For 3 pop migration:

What does it mean that there seem to be more individuals that are mostly blue but a significant (30%+) proportion of green but not the other way? Can we get a little more info out of this?

For your simulation:

It would be easier to tell what’s going on if the dots were colored based on population of origin. I don’t really see 9 here, I see maybe 6.

Why would k=4 be high probability? If I look back at your PCA I can see where that is coming from.

I’d like a little more detail here too. Your red population, for example, seems to be the most ‘mixed’ why might that be? Does it receive a lot of migration? Or maybe it is an ancestral population?

What is with the ‘yellow’ population? What does that color tell us on this plot?

Mystery 1:

How are you telling that one population is bigger? Just because there are more green columns doesn’t mean the population is bigger. It just means I sampled more from that population.

Good analysis of the migrations. Does the red/yellow migration go both ways, do you think?

Mystery 2:

Same caveats about population size.

This seems to really look like 4 real populations to me, but then what do the other colors represent?

I’m also confused by the fact you got k=8 to be the highest probability, you might want to check that you are reading the probability column correctly.

Mystery 3:

Same caveats as before. I worry a little bit that you are reading these figures wrong. Keep in mind that each column is one individual, the colors represent how much of that individual’s genomes come from a set of theoretical populations. So the very first individual has DNA that is mostly ‘red’ and ~2% each of all of the other colors.

Overall I think you need to go a little deeper into analysis and check up with me if you’re confused about the figures.