Assume WLOG that Blacksburg sends N players. Greensboro and Silver Spring could send any of the following possibilities: $(N-1,1)$; $(N-2,2)$; … $(2,N-2)$; $(1,N-1)$. There are $N-1$ possibilities.

If Blacksburg had sent $N-1$ players, then Greensboro and Silver Spring could send from any of $N-2$ possibilities.

This pattern continues to Blacksburg sending $N-(N-2)=2$ players, and Greensboro and Silver Spring can only send 1 each.

Multiplying 3 accounts for each city providing the largest team.

$$3\sum_{k=1}^{N-1} k = \frac{3N \times N-1}{2}$$

Dividing by $N^3$for the total possibilities yields :

$$\frac{3N-3}{2N^2}$$

For $N=5$, the probability is $\frac{6}{25}$.

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