How many people can be present in a farmers' market space and still maintain 6' distancing?

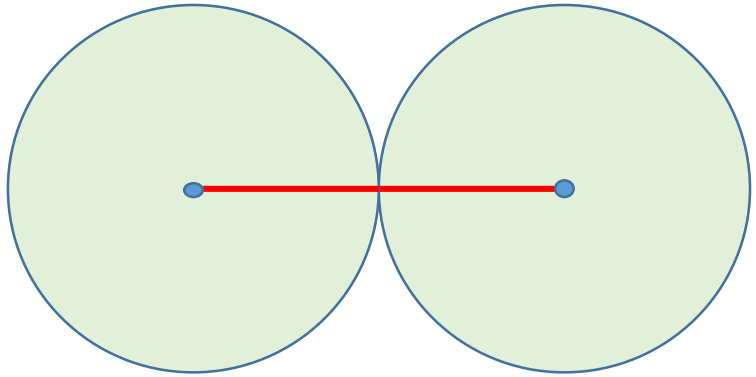
Think about a circle of distance around each person that keeps people 6 ft apart from each other.

Normally when doing math involving circles, the point at the center of the circle is assumed to take up zero physical space.

When we're thinking about circles of distance around humans, though, that human at the center of the circle does take up physical space.

Radius = distance from center of circle to outer edge of circle

Center of circle = person

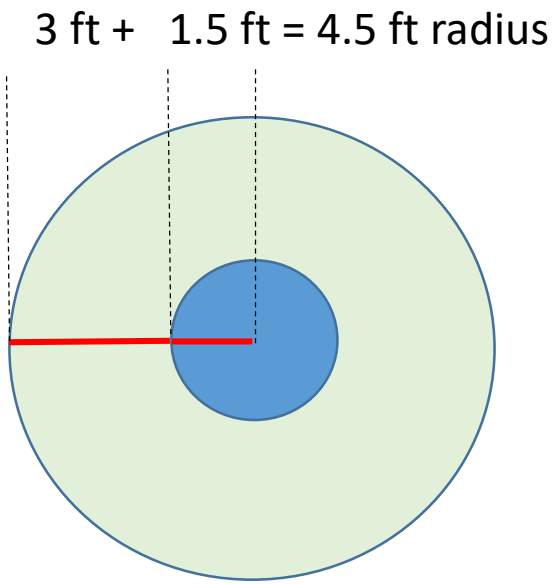


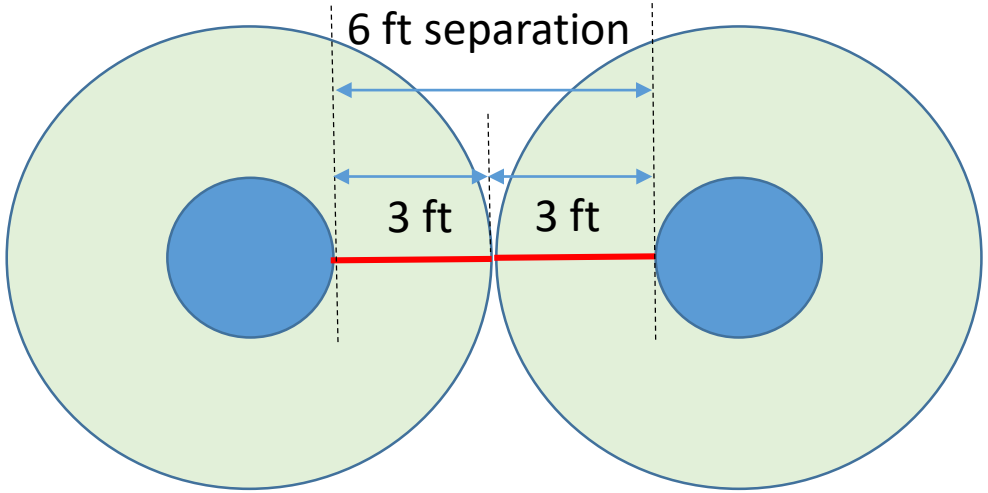
The circle of distance for each human must account for BOTH:

- The space taken up by the human; and
- The radius of distance to accomplish 6 ft between humans

We suggest a 4.5 ft radius to the circle.

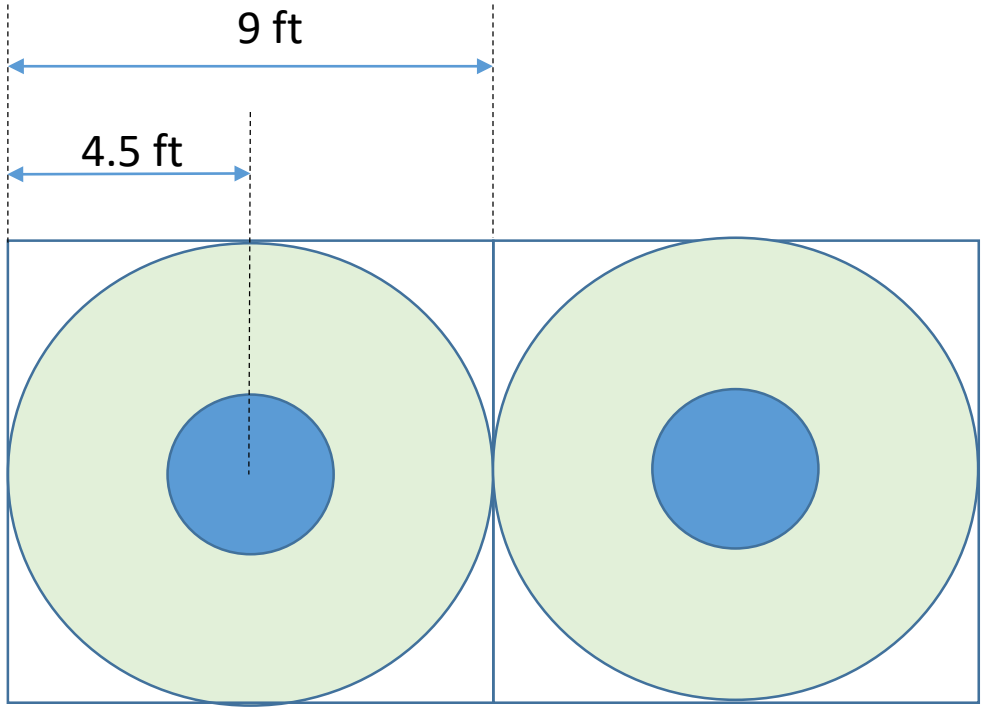
- This allows 1.5 ft of radius, or 3 ft of diameter, to be occupied by the person in the center of the circle.
- The 3 ft radius of separation is tacked on to the 1.5 ft of radius occupied by the human.





BUT, circles don't pack together perfectly in a space. There's empty space where they come together, and that needs to be accounted for.

If we have circles with 4.5 ft radius, which means they have 9 ft diameters, those circles have to be envisioned as sitting within squares that are 9 ft on a side.



That means the area calculation should be done on the squares:

9 ft x 9 ft = 81 ft^2

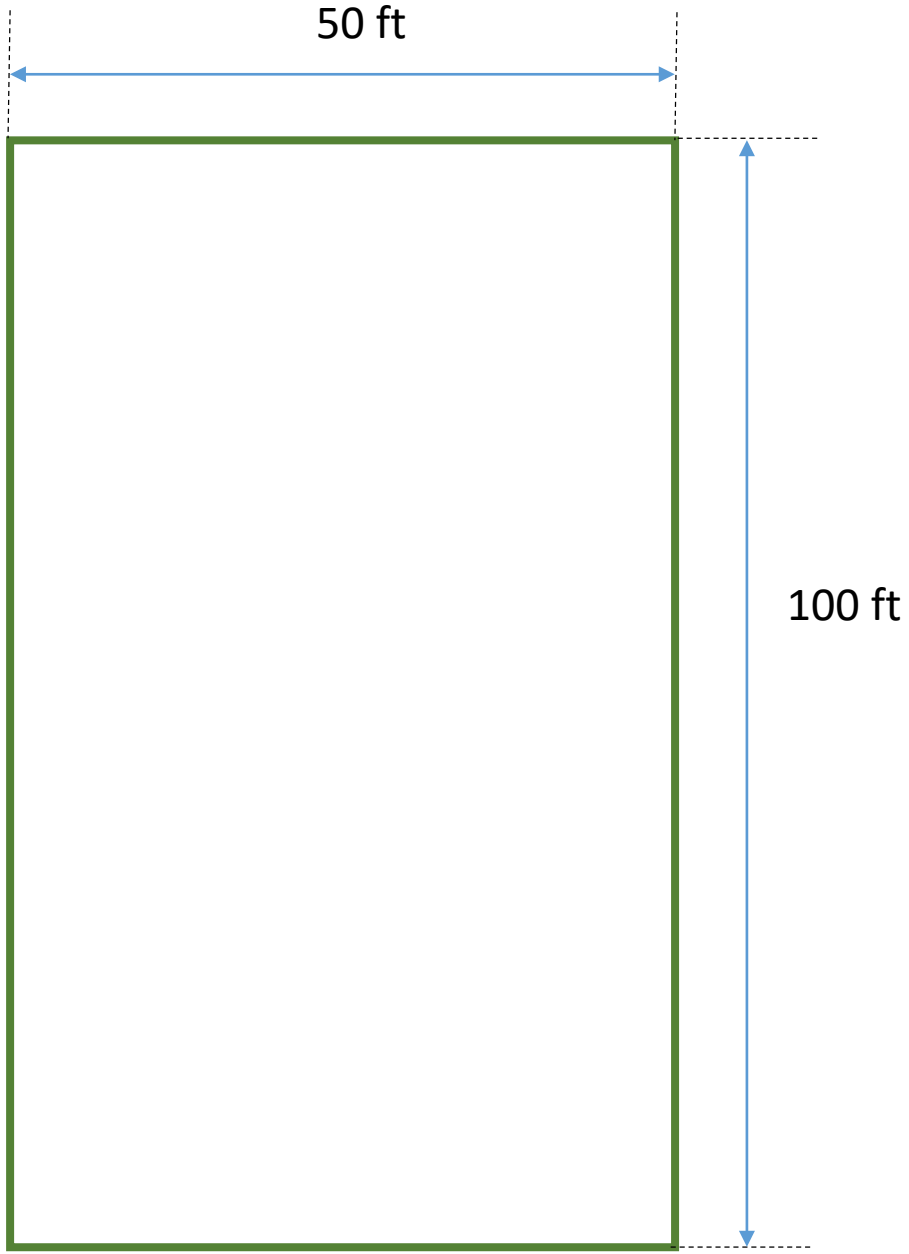
The *market's area in square feet that is available to customers* should be divided by 81 to get the number of people allowed in at any one time.

How much market space is available to customers, and how many customers can be in that space?

Example 1:

In this example, the market is 50 ft wide and 100 ft long.

Total area = 50 ft x 100 ft = 5,000 ft^2



Total market area = 5,000 ft^2, but some of that space is used by vendors.

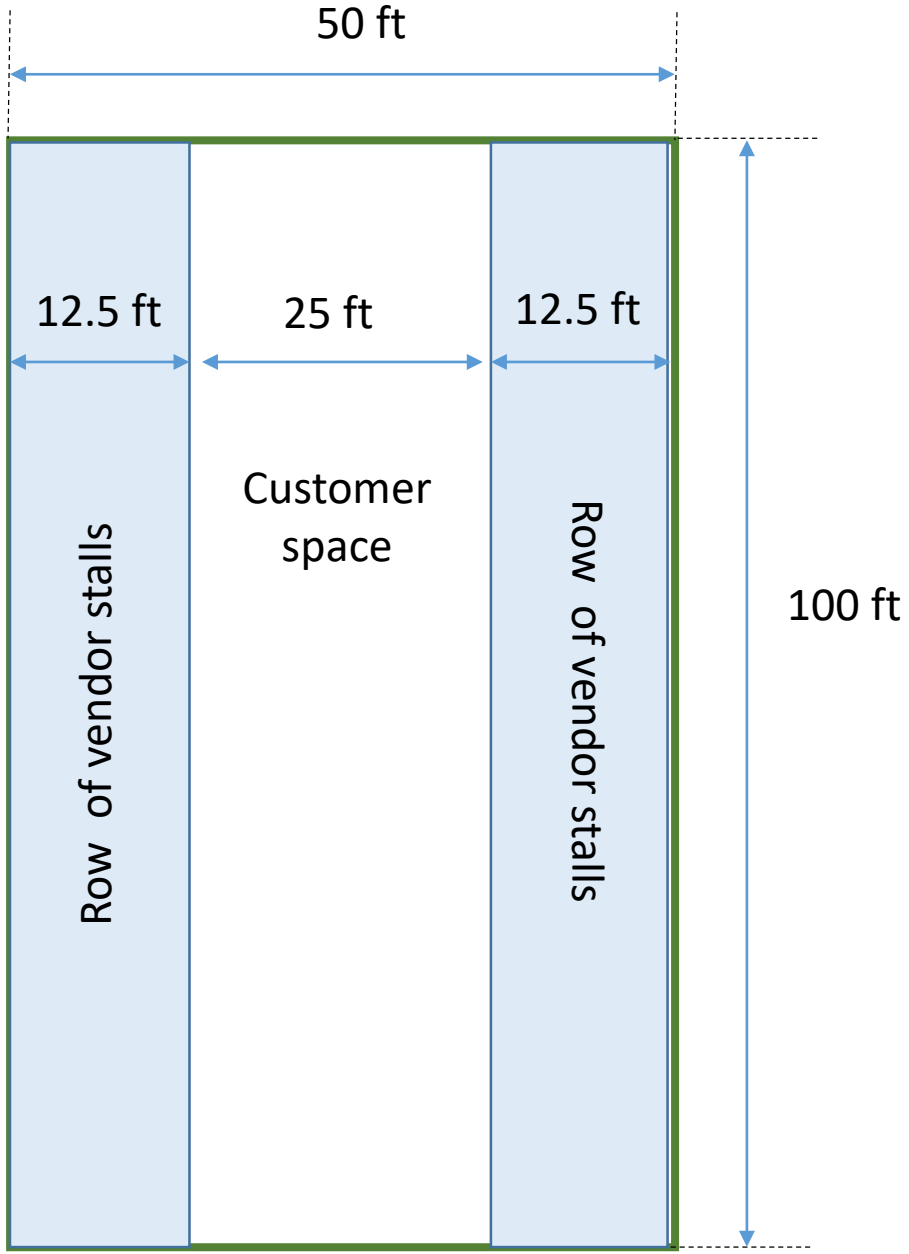
In this example, there is a row of vendor stalls on either side of the market. The space available for customers to walk is 25 ft wide and 100 ft long.

Area available to customers:

25 ft x 100 ft = 2,500 ft^2

Customers allowed in this market at one time: 2,500 ft^2 / 81 ft^2 per customer = 30.86

Round down to the nearest whole number. 30 customers at a time can be allowed into this market space.

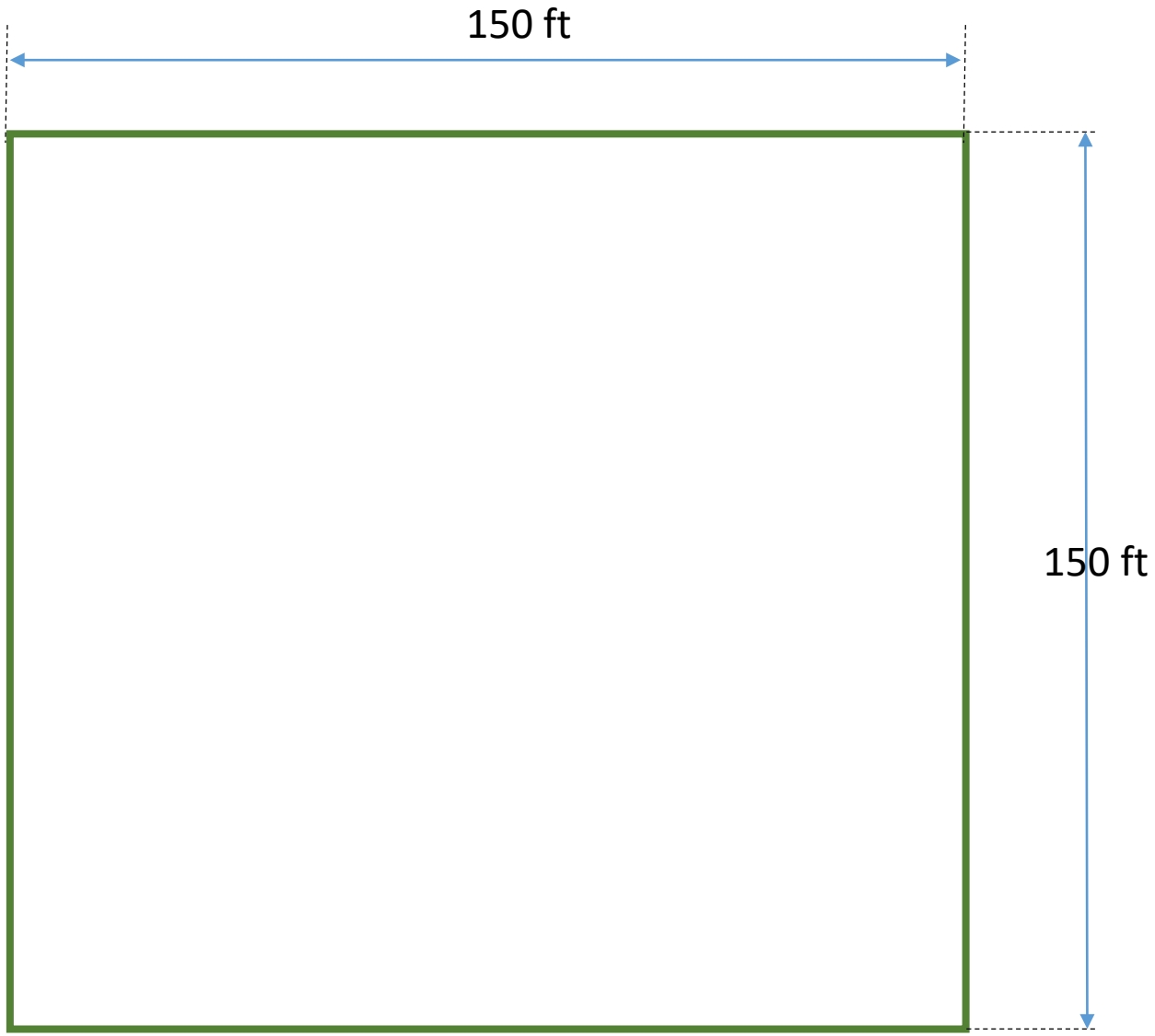


How much market space is available to customers, and how many customers can be in that space?

Example 2:

In this example, the market is a square, 150 ft per side.

Total area = 150 ft x 150 ft = 22,500 ft^2



In this example, vendor stalls are set up on three sides of the market and there is a block of stalls in the center.

Calculate all of the area taken up by vendors and subtract that from the total area to figure out the space available to customers.

Vendor block A: 12.5 ft x 150 ft = 1,875 ft^2

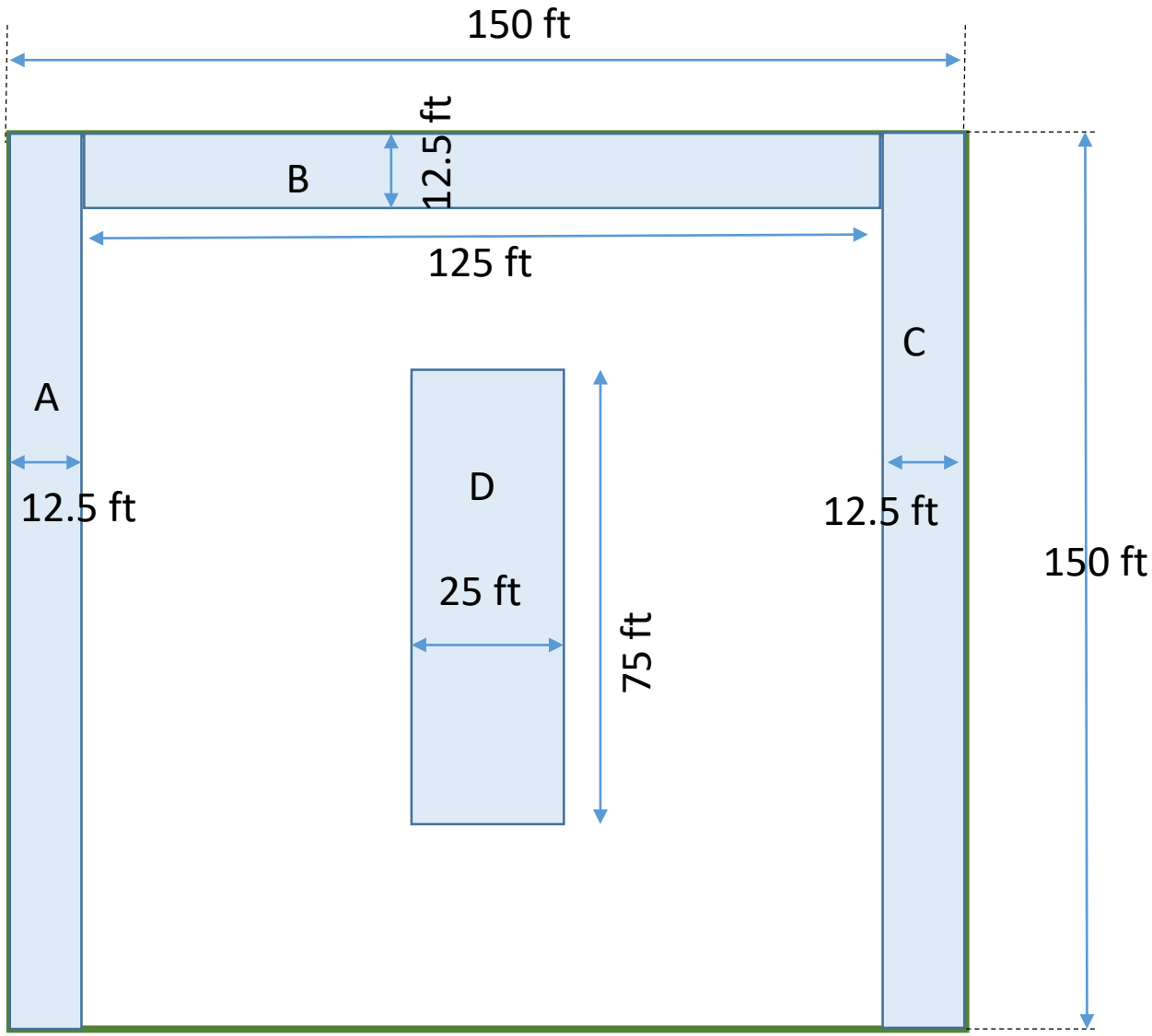
Vendor block B: 12.5 ft x 125 ft = 1,562.5 ft^2

Vendor block C: 12.5 ft x 150 ft = 1,875 ft^2

Vendor block D: 25 ft x 75 ft = 1,875 ft^2

Total vendor blocks: 7,187.5 ft^2

Customer area:
22,500 ft2 – 7,187.5 ft2 = 15,312.5 ft^2



Customers allowed at one time in this market: 15,312.5 ft^2 / 81 ft^2 = 189

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For guidance on best practices for MN farmers' markets during this COVID-19 pandemic, go to www.mfma.org.

April 20, 2020