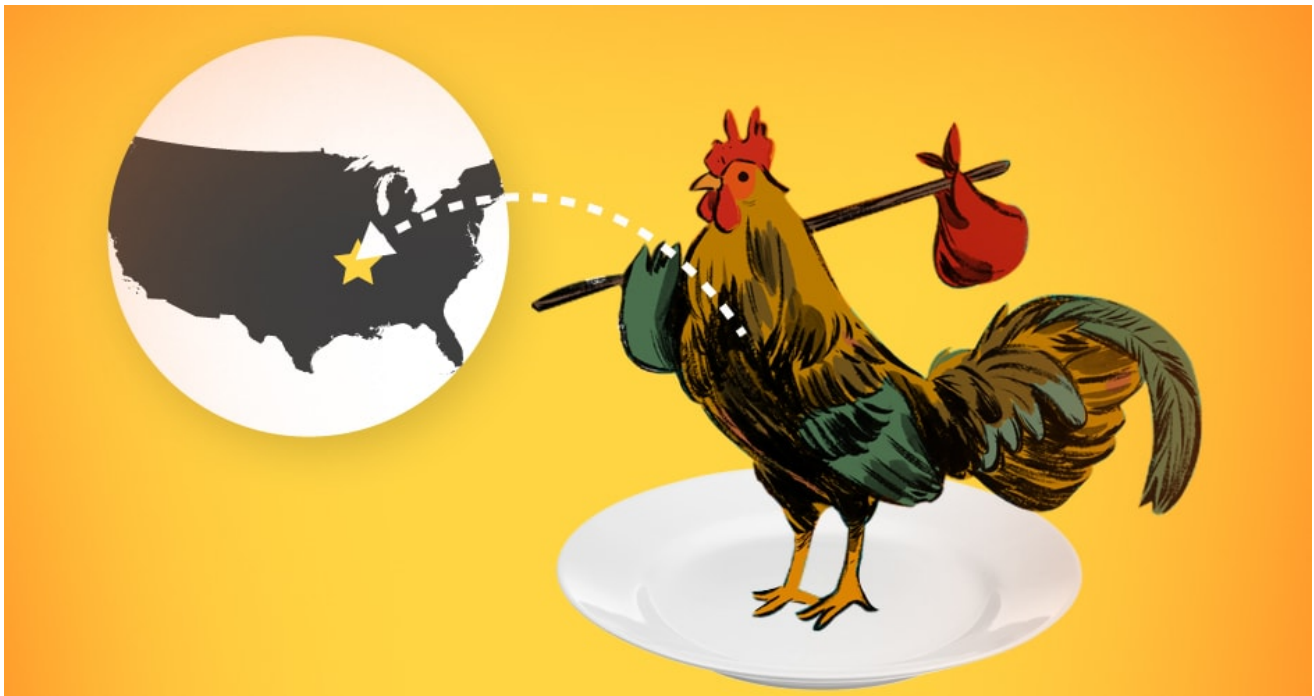


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Chicken More Popular Than Beef In U.S. For First Time In 100 Years. CODE ▾



1 Introduction:

Kids love them, fast food restaurants count on them and advertisers use them to lure in millions of hungry Americans every year. As more consumers demand on-the-go alternatives to fattier beef and pork dishes, chicken nuggets and tenders reign supreme.

The chickens that saved Western civilization were discovered, according to legend, by the side of a road in Greece in the first decade of the fifth century B.C. Chicken is the ubiquitous food of our era, crossing multiple cultural boundaries with ease. With its mild taste and uniform texture, chicken presents an intriguingly blank canvas for the flavor palette of almost any cuisine. How did the chicken achieve such cultural and culinary dominance? It is all the more surprising in

light of the belief by many archaeologists that chickens were first domesticated not for eating but for cockfighting. Until the advent of large-scale industrial production in the 20th century, the economic and nutritional contribution of chickens was modest.

The modern American chicken, *Gallus gallus domesticus*, has come a long way from the jungles of Southeast Asia from which its ancestors originated some eight- to ten-thousand years ago. Carried west over the centuries by Harappan merchants, Persian caravans, and Roman armies, the chicken finally arrived in the New World in 1493 as a passenger on Christopher Columbus' second voyage to the Americas.

Some Highlights

- Slaves saw the economic viability of chicken.
- Those with an even greater entrepreneurial spirit took to roads in town and country alike to sell chicken and other foods. These individuals quickly become known as "the general chicken merchants" of the South. -Chicken salad became a symbol of wealth for the 1%. -A Canadian invented an artificial incubator and became king of the Hen Men.
- This invention singlehandedly changed the future of chicken consumption. Farmers and their families could now easily hatch hundreds of chicks at once. -The chicken got bigger breasts thanks to the U.S. Government's "Chicken of Tomorrow" competition.
- Not only did the "Chicken of Tomorrow" winners grow bigger in less time on less feed as the contest's originators desired, but also the texture and size of its wondrously huge breasts delighted the American eater, who was used to seeing a chicken as scrawny.
- The bird became a nugget.
- Thanks to the McNugget, this hamburger chain instantly became the second biggest user of chicken on planet earth, trailing only behind the fried-chicken powerhouse, KFC.

As demand for nuggets took off, other forms of ready-to-cook and ready-to-eat chicken products became available, including tenders and breast fillet sandwiches. When the market expanded, so did the need to produce meatier chickens at a faster rate.

2 Data Source

We will read the data from the websource itself. We will extract our data from National Chicken Council. (%22<http://www.nationalchickencouncil.org/about-the-industry/statistics/per-capita-consumption-of-poultry-and-livestock-1965-to-estimated-2018-in-pounds/>%22)

You can see table data upto 2018 and forecasted for 2019. >Note: All poultry and livestock products are on a retail weight basis, except "other chicken" and "turkey" which are reported by USDA on a carcass-weight basis. Fish/shellfish is reported by The National Marine Fisheries Service on an edible weight basis.

NOTE A broiler (*Gallus gallus domesticus*) is any chicken that is bred and raised specifically for meat production

Although chicken and broilers, are same we will not merge them together and show in graph independently.

Need to address the Question before we dive in data?? Americans buy more chicken than any other food at the center of the plate. Chicken consumption per capita has increased nearly every year since the mid 1960's, while red meat consumption has steadily declined. Are more people eating less meat or different kinds of meat.

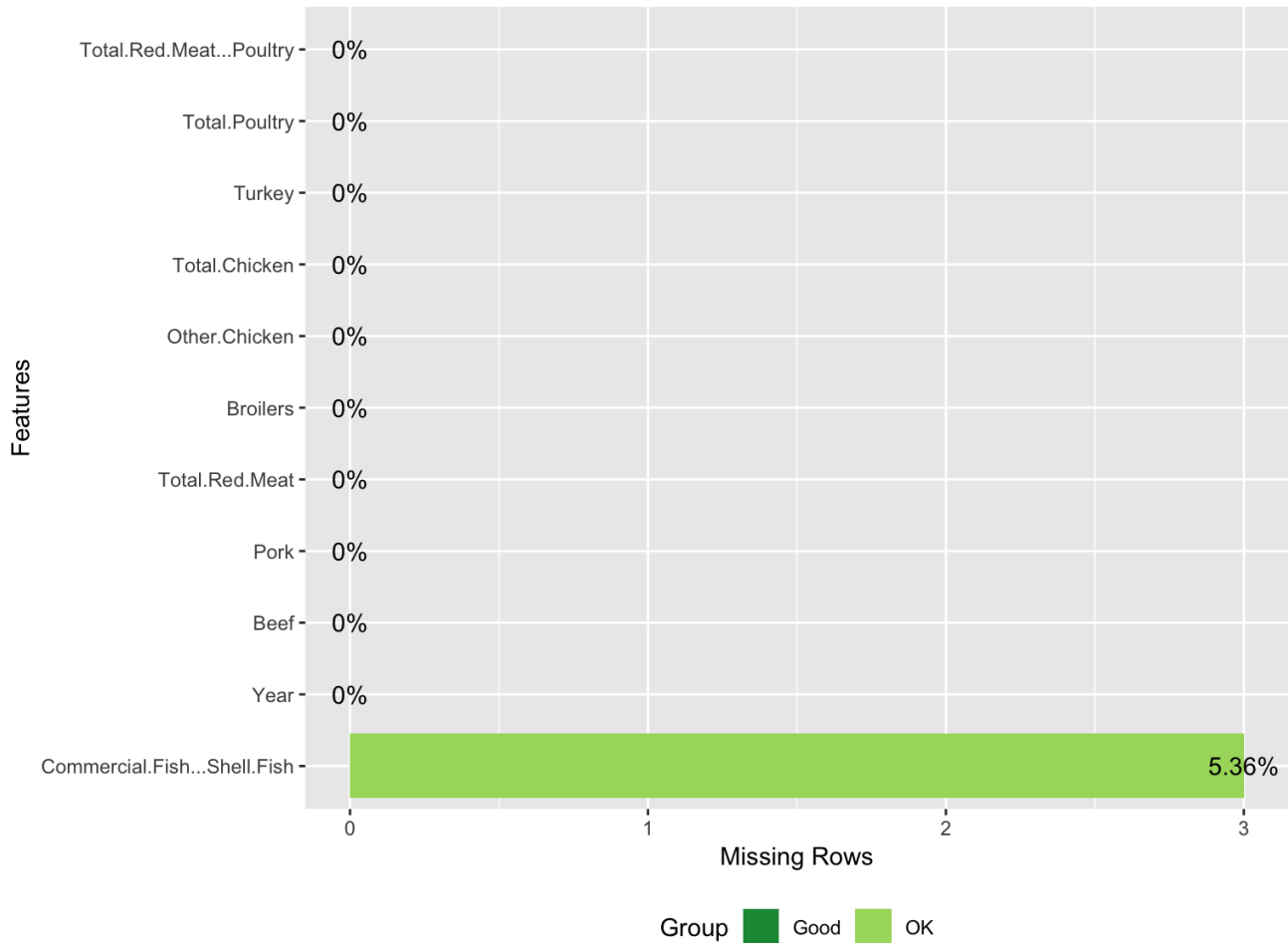
We will gather data to show these output.

Whenever you are trying to show visually any Time Series graph use Line plot to convey. Line plots are always good visuallization for Time Series Data like this.

Year	Beef	Pork	Total.Red.Meat	Broilers	Other.Chicken	Total.Chicken	Turkey	Total.Poultry	Total.Red.Meat... Poultry	Comme
1960	63.3	59.1	133.0	23.6	4.4	28.0	6.2	34.2	167.2	
1965	74.7	51.5	133.9	32.4	4.0	36.4	7.6	44.0	177.9	
1966	78.1	50.3	135.8	32.1	3.7	35.8	7.9	43.7	179.5	

Year, Beef, Pork, Total Red Meat, Broilers, Other Chicken, Total Chicken, Turkey, Total Poultry, Total.Red.Meat...Poultry

3 Info about datasets



```
## $data.frame
##      name size
## 1 poultry_df 0 Mb
##
## $dimensions
##   rows columns
## 1   56      11
##
## $column.details
##           column unique.values missing.count missing.pct
## 1           Year          56             0         0.00
## 2           Beef          50             0         0.00
## 3           Pork          41             0         0.00
## 4 Total.Red.Meat          52             0         0.00
## 5         Broilers          54             0         0.00
## 6   Other.Chicken          27             0         0.00
## 7   Total.Chicken          53             0         0.00
## 8           Turkey          35             0         0.00
## 9   Total.Poultry          54             0         0.00
## 10 Total.Red.Meat...Poultry          54             0         0.00
## 11 Commercial.Fish...Shell.Fish          38             3         5.36
```

year beef pork total_red_meat broilers other_chicken total_chicken turkey total_poultry total_red_meat_poultry

	year	beef	pork	total_red_meat	broilers	other_chicken	total_chicken	turkey	total_poultry	total_red_meat_poultry
52	2015	53.8	49.2	104.2	88.4	0.9	89.3	15.9	105.2	209.4
53	2016	56.5	50.1	106.9	89.8	1.2	91.0	16.6	107.6	214.5
54	2017	56.9	50.1	108.2	90.8	1.3	92.1	16.4	108.5	216.8
55	estimate 2018	57.1	50.6	109.1	92.1	1.4	93.5	16.2	109.7	218.8

See the last two rows in year column it says estimate 2018 and forecast 2019 as Date column so we need to fix that before we convert whole column into date object

4 Data preprocessing

Lets remove the word estimate and forecast for now. We just want year to be numeric rather than character

	year	beef	pork	total_red_meat	broilers	other_chicken	total_chicken	turkey	total_poultry	total_red_meat_poultry
52	2015	53.8	49.2	104.2	88.4	0.9	89.3	15.9	105.2	209.4
53	2016	56.5	50.1	106.9	89.8	1.2	91.0	16.6	107.6	214.5
54	2017	56.9	50.1	108.2	90.8	1.3	92.1	16.4	108.5	216.8
55	2018	57.1	50.6	109.1	92.1	1.4	93.5	16.2	109.7	218.8
56	2019	58.3	52.3	111.9	93.0	1.3	94.3	16.1	110.4	222.4

5 Skim our datasets

```
## Skim summary statistics
##  n obs: 56
##  n variables: 11
##
##  — Variable type:numeric —
##
##           variable missing complete  n    mean    sd    p0
##           beef          0         56 56   70.69 10.39  53.8
##           broilers       0         56 56   61.27 20.6   23.6
## commercial_fish_shell_fish 3         53 56   13.99  1.75  10.3
##           other_chicken  0         56 56    1.88  1.12   0.3
##           pork          0         56 56   50.66  3.41  42.9
##           total_chicken  0         56 56   63.14 19.6   28
##           total_poultry  0         56 56   76.84 23.19  34.2
##           total_red_meat  0         56 56  124.37 13.05 100.4
##           total_red_meat_poultry 0         56 56 201.22 12.46 167.2
##           turkey        0         56 56   13.71  3.99   6.2
##           year          0         56 56 1991.43 16.44 1960
##
##           p25    p50    p75    p100    hist
##           64.7    67.4    78.55   94.1
##           41.9    63.15   81.17    93
##           12.6    14.6    15.2    16.6
##           0.9     1.6     2.52     4.4
##           48.77   50.7    52.15   60.6
##           44.2    64.7    82.15   94.3
##           52.9    82.45   98.73  110.4
##           116.4   120.6   134.17 149.6
##           193.6   199.85  210.12 222.4
##           8.97    15.9    17.33   18.1
##           1977.75 1991.5  2005.25 2019
```

There is one more column called other.chicken. I guess its just different type. You can merge these two table and make one whole chicken but for now we will leave it like that without creating biases. So we will leave other chicken and total chicken for now.

6 Normalization before comparison

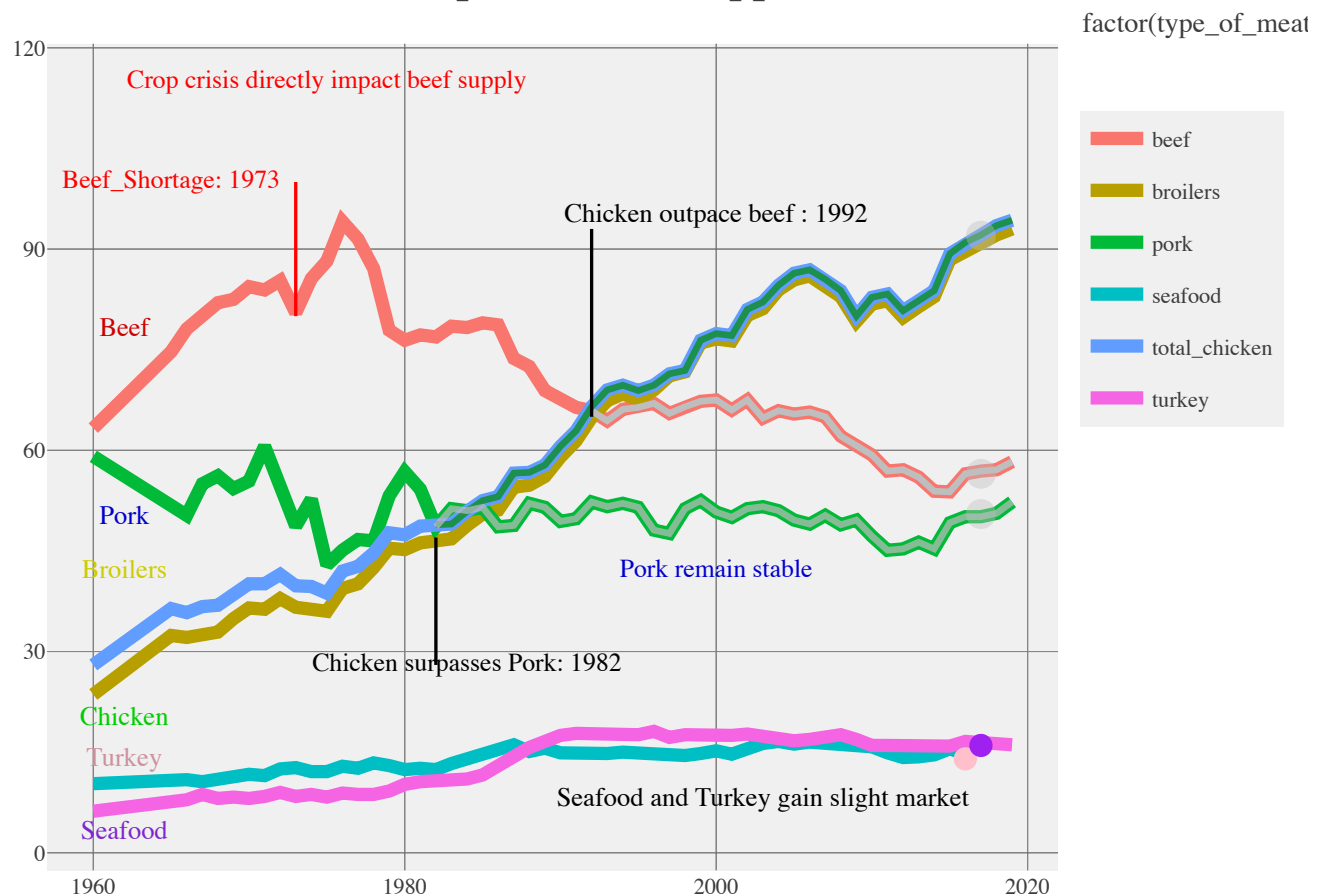
We need to calculate the percentage change from the baseline. otherwise our plot will start from different bases. So lets normalise the data. look into first line of the year 1960.

year	beef	pork	broilers	total_chicken	turkey	seafood	pcnt_change_beef	pcnt_change_pork	pcnt_change_broilers	pc
1960	63.3	59.1	23.6	28.0	6.2	10.3	0.00000	0.000000	0.00000	
1965	74.7	51.5	32.4	36.4	7.6	10.9	18.00948	-12.859560	37.28814	
1966	78.1	50.3	32.1	35.8	7.9	10.9	23.38073	-14.890017	36.01695	
1967	79.8	55.0	32.6	36.7	8.7	10.6	26.06635	-6.937394	38.13559	
1968	82.0	56.2	32.9	36.9	8.1	11.0	29.54186	-4.906937	39.40678	

Lets confirm unique type of meat so that we can get gist of it.

7 Plot

Chicken consumption has outsupplied Beef and Pork



Analysis:

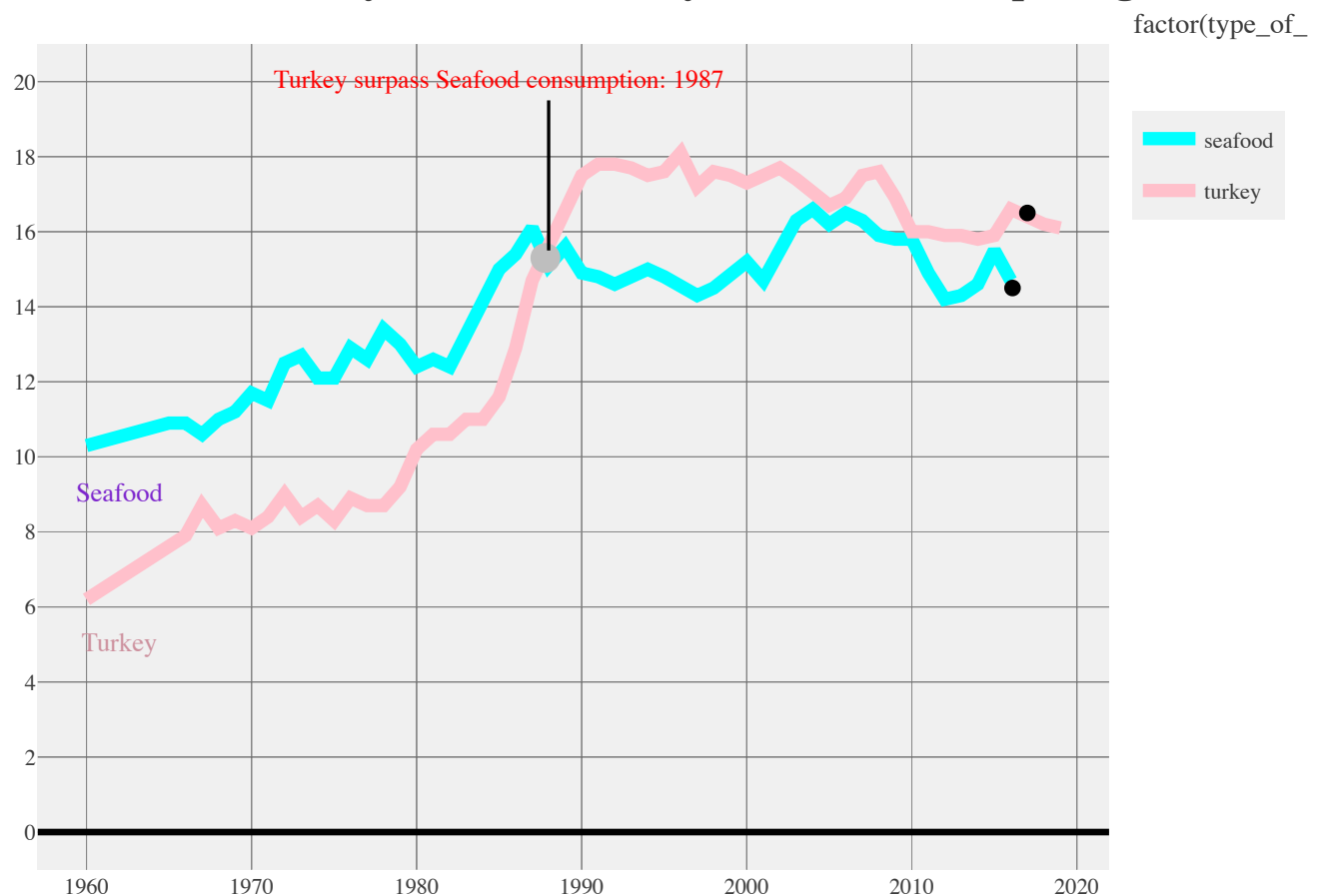
1. year 1973 : Beef Shortage
2. Chicken and Broilers growth continues. They both go hand in hand. No any strange pattern.

3. The First Global Energy Crisis of 1973-1974 where consumption of beef took a hit.
4. We can see drop in pork market share but chicken consumption thrive to grow.
5. Seafood and Turkey consumption didn't get affected but in recent years it is still in lower end consumption rate in the market. Most of the fresh seafood are found near the coastal region. Also they are expensive than chicken and beef thats why we see less consumption of seafood in USA market.

8 Comparing Seafood and Turkey

year	beef	pork	broilers	total_chicken	pcnt_change_beef	pcnt_change_pork	pcnt_change_broilers	type_of_meat	poul
1960	63.3	59.1	23.6	28.0	0.00000	0.000000	0.00000	turkey	
1965	74.7	51.5	32.4	36.4	18.00948	-12.859560	37.28814	turkey	
1966	78.1	50.3	32.1	35.8	23.38073	-14.890017	36.01695	turkey	
1967	79.8	55.0	32.6	36.7	26.06635	-6.937394	38.13559	turkey	
1968	82.0	56.2	32.9	36.9	29.54186	-4.906937	39.40678	turkey	

Seafood and Turkey are unaffected by Chicken consumption growth



Analysis

- we don't have future data for Seafood. Data until 2016
- Seems like most of people in USA doesn't consume seafood or Turkey
- Turkey might be consumed more on thanksgiving day
- Seafood might be consumed only in Coast line. East-coast or west coastline.
- Nothing so much in middle of country as it's not so fresh as well as price do play a factor.

Price Analysis - Wholesale and Retail Prices for Chicken (Broilers), Beef ,Pork - We don't have a price for seafood or turkey to compare.

NOTE

Wholesale beef price is wholesale choice grade value adjusted to wholesale weight equivalent using a coefficient of 1.142 (1.1428 for 2000 on). Wholesale pork price is wholesale value adjusted to wholesale weight equivalent using coefficient of 1.06 (1.04 for 2000 on). Retail prices for choice beef and pork are weighted composite prices as used by USDA in their farm to retail price spread series. Wholesale and retail broiler price are composite prices of parts from 1990 forward. USDA's New York wholesale whole-carcass broiler price from 1960 to 1963; from 1964 to May 1983 USDA's 9 city composite wholesale broiler price used from June 1983 to 1989 USDA's 12-city wholesale, whole-carcass composite price used.

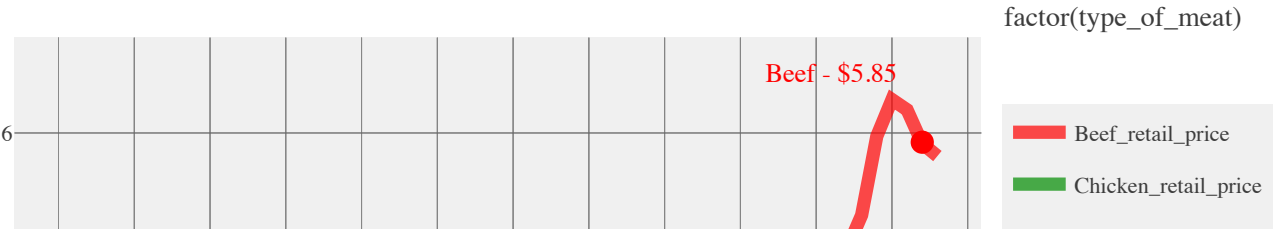
9 Skim the price

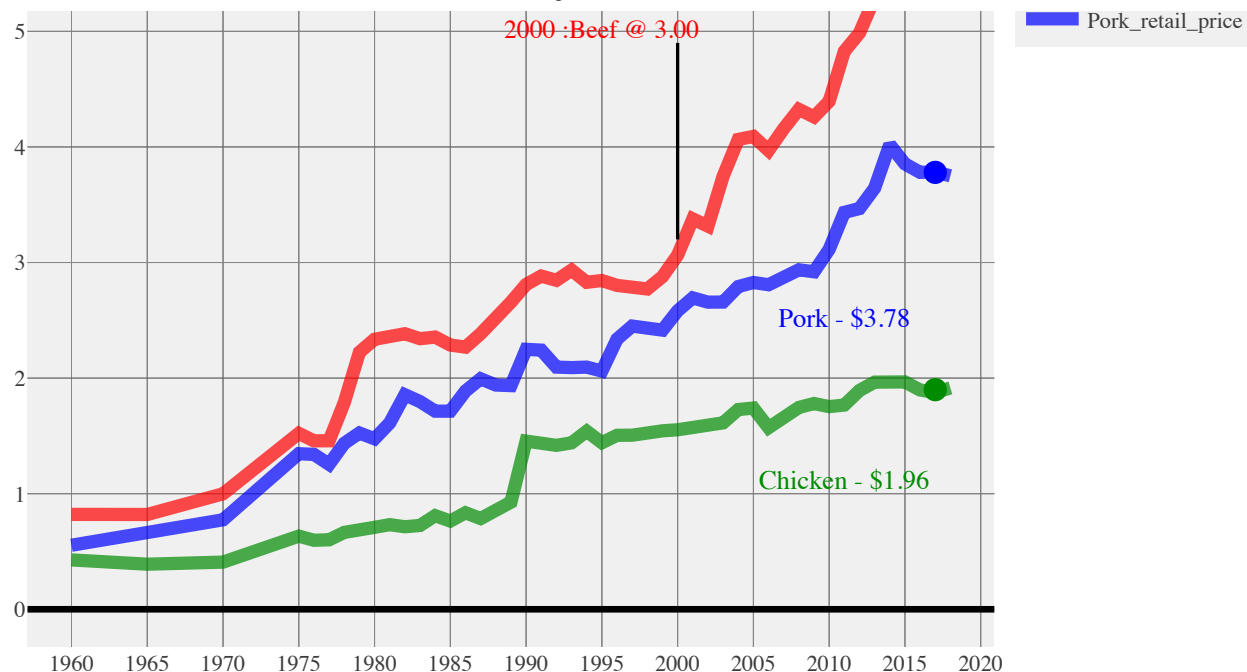
```
## Skim summary statistics
##  n obs: 49
##  n variables: 7
##
##  — Variable type:character —
##      variable missing complete  n min max empty n_unique
##      RETAIL.PRICE      0      49 49   4  57     0      48
##      RETAIL.PRICE.1     0      49 49   4  57     0      47
##      RETAIL.PRICE.2     0      49 49   4  57     0      49
##      Var.1              0      49 49   0  15     1      49
##      WHOLESALE.PRICE    0      49 49   4  57     0      48
##      WHOLESALE.PRICE.1  0      49 49   4  57     0      47
##      WHOLESALE.PRICE.2  0      49 49   4  57     0      47
```

year	beef	pork	broilers	total_chicken	turkey	seafood	pcnt_change_beef	pcnt_change_pork	pcnt_change_broilers	pcnt_change_total_chicken
1960	63.3	59.1	23.6	28.0	6.2	10.3	0.00000	0.000000	0.00000	0.00000
1965	74.7	51.5	32.4	36.4	7.6	10.9	18.00948	-12.859560	37.28814	18.00948
1966	78.1	50.3	32.1	35.8	7.9	10.9	23.38073	-14.890017	36.01695	23.38073
1967	79.8	55.0	32.6	36.7	8.7	10.6	26.06635	-6.937394	38.13559	26.06635
1968	82.0	56.2	32.9	36.9	8.1	11.0	29.54186	-4.906937	39.40678	29.54186

	year	type_of_meat	price	price_dollar
132	2009	Chicken_retail_price	178.0	1.780
133	2010	Chicken_retail_price	175.3	1.753
134	2011	Chicken_retail_price	176.7	1.767
135	2012	Chicken_retail_price	189.3	1.893
136	2013	Chicken_retail_price	196.5	1.965

Price of chicken is rising compare to falling price of Pork and Beef

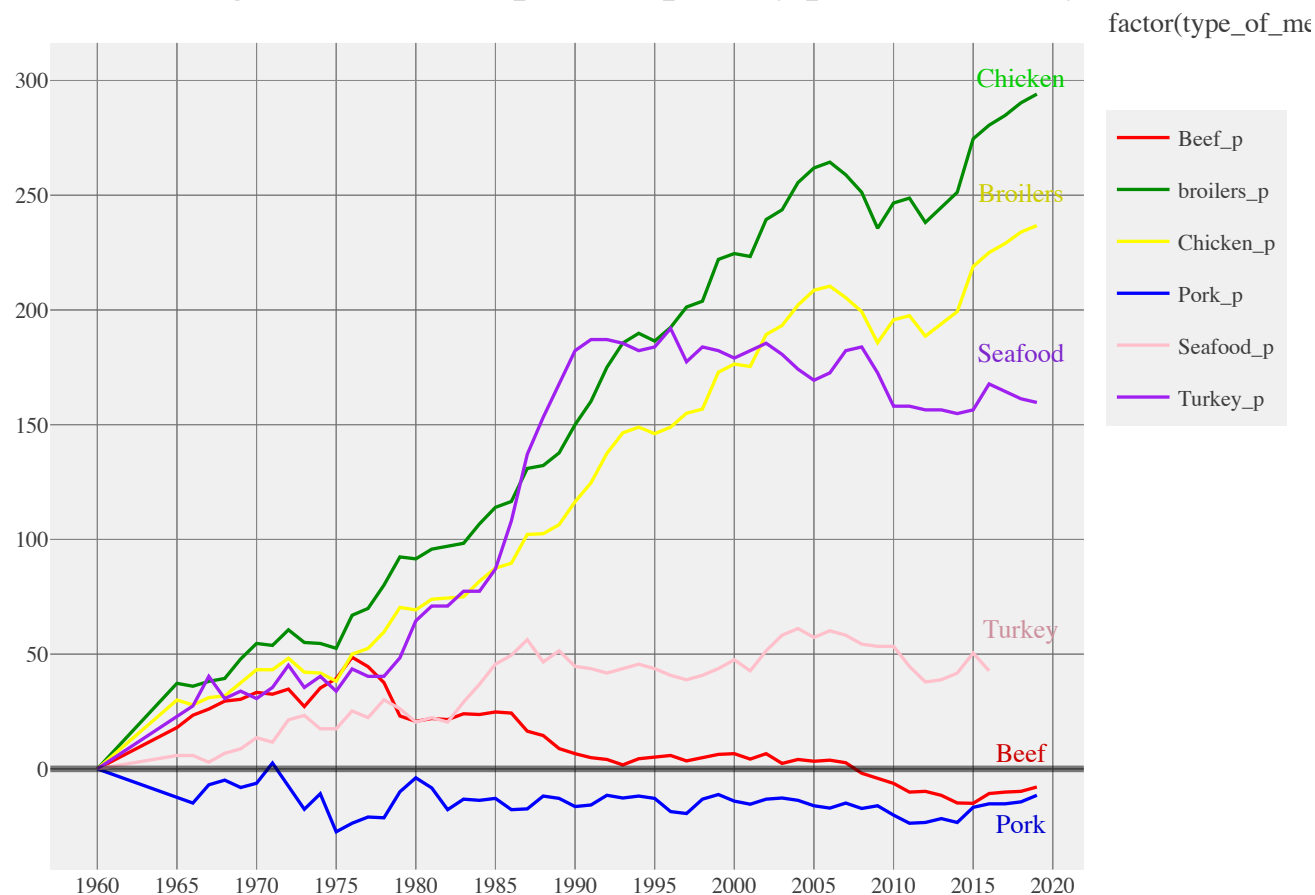




Analysis - We don't have price for Seafood and Turkey. - price of Beef has almost doubled in past 20 years - Consumption of beef is falling down from 2015. - From 2000 beef has been consumed more than chicken

10 Percent consumption change Graph

Change in % consumption of poultry products over year



Analysis

1. price of pork hasn't risen and overall its is declining
2. Price of beef has fallen down
3. Chicken has been consumed almost 300 % from year 1960.
4. Beef and pork are less favorable food of consumption.
5. We can see huge spike in seafood in year 1985 to 1990 then it flats out.
6. We can see the difference in what called broilers consumption and chicken consumption.

Conclusion:

Beef consumption has been declining for the past decade, as consumers become more health conscious and choose leaner meats and vegetarian options. Red meat has been linked to heart disease and diabetes, and people perceive chicken, a white meat, to be a healthier option. The shift toward healthier dietary habits is only one piece of the puzzle, however. Fast food companies have been putting more chicken on their menus, (McDonald's is the second largest purchaser of chicken in the country), and restaurants saw a 12 percent jump in menu items including chicken from 2009 and 2012.

While American's are actually eating less meat overall — from chicken to beef to pork — the scale has finally tipped from greater consumption of beef to greater consumption of chicken. In 2012, Americans were eating almost 60 pounds of chicken per person each year. Chicken has become such a staple of the American diet that it's hard to imagine a time when we weren't eating much of it at all. The change has been dramatic, however. In the 1950s, Americans ate an average of 16 pounds of chicken per person every year. By 2000, that number grew to 53 pounds per year[External Source]

Thank you for Reading the Post.Hope you enjoyed reading as much as “fun” I had making it.

