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Analysis of Relations between Subjects Involved and Their Numerical Representation

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Abstract:- Critical Analysis of relations underlying the numerically representation of the subjects involved in the COVID-19 Pandemic.

Keywords:- *C.F.; once only; one-to-one; set.*

I. INTRODUCTION

Analyzing the Excel table contained in [4], representing the World's population involved in the epidemic/pandemic disease called COVID-19, I was able to make some critical observations.

The mathematical concepts used to represent the involved population, present some inconsistencies which I am going to highlight.

II. METHOD

The labels definition: "TOTAL CASES", "TOTAL DEATHS", "TOLAL RECOVERED" and "ACTIVE CASES", taken directly from their definition in [4], show the following mathematical relationship.

"TOTAL CASES":
Cumulative Addition of "New daily cases".

"TOTAL DEATHS:
Cumulative Addition of "New daily deaths".

"TOTAL RECOVERED":
Cumulative Addition of "New daily recovered".

"ACTIVE CASES":
Subtraction from "TOTAL CASES" of
("TOTAL DEATHS" + "TOTAL RECOVERED")

If we want to have the correct relationship between POPULATION involved and its NUMERICAL REPRESENTATION, these conditions HAVE TO BE daily satisfied during the WHOLE period, from the beginning to the end of the epidemic event.

III. DISCUSSION

At first, all the daily variables should start from a common starting point, represented by the day before the data entry, whose numerical values are ALL equal to ZERO.

Starting from FIRST DAY of data entry, it means that in this day, the "TOTAL CASES" should be the addition of:
("New daily cases" + "New daily deaths" + "New daily recovered")

instead of
"TOTAL CASES":
Cumulative Addition of "New daily cases",

if we want to also satisfy the condition of
"ACTIVE CASES":
Subtraction from "TOTAL CASES" of
("TOTAL DEATHS" + "TOTAL RECOVERED").

This represents the FIRST DISCREPANCY needs to be solved to maintain the harmony between involved persons and their numerical representation.

Continuing with the necessary investigation after having detected this problem, it becomes evident that in the first day of data entry, the value of "New daily cases" will be COINCIDENT with the value of "ACTIVE CASES".

This condition is ABSOLUTELY CERTAIN only on the first day of data entry.

In the following days and for a period established from experts in a couple of weeks, corresponding to the INCUBATION TIME of the epidemy itself, it will be also VERY LIKELY.

During this period, daily variables "New daily deaths" and/or "New daily recovered", will represent different conditions, related to a sort of hybrid situation in which detected subjects could be totally or partially CONSIDERED or NOT CONSIDERED in the previous "TOTAL CASES" days representing a completely new numerical representation.

In other words, during this period we need, daily, to manage combined situations in which
"TOTAL CASES":
("New daily cases" + "New daily deaths" + "New daily recovered"),
together with
"TOTAL CASES":
Cumulative Addition of "New daily cases",
must be considered.

After the incubation time, these situations will still be PROBABLE, until the "New daily deaths" and the "New daily recovered" will be totally part of the "TOTAL CASES" identified in the previous days.

ONLY with these above conditions, the relations:
"TOTAL CASES":
Cumulative Addition of "New daily cases"

and "ACTIVE CASES":

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Subtraction from "TOTAL CASES" of ("TOTAL DEATHS" + "TOTAL RECOVERED") can be considered applicable.

Combination of these different and variable conditions: CERTAIN, VERY LIKELY, PROBABLY, could come back in the following days UNTIL the END of the epidemy, and should be ALWAYS considered in calculation processes.

Furthermore, in the event of RELAPSES in the disease or variants thereof, there is a SECOND DISCREPANCY that need to be solved.

The number of "TOTAL CASES", according to my point of view, should remain UNCHANGED, because must be considered that a subject infected "MORE" times is NOT comparable with "MORE" subjects infected only once.

If we do not find the solution for this problem and we take the implied concept to the limit, we arrive to the conclusion that the NUMBER of Infected people would be GREATER THAN the WORLD POPULATION itself, an evident NONSENSE SITUATION.

Lesson learned from this investigation, shows that mathematical equalities taken individually lead to diametrically opposite results, and that only by bringing the underlying concepts to their limits can we verify that both lose their meaning if we consider them separately.

Only when we can use them properly, they led to a convergent point that represent the correct numerical representation.

Today we are closed to Eight Billion people, but everyone should be at first considered as one SINGLE ENTITY.

This is the daily variable situations that should be considered if we want to have a daily situation, check the trend, and start every kind of further interpretation or deductive analysis, like for instance in [3].

IV. CONCLUSION

Considering the evidence of the FIRST DISCREPANCY, I have concluded that it becomes NECESSARY if not ESSENTIAL, to associate a ONE-TO-ONE relationship with the involved subjects and their NUMERICAL REPRESENTATION.

Being Italian, I identified this relationship with the attribution to every single subject a single "FISCAL CODE" or "C.F.", introduced in Italy since 1973, to be used during the CERTIFICATION PHASE or a GENERAL REVIEW of data RESULTS.

Using the "C.F.", we are sure that Numerical Value of "TOTAL CASES", is COINCIDENT with the detected population involved in the event and VERY IMPORTANT, that the individuals have been considered ONCE ONLY.

In addition, we bypass any homonymy problem and/or typing errors, and that by SUBTRACTING the "TOTAL RECOVERED" and the "TOTAL DEATHS" from "TOTAL CASES" we obtain consequently the correct number of "ACTIVE CASES".

By applying this verification through the "C.F.", from FIRST data entry, there would be a DAILY verification of CORRECTNESS between detected population and its NUMERICAL REPRESENTATION.

To better understand the problem highlighted in the SECOND DISCREPANCY, I believe it is important to introduce logical concepts contained in SET THEORY [2].

Although I am unable to use Set Theory Demonstration Formulas in a proper way, I would like to show the concepts that I am confident to have understood.

Trying to consider [2], I have done my personal resume of the global situation relationship.

SET "A" = TOTAL WORLD'S POPULATION

SET "B" = TOTAL CASES

SET "C" = TOTAL DEATHS

SET "D" =TOTAL CASES (Living People)

SET "E" = TOTAL RECOVERED

SET "F" = ACTIVE CASES

Applying the mathematical previews rules to these general sets of elements, except for errors and beyond any reasonable doubt, I deduced the following relationships:

SET "D" = (SET "B" – SET "C") and

SET "D" = (SET "E" + SET "F") or

(SET "B" – SET "C") = SET" D" = (SET "E" + SET "F").

SET "B" requirements:
ONE-TO-ONE relationship between FISCAL CODE (C.F.) and NUMERICAL REPRESENTATION.

In other words:
ADDITION of infected subjects MUST BE COINCIDENT with ADDITION of corresponding "C.F.".

In case of relapses, subjects will be subtracted from SET "E" and added to SET "F", and VERY IMPORTANT without increasing SET "B".

As far as I can understand, until now this concept has not yet been introduced in calculation: it means that it is likely to have a general overestimation of "TOTAL CASES".

Subsequently, in the event of a positive outcome, the subjects will be re-added to SET "E".

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In case of a negative result, they will be added to SET "C".

In summary, to obtain a correct numerical representation of the evolution, we should consider that the detected people involved, in whole or in part, may be RE-INFECTED during the entire phase in which the epidemy is active.

Mathematical equalities used for this purpose should consider the WHOLE COMBINATIONS that may arise, and that the general mathematical relations must be applicable and valid SIMULTAINEOSLY.

To achieve this condition of HARMONY and BALANCE, it is necessary to consider the limits of applicability of these mathematical equalities, associating a SINGLE external element, in this case identified in the "C.F.", which has the multiple function of VERIFICATION, CONTROL and VALIDATION of the NUMERICAL REPRESENTATION of the people involved, from start to finish.

Of course, this conclusion is ONLY referred to the detected subject's population, without considering other statistics considerations, like seroprevalence survey or others, like [3].

Reminiscent of an ancient and always valid Latin maxim "Aurea mediocritas" (The Truth is somewhere in between), from [1] I have found this unexpected thinking connection.

"To put it in another way, calculating thinking and critical thinking must proceed at the same speed, just as Plato's famous parable in Phaedrus suggests:
'The furrow will be straight (and therefore the harvest will be abundant) if the two horses pulling the plow advance paired'.

Indeed, the path of reductionism taken by economic science, starting from the second half of the twentieth century, has ended up disarming critical thinking, with the results that are now there for all to see."

In this period, I think it is time to go back to fundaments of the whole scientific knowledge and have the courage to make a critical analysis of everything with the aim to find mistakes or misunderstanding, hindrances to reach Harmony and Coherence.

Artificial Intelligence does not solve this fundamental human question, we are the only Controllers.

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