

## UFO Reports by Time of the Day

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In two previous posts in the UFO FOTOCAT blog I examined the graphs of UFO/IFO reports distributed by hour for the periods 1947-1999 (1) and 2000-2005 (2) in the FOTOCAT collection. Now I plan to compare data from both periods. In the last months, time data has been added to the database in >600 cases. It is a good improvement but still far from ideal.

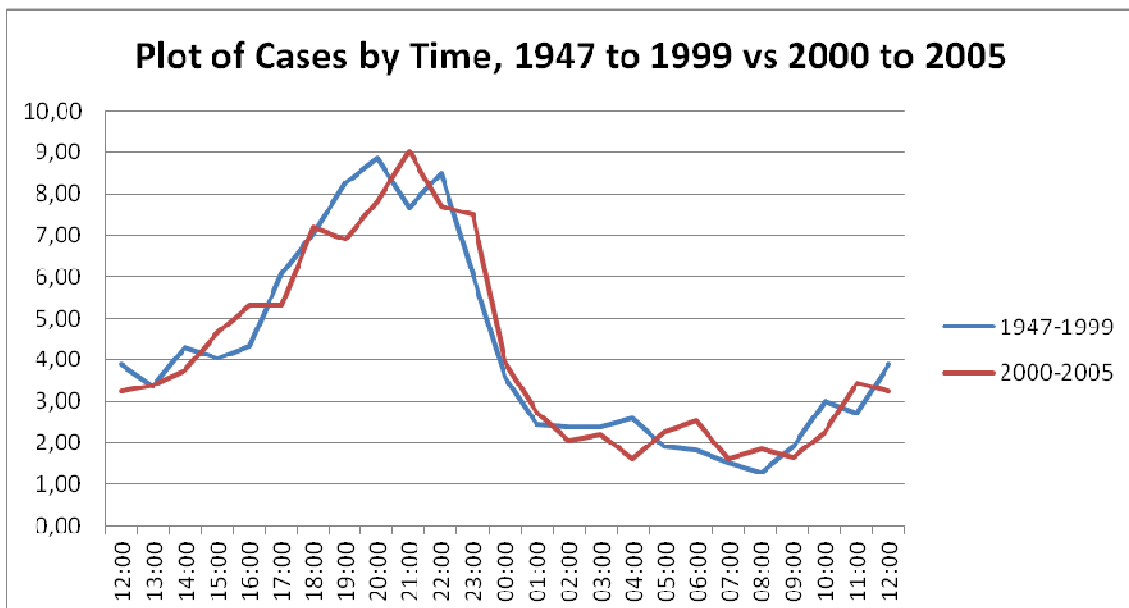
Currently, the FOTOCAT databank provides this distribution:

	<u>Total</u>	<u>Time</u>	<u>UFO</u>	<u>IFO</u>
1947-1999	7875	3348	1645	1703
2000-2005	<u>2936</u>	<u>1416</u>	<u>838</u>	<u>578</u>
TOTAL	<u>10811</u>	<u>4764</u>	<u>2483</u>	<u>2281</u>

Out of 10,811 reports considered for this study, time data is only recorded in the catalog for 4,764 entries, or 44.1% of the total. Because the development of FOTOCAT is still in progress, time information is pending to be entered into the spreadsheet for lots of cases. We are working to improve this. In addition, there are also cases where time is not indicated in the sources or simply unknown.

Figure 1 compares grand totals of reports by time for the two periods under survey. The similarity of both curves is visually obvious and the calculated correlation coefficient is as high as 0.95 (sample sizes: 3,348 for 1947-1999 and 1,416 for 2000-2005.)

Fig.1



If we now plot cases by ID for the period 1947 to 1999 we find the resulting graph in Figure 2, with a correlation coefficient of 0.94 (sample sizes: 1,645 UFOs and 1,703 IFOs). On the other hand, Figure 3 shows the distribution of reports for 2000 to 2005, when correlation drops to 0.83 (sample sizes: 838 UFOs and 578 IFOs.)

Fig. 2

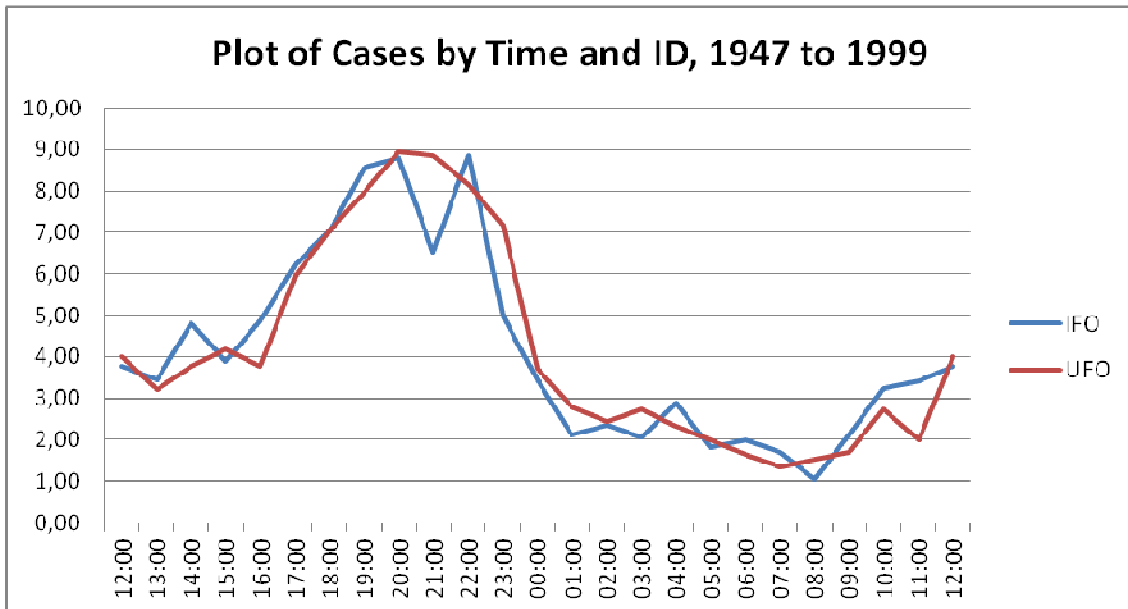
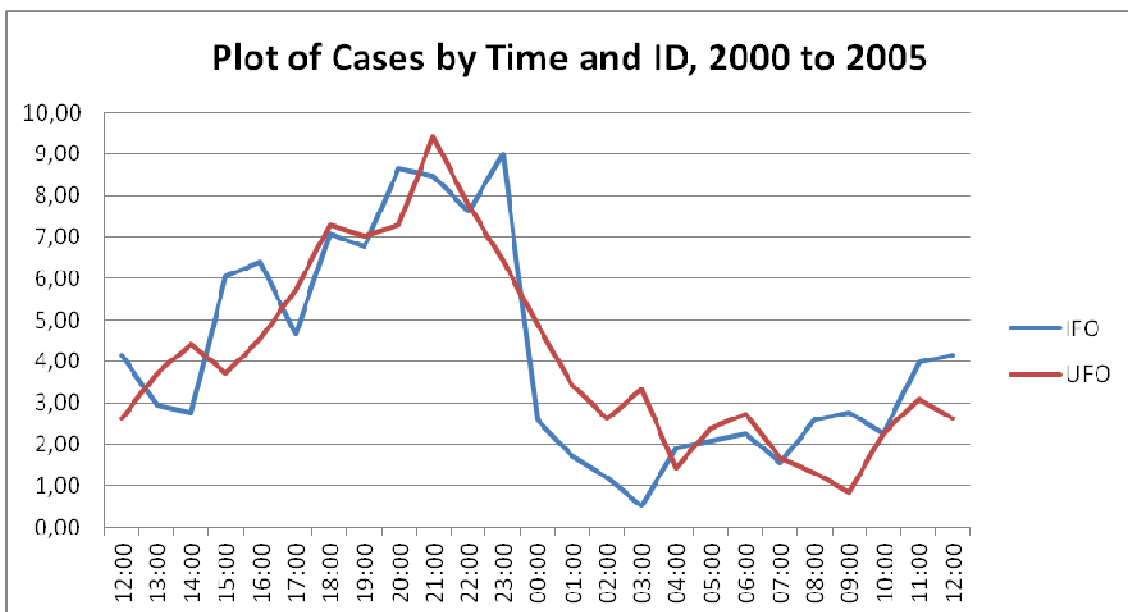


Fig. 3

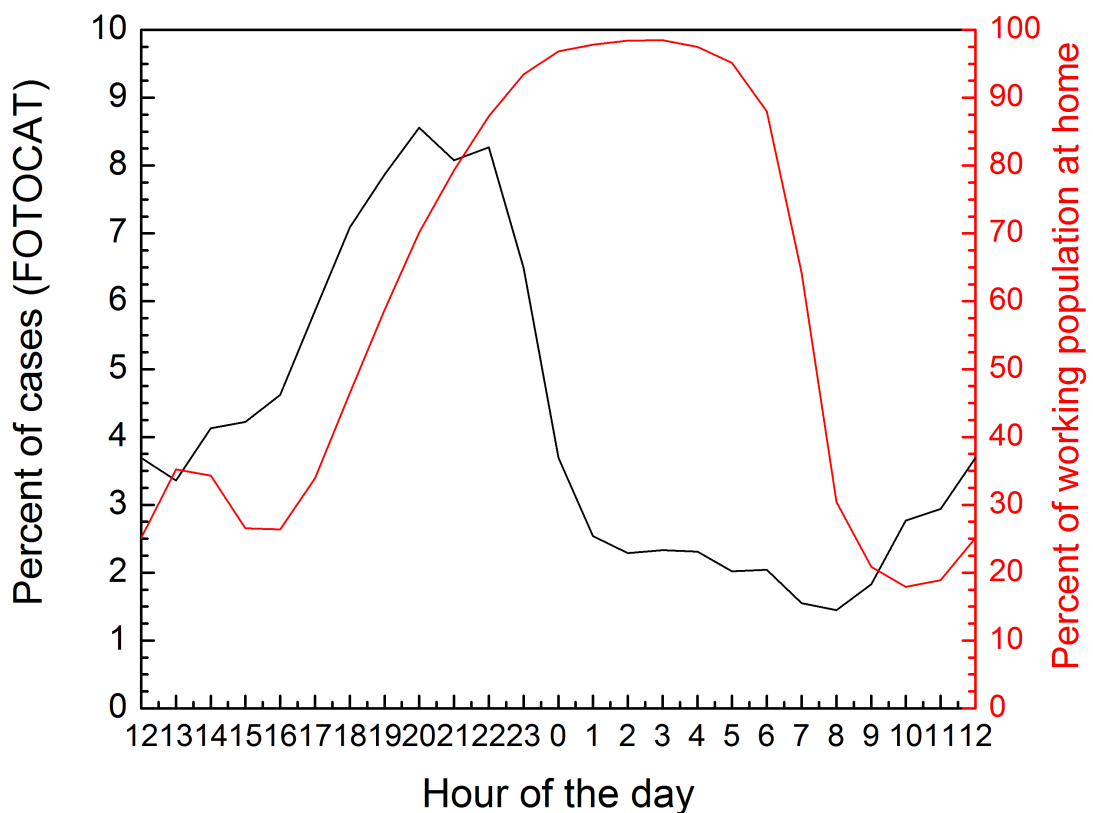


Apparently, it is the available number of reports-not their nature-that is the important factor in the mutual resemblance of resulting curves. The more cases available, the more similar the curves are. Again, the indiscernible statistics of UFOs versus IFOs strikes back, with its logical implications.

So we can conjecture that—to the effect of a theoretical true time distribution of the phenomena—the global plot of cases from 1947 to 2005 can be taken as a standard representation. Figure 4 (FOTOCAT, sample size: ~4,800 entries) is therefore the resulting plot of the scattering of reports over time. There we see the frequency of cases increasing during evening and reaching a maximum between 8 and 10 PM, when it decays rapidly. It is impossible not to guess that conventional lights in the sky are better distinguished under nocturnal conditions, i.e. astronomical bodies, airplanes, fireballs, satellites, reentries, missiles, flares, high-altitude balloons, space tests, etc.

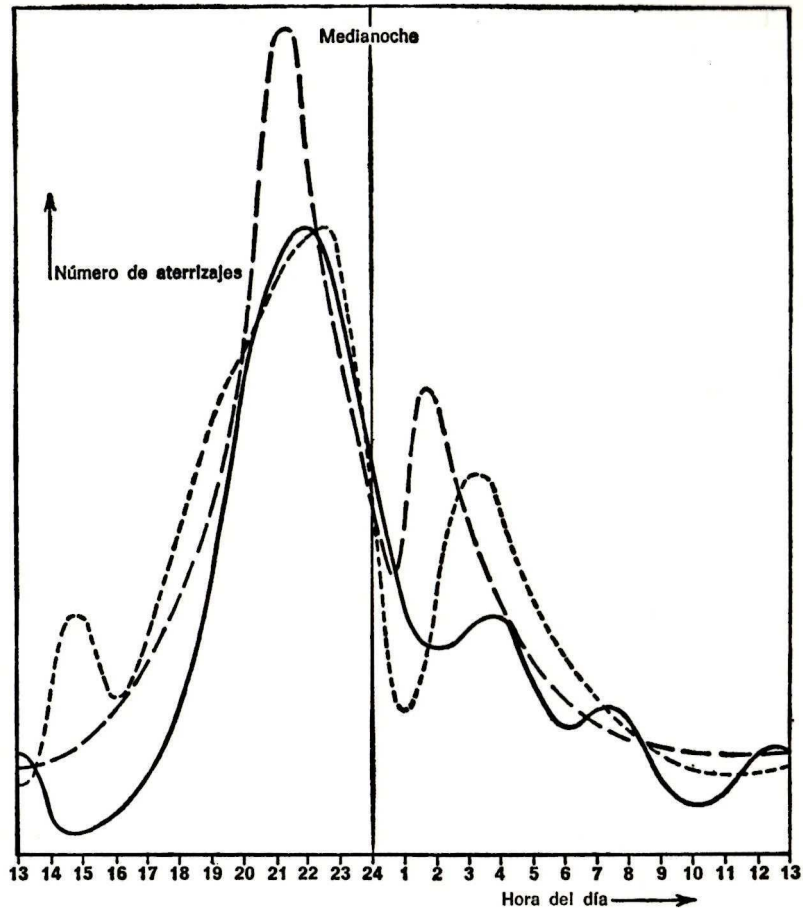
I have also added to the plot a graph showing the percent of working population at home, adapted from Vallee (3), which shows that the hours where reporting drops dramatically coincides with the hours when people are indoors and sleeping. It clearly indicates that at least a part of the shape of the curve is affected by sociological causes. In the absence of this effect, we guess that the real plot would be a Gaussian, normal curve centered on dark hours of the day when illuminated objects are better observed.

Fig. 4



This renews the discussion about the “law of the times” (Figure 5.) This is the tendency of UFO landing events to occur in a given pattern: a minimum rate of cases between 5 AM to 5 PM, a marked increase during evening hours with a maximum between 9-10 PM, when an acute decrease starts, and a secondary peak observed at 2-3 AM hours. (4, 5)

Fig. 5



In fact, we once went so far as to propose a quantified version of this plot as a mathematical measure to define the reliability of any case sample in terms of its numerical “degree of conformity” with respect to this model curve. (6)

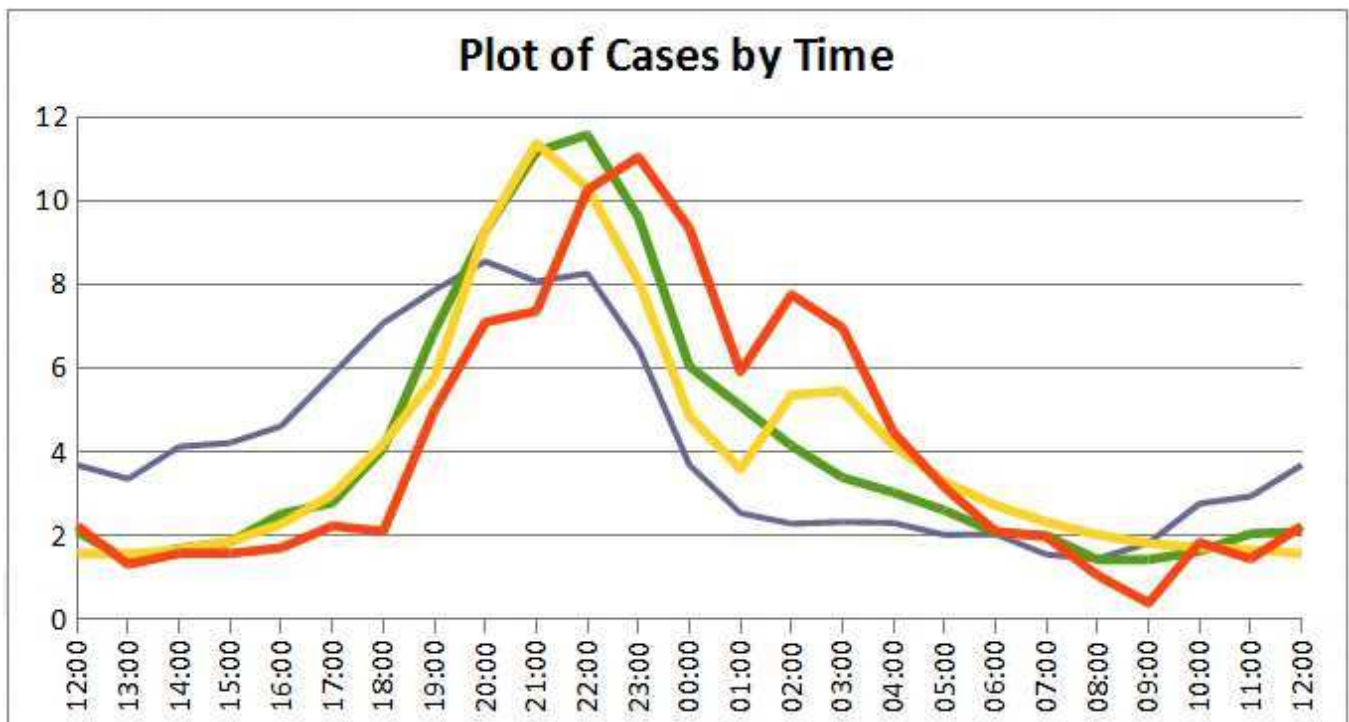
Scholarly literature on UFOs includes remarkable papers investigating the existence of periodicities in UFO observation over time. One of these demonstrated a link between UFO activity and certain solar aspects. It concluded: *there is a correlation between the optimal time for UFO observation during the day and the elevation of the sun relative to the horizon.* (7) Unfortunately it went mostly unnoticed in the research community, probably because it was published in French.

The verified problem with the law of the times is that it emerges in the same manner in both unexplained and explained sets of reports. We were able to prove it in an intensive analysis of ~600 alleged UFO landings reported in Spain and Portugal up to 1985. (8)

In order to review the law of the times as it stands today, we will consider 4 catalogs for collating purposes.

1. Counting a recent, unpublished compilation of >400 additional landing cases reported in the Iberian Peninsula, which occurred or were discovered after the year 1985 (9), the current total figure of landing reports in Spain and Portugal is ~1,000 cases. The event hour is collected for ~800 cases (let us call it ALLCAT.)
2. A catalog of 2,000 landing reports on a worldwide scale, by Jacques Vallee. (3)
3. Larry Hatch's worldwide database of 12,100 UFO reports for all categories. (10)
4. FOTOCAT, covering years 1947 to 2005 with ~4,800 entries.

Fig. 6



The following table computes the various correlation coefficients relating the catalogs:

	FOTOCAT	ALLCAT	VALLEE	HATCH
FOTOCAT	1,00	0,46	0,72	0,78
ALLCAT		1,00	0,84	0,85
VALLEE			1,00	0,96
HATCH				1,00

It appears that landings (Vallee and ALLCAT)—whatever the nature of these phenomena—are very similar between themselves as far as the time distribution is concerned (correlation scores 0.84). Cases are dramatically centered on night-time, peaking at 9 PM for worldwide cases (curiously with a 2-hour lag in the Spanish cases.) A second peak at around 2 AM still turns up in both samples.

It is significant that the above match deteriorates to 0.74 when Vallee’s sample is contrasted with FOTOCAT cases (mostly air sightings as opposed to close encounters), and the secondary maximum is lost. But, on the other hand, Vallee *versus* Hatch shows almost a perfect relationship (0.96), excluding the second peak. So we cannot speak of a specificity of landing reports in regard to general sightings for time spread.

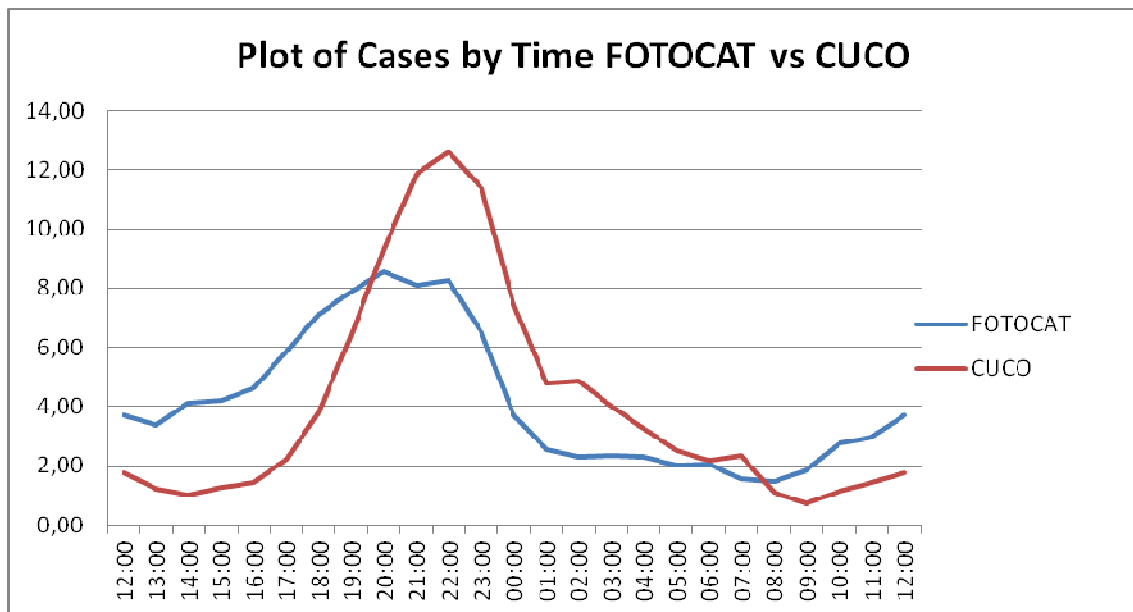
The most unfavorable correlation is found between FOTOCAT and ALLCAT (0.46), and we wonder about the role played here by the limited size of the latter sample (~800 reports only.)

Somehow one expects a closer relationship to appear within type of report (landings, all-category) and size of sample (large, small), i.e., Vallee & ALLCAT and Hatch & FOTOCAT, but this prediction is not fulfilled in the results found. Instead, a combined kind of correlation is revealed.

Does sample size improve correlation? We have compared FOTOCAT data with CUCO, an all-category catalog of 7,540 UFO and IFO cases for Spain and Portugal, where time is known in 4,800 events. See Figure 7.

Both samples show exactly the same number of cases (4,800). In spite of this, correlation scoring shows a modest 0.72 value. Percent of common cases in both catalogues (redundancy) is ~ 8%

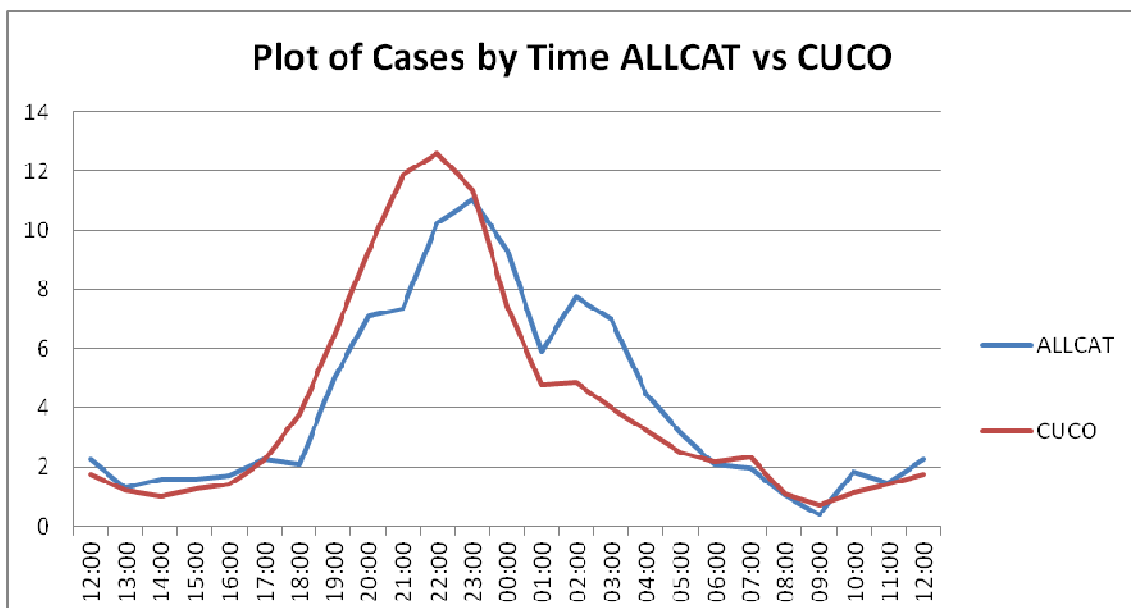
Fig. 7



Nocturnality in incidents where phenomena are photographically recorded is smoother than in general cases. Perhaps availability of cameras during the peak night hours is less. Future, more enriched FOTOCAT samples will allow us to continue exploring this.

Does provenance improve correlation? We have now collated ALLCAT and CUCO, both catalogs formed exclusively with cases from Spain and Portugal. See Figure 8.

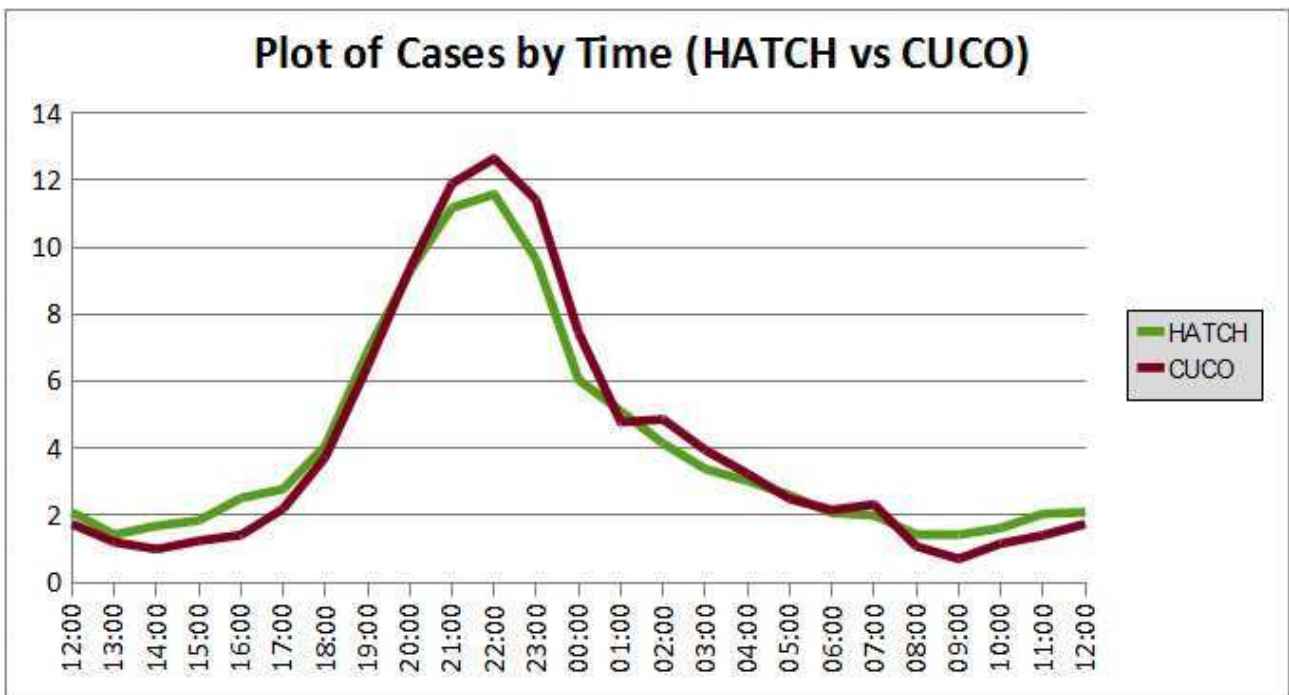
Fig. 8



Correlation scores at 0.90, a very high value that does not seem to be caused by the inclusion of some ALLCAT entries into the 4,800 CUCO reports (11% redundancy.)

A colleague has noticed that the top correlation is found between Hatch and CUCO samples, scoring 0.99 (11). For what it is worth, both contain thousands of cases, but one is double the other in size (12,100 to 4,800), and both collect all-category reports, but one is international in scope and another only covers Spain and Portugal. Catalog overlapping is not a key issue here, as redundancy is less than 4% (12). The Larry Hatch compilation, the largest in the series of catalogs used, shows a Gaussian curve centered on 10 PM, with no secondary peak.

Fig. 9



In the analysis of the time variable, one could forecast that statistics at national level are more valuable than worldwide catalogs because of consistency of local conditions, astronomical, sociological, etc. But this is not particularly true, as we have seen the highest fit in international *versus* national samples.

The time-of-the-event is universal, objective information that deserves to be well studied. For example, It was a crucial datum from the *process theory* perspective. (13) Attempts to correlate UFO sightings with sidereal time (10, 14) and other astronomical magnitudes (15) have been tested, and the discussion has not been settled yet.

We feel that patterns-or lack of them-in UFO studies reflect the internal quality and size of the samples used. This reinforces the need for building wide, reliable databases to test theories and search for patterns.

### Acknowledgements

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