

Explanations of Classification Methodology :

Classification according to Civil Aviation Facilities :

The classification is based on three indicators for each country, which I use in the following order to make the categories :

- 1) Number of Major Airports¹ – more public means are needed to handle more airport –,
- 2) Synthetic Runway Index² – more runway means more complexity to handle for the airport authority –,
- 3) Number of National Airlines, i.e. airlines with their headquarters located in the country – as their main hub is in the country, they can occasionally bring help to the national authorities –.

I consider these indicators under the following hypothesis : if the infrastructure is present on the country, then the public authorities can run it to a certain extent. According to that, I start gathering the countries having the same number of airports, then I examine each set of countries one by one :

- If there are too many countries in the set, I restart the algorithm with the next category (in this case, with the maximal number of runways in an airport).
- If there aren't enough countries in the set, I merge the set with the next one and examine again the new set.
- If the number of countries is acceptable, I keep the set as a category for my classification.

I choose to make about 6 categories of countries, which correspond to around 30 countries in each category for a total number of 191. I think this number is good compromise between reducing the number of countries in each category for the classification precision and reducing the number of categories for the classification easy understanding. I also try to make the first categories more accurate (which are the main object of the classification), even if it means gathering all the countries with the biggest civil aviation capacities in a big last category.

But this classification needs some improvement for the project purpose, especially in taking into consideration the national flight traffic of each countries. For example, Luxembourg (category C with 1/1/2) is ranked lower than Yemen (category F with 3 airports, like the USA) whereas Yemen will need much more the ICAO technical support than Luxembourg (as soon as the current situation will be solved). To solve this problem, I choose to merge this classification with a classification based on the flight traffic.

Classification according to Flight Traffic :

The classification is based on the number of airports by size for each country, which I use in the following order to make the categories :

¹ A Major Airport is either a big airport (cf. infra) or an airport more than 50 % of the yearly flight number of the largest airport of the country.

² The Runway Index of an airport is the number of parallel runways plus 0.5 if there are other runways in the airport. Based on it, the Synthetic Runway Index, i.e. the sum of all Runway Index of the country divided by the number of airports, gives the average number of plane which can land at the same time in the country (usually between 1 & 2).

- 1) Number of Big Airports (16% larger),
- 2) Number of Average Airports (42%),
- 3) Number of Small Airports (42% smaller).

I work in the same way than the classification 1 (cf. above), but I need to consider all the 3,733 airports in the world to have enough data to create acceptable categories for the classification.

Classification according to Civil Aviation Capacities :

When I compare the two classifications, I notice that I only have around 40% of the countries which have the same categories in both. So, I need a way to decide which category I will give to the 60% remaining. As the example above shows, the wealth of a countries is a good indicator for the final classification too (wealthier a country is, more it may invest in Civil Aviation). I decided with this aim in mind to use the Income Classification of the World Bank, based on the GNP per capita. You can see below the rules I use to merge the two classifications :

<i>Traffic</i> → <i>Facilities</i> ↓	A	B	C	D	E	F	
A		A – Low B – High	A – Low B – Middle C – High	B – Low C – High			
B	A		B – Low C – High	B – Low C – Middle D – High			
C		B – Low C – High		C – Low D – High			
D		B – Low C – Middle D – High	C – Low D – High				
E		B – Low C – High		D – Low E – High		F	
F				D – Low E – Middle F – High	E – Low F – High		

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