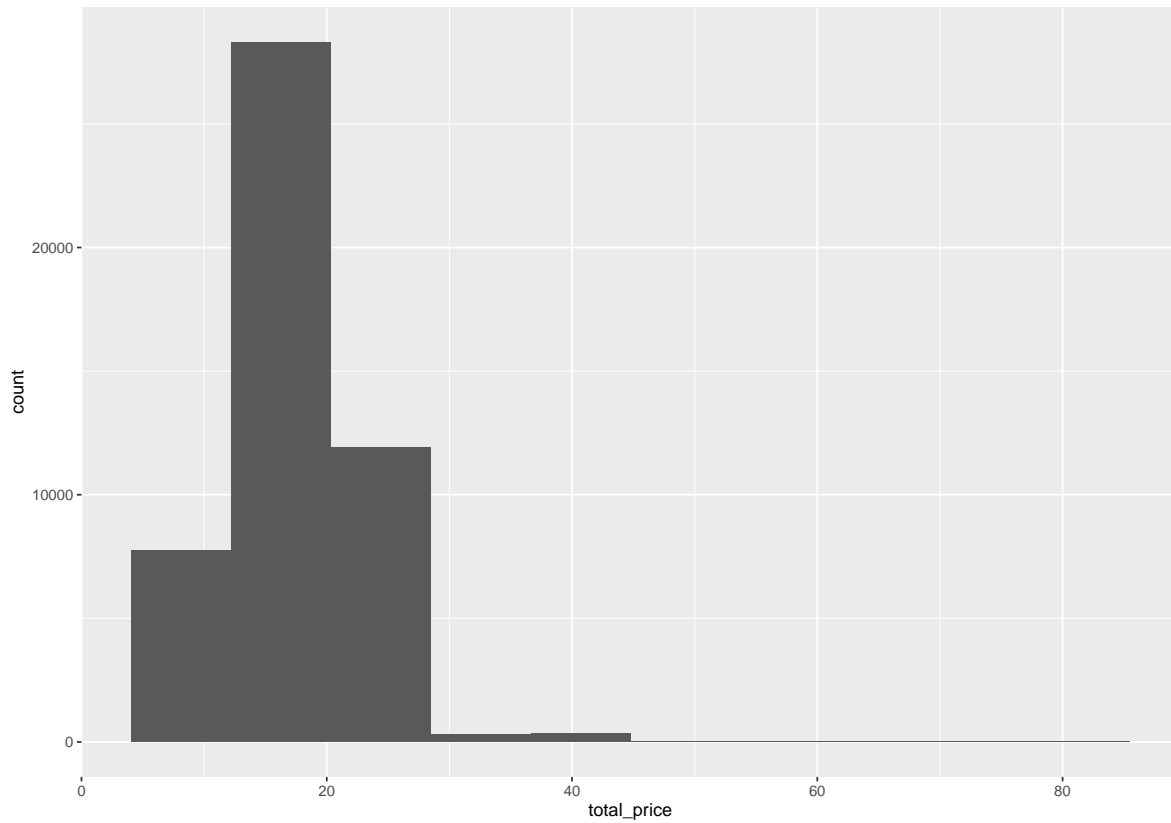
```

## 4. data type conversion and features engineering

## 5. data visulization

	L	M	S	XL	XXL
Chicken	0.0987042	0.0783834	0.0453517	0.0000000	0.0000000
Classic	0.0820033	0.0831962	0.1228918	0.0111888	0.0005759
Supreme	0.0920814	0.0817976	0.0683464	0.0000000	0.0000000
Veggie	0.1082476	0.0730564	0.0541752	0.0000000	0.0000000

## ploting data



	L	M	S	XL	XXL
The Barbecue Chicken Pizza	0.0198889	0.0190457	0.0098519	0.0000000	0.0000000
The Big Meat Pizza	0.0000000	0.0000000	0.0372480	0.0000000	0.0000000
The Brie Carre Pizza	0.0000000	0.0000000	0.0098725	0.0000000	0.0000000
The Calabrese Pizza	0.0056355	0.0113945	0.0020362	0.0000000	0.0000000
The California Chicken Pizza	0.0184081	0.0187988	0.0101399	0.0000000	0.0000000
The Chicken Alfredo Pizza	0.0038462	0.0143357	0.0019745	0.0000000	0.0000000
The Chicken Pesto Pizza	0.0080625	0.0056355	0.0060675	0.0000000	0.0000000
The Classic Deluxe Pizza	0.0096874	0.0238379	0.0161662	0.0000000	0.0000000
The Five Cheese Pizza	0.0279515	0.0000000	0.0000000	0.0000000	0.0000000
The Four Cheese Pizza	0.0261826	0.0118675	0.0000000	0.0000000	0.0000000
The Greek Pizza	0.0052448	0.0057384	0.0061703	0.0111888	0.0005759
The Green Garden Pizza	0.0019334	0.0061703	0.0121966	0.0000000	0.0000000
The Hawaiian Pizza	0.0184286	0.0097285	0.0205882	0.0000000	0.0000000
The Italian Capocollo Pizza	0.0147059	0.0082065	0.0061703	0.0000000	0.0000000
The Italian Supreme Pizza	0.0151172	0.0189223	0.0039901	0.0000000	0.0000000

	L	M	S	XL	XXL
The Italian Vegetables Pizza	0.0039079	0.0099342	0.0062114	0.0000000	0.0000000
The Mediterranean Pizza	0.0074866	0.0055738	0.0059235	0.0000000	0.0000000
The Mexicana Pizza	0.0173591	0.0092966	0.0032908	0.0000000	0.0000000
The Napolitana Pizza	0.0114562	0.0087618	0.0096257	0.0000000	0.0000000
The Pepper Salami Pizza	0.0139860	0.0087207	0.0065405	0.0000000	0.0000000
The Pepperoni Pizza	0.0146442	0.0188811	0.0151995	0.0000000	0.0000000
The Pepperoni, Mushroom, and Peppers Pizza	0.0078363	0.0080420	0.0117236	0.0000000	0.0000000
The Prosciutto and Arugula Pizza	0.0087001	0.0120321	0.0086384	0.0000000	0.0000000
The Sicilian Pizza	0.0122583	0.0115179	0.0150350	0.0000000	0.0000000
The Soppressata Pizza	0.0082476	0.0055121	0.0059235	0.0000000	0.0000000
The Southwest Chicken Pizza	0.0204237	0.0108186	0.0075278	0.0000000	0.0000000
The Spicy Italian Pizza	0.0223776	0.0082271	0.0082065	0.0000000	0.0000000
The Spinach and Feta Pizza	0.0089881	0.0114768	0.0089881	0.0000000	0.0000000
The Spinach Pesto Pizza	0.0057384	0.0057795	0.0081654	0.0000000	0.0000000
The Spinach Supreme Pizza	0.0057589	0.0054710	0.0081037	0.0000000	0.0000000
The Thai Chicken Pizza	0.0280749	0.0097491	0.0097902	0.0000000	0.0000000
The Vegetables + Vegetables Pizza	0.0087001	0.0129576	0.0093994	0.0000000	0.0000000