**Guide to supply and demand estimation**

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**Demand Estimation:**

1. In 2017, fresh market consumption was 20.3 pounds per capita. (<https://www.agmrc.org/commodities-products/vegetables/tomatoes>)
2. We will allocate this demand to each county of Iowa by population.

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| **Rank** | **County** | **Population** | **Demand of Tomatoes (MT/week)** |
| 1 | Polk County | 501,089 | 92.69 |
| 2 | Linn County | 229,033 | 42.36 |
| 3 | Scott County | 173,924 | 32.17 |
| 4 | Johnson County | 156,420 | 28.93 |
| 5 | Black Hawk County | 130,274 | 24.1 |
| 6 | Dallas County | 108,016 | 19.98 |
| 7 | Woodbury County | 105,671 | 19.55 |
| 8 | Story County | 99,673 | 18.44 |
| 9 | Dubuque County | 98,677 | 18.25 |
| 10 | Pottawattamie County | 93,173 | 17.23 |
| 11 | Warren County | 54,327 | 10.05 |
| 12 | Clinton County | 46,344 | 8.57 |

**Supply Estimation:**

1. The growing season of tomatoes is between May to Mid-September in Iowa. (<https://www.tomatofest.com/Tomato_Growing_Zone_Maps_s/164.htm>)
2. We have 135 days between planting and harvesting tomatoes.
3. Tomatoes require 100 days to fully mature. However, there are some special varieties of tomatoes that require 50-60 days to mature. (<https://www.gardeningknowhow.com/edible/vegetables/tomato/planting-time-for-tomatoes.htm>)
4. So, we are considering on average tomatoes take 80 days to be harvested.
5. In this context, we assumed that being mature represents the time between sowing seed and harvesting full-grown tomatoes.
6. We are only considering single cultivation of tomatoes during a year.
7. So, the tomatoes will be harvested during the timeline day 80-135 or, during late July to mid-September, that is 7.85 or 8 weeks.
8. In our calculations, we will estimate the weekly supply of tomatoes from late July to mid-September.
9. In 2017, approximately 157 acres of tomatoes were harvested in the open field. (<https://quickstats.nass.usda.gov/>)
10. In 2018, the yield for tomatoes in Iowa was 246 CWT per acre. (<https://quickstats.nass.usda.gov/>)
11. Considering the yield of tomatoes in 2018 and 2017 same, the total production of tomatoes in Iowa in 2017 was 38622 CWT or 1962 Metric Tons.
12. As the production of tomatoes is distributed over 8 weeks (as mentioned in no 8), the weekly supply quantity of tomatoes is (1962/8) or 245.25 Metric Tons.
13. Considering the average farm size in each county of Iowa is the same. The supply of tomatoes can be obtained from the number of farms.

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| **County** | **Supply (MT/Week)** |
| Polk County | 2.1388 |
| Linn County | 3.8792 |
| Scott County | 2.1001 |
| Johnson County | 3.7132 |
| Black Hawk County | 2.5566 |
| Dallas County | 2.7697 |
| Woodbury County | 2.6922 |
| Story County | 2.6728 |
| Dubuque County | 4.0452 |
| Pottawattamie County | 3.2871 |
| Warren County | 3.691 |
| Clinton County | 3.442 |

**Supply-Demand Ratio:**

1. This process leads to total supply of 566.6359 Metric Tons/week and demand of 245.2503 Metric Tons/week for 8 weeks (Late July- Mid-September).
2. As there is no production of tomatoes other than these 8 weeks, the total supply for tomatoes is (245.2503x8) or 1962.0024 Metric Tons.
3. On the other hand, the total annual demand for tomatoes is (566.6359 x 52) or 29465.0668 Metric Tons.
4. This number leads to a supply-demand ratio of 0.06658.
5. In the IMPLAN model for vegetables and melons (not specifically tomatoes), the supply-demand ratio is 0.0380, which is very close to our estimation.