

UFOs Over Canada: 25 Years of UFO Reports

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Overview

Since 1989, details about UFO reports in Canada have been solicited from all known and active investigators and researchers in this country for analyses and comparison with other compilations. Before that time, individual researchers usually maintained their own files with little or no communication to others. Even today, it is known that some representatives of major UFO organizations often do not regularly share or share case data, and the parent organizations themselves tend not to do much analyses with the data they do receive, although this is changing. Recently, however, MUFON finally has been publishing results from analyses of UFO data it has collected, and this has been useful in comparisons with other data sets (Spencer, 1993).

After favourable responses from the publication of its previous Canadian UFO Surveys, the former Ufology Research of Manitoba (now Ufology Research) decided to continue the systematic collection of raw UFO report data in Canada and prepare yearly reports for general circulation. It was believed that the dissemination of such data would be of great advantage to researchers in the hope of better understanding the UFO phenomenon.

This is not to suggest that statistical studies of UFO data are without their limitations and problems. Allan Hendry, in his landmark book *The UFO Handbook*, pointed out flaws in such studies and asked:

... do UFO statistics represent a valid pursuit for more knowledge about this elusive phenomenon, or do they merely reflect frustration that none of the individual reports are capable of standing on their own two feet? (1979, p. 269)

Hendry offered six questions to ask of statistical ufology:

- 1) Does the report collection reflect truly random sampling?
- 2) Have the individual cases been adequately validated?
- 3) Are apples and oranges being compared? Are NLs necessarily the same kind of UFO as DDs?
- 4) Are differing details among cases obscured through simplification for the purpose of comparisons?

5) Does the study imply the question: "Surely this mass of data proves UFOs exist?"

6) Do the correlations really show causality?

The Canadian UFO Survey was undertaken with these and other critical comments in mind.

The Collection of Canadian UFO Data

Many individuals, associations, clubs and groups claim to investigate UFO reports or and otherwise solicit reports from the general public. However, very few of them actually participate in any kind of information sharing or data gathering for scientific programs. Many are only interest groups, perhaps based in museums, planetariums, church basements or members' homes, and do virtually nothing with the case reports they receive. Indeed, because there is no way to enforce standards in UFO report investigations, the quality of case investigations varies considerably. Some researchers do not maintain useable case files and do not retain quantitative criteria in their investigations (for example, alien abduction or contactee groups).

This presents an interesting problem for scientific studies of UFO data. Whereas it would appear that there are a number of very active ufologists and ufology groups around the world, some exist, it seems, only to garner media attention and massage delicate egos, without actually doing any research or in-depth investigation of cases. This is certainly a product of the non-professional nature of the UFO field, where post office clerks and truck drivers can claim expertise as well as astronomers and psychologists. This may be frustrating to serious researchers, but must be accepted as an artefact of the subject area.

This situation has led some researchers to note that UFO investigation, as an art or aspect applying scientific methodology, is "dead."

Further complicating this problem was the cessation of the collection of UFO reports by the National Research Council of Canada (NRC). The NRC routinely received UFO reports from private citizens and from RCMP, civic police and military personnel, with the understanding that many reports of UFOs can be positively identified as meteors or bolides, and the tracking of such reports could lead to the discovery of a meteorite fall. In fact, the combination of photographic tracking networks and the receipt of eyewitness reports combined on at least one occasion that allowed a significant meteorite find in Innisfree, Alberta on February 5, 1977. However, the NRC noted that although the all-sky cameras record a large area of the night sky,

They have *never* seen what is usually called an Unidentified Flying Object and surely this negative evidence should be considered in any discussion about the reality of UFOs. (Halliday et al. "The Innisfree meteorite and the Canadian camera network." *Journal of*

the Royal Astronomical Society of Canada, vol. 72, Feb. 1978, p. 15-39.) [emphasis in original]

Included among the NRC reports are many observations of meteors and fireballs, and these had been added into the Canadian UFO Survey database since it began in 1989. However, in 1995, due to budget restraint and the lack of continuing research in meteoritics at the NRC as a result of retirements, deaths and other staff changes, the NRC announced it would no longer be accepting UFO reports as a matter of course. As a consequence, RCMP reporting of UFOs and fireballs to the NRC summarily ceased at that time.

This shift away from relatively good public access to official UFO reports to little or no access has resulted in an increase in Access to Information (AI) requests filed by ufologists with various government and military agencies in Canada. (These are the Canadian equivalent of the American Freedom of Information Act requests.) These have yielded some UFO cases, but the process is very time-consuming, costly and may not uncover all the cases needed for study.

As a consequence of these factors, what has been adopted for this present study is a requirement for an "official" status regarding UFO reports. If UFO sightings are reported to groups or individuals who do not share their case data with serious researchers, those sightings are effectively lost to scientific analyses. The reports may accumulate in impressive numbers claimed by some organizations, but without the data being available for study, they are of no value whatsoever.

Therefore, for the purposes of this and other scientific studies of UFO data, only those UFO sightings which have been made to contributing and participating groups, associations, organizations or individuals can be given any kind of official status. Cases reported to any other group, association, club or individual cannot be considered officially reported.

These factors have made collection of Canadian UFO data rather challenging. Certainly, because of the changes and variation in the way in which reports were received or obtained, it is difficult to make direct comparisons between years. However, the data obtained for the present analysis is still useful in understanding the nature of UFO reports in Canada, and can shed light on the nature of UFO reports elsewhere in the world.

UFOs as Vital Intelligence

A significant reason why UFO data should be collected and studied is found in official directives of the Department of National Defence regarding the actions of all pilots in Canadian airspace. In documents relating to CIRVIS (Communications Instructions for Reporting Vital Intelligence Sightings), both civilians and military personnel are instructed that:

CIRVIS reports should be made immediately upon a vital intelligence sighting of any airborne, waterborne and ground objects or activities which appear to be hostile, suspicious, unidentified or engaged in illegal smuggling activity.

Examples of events requiring CIRVIS reports are:

- unidentified flying objects;*
- submarines or warships which are not Canadian or American;*
- violent explosions; and*
- unexplained or unusual activity in Polar regions, abandoned airstrips or other remote, sparsely populated areas.*

[DND Flight Information Publication - GPH 204. Flight Planning and Procedures, Canada and North Atlantic, Issue No. 57, Effective 0901Z 20 May 1999]

In other words, it is considered in the best interests of everyone to report UFO sightings, and certainly of interest to the Department of National Defence. The annual Canadian UFO Survey looks critically at UFO sightings and assesses their nature.

UFO Reports in Canada

For this study, the working definition of a UFO is: "an object seen in the sky which its observer cannot identify."

The number of UFO sightings officially reported each year in Canada throughout the past 25 years was initially comparatively small. In 1989, 141 UFO reports were obtained for analysis. In 1990, 194 reports were recorded. In 1991, 165 reports were received and in 1992, 223 cases were examined. But in 1993, a significant jump to 489 reports was realized. The following years were lower again: 189 reports received in 1994 and 183 in 1995.

UFO report numbers remained at about this level until about 2000, when a markedly upward trend began, lasting until the present. In a five-year period, there was about a fourfold increase in the number of UFO reports, from 1999 to 2004. Curiously, the number of reports seemed to reach another plateau at this time, lasting until the very unusual high level in 2012. Overall, however, there has been an increase in UFO report numbers since the Canadian UFO Survey was initiated in 1989.

The number of reports received in 1993 represented a significant increase over previous years. The largest contributor to this increase was a single fireball event on October 30, 1993. That evening, a spectacular object and a sonic boom was reported by literally hundreds of people throughout Canada. More than 120 individual reports were filed with astronomers, RCMP, police, the NRC and other agencies. The implication of this case is that statistical tabulations of

UFO characteristics in 1993 were skewed by a significant amount. Report numbers for 1994 and 1995 once again reflected the previously-determined Canadian average.

(The most interesting implication of this event was that the UFO reports from October 30, 1993, actually reflected a real event that had occurred. This lends some credence to the belief that when a UFO is reported, a real object has been seen and was not just a fantasy of a witness' imagination. Therefore, it can be said that UFO reports usually imply actual observations of something out of the ordinary.) (See Appendix)

UFO reports were obtained from contributing investigators' files, press clippings and the files of the National Research Council of Canada (NRC). The NRC routinely receives UFO reports from private citizens and from RCMP, civic police and military personnel. Included among the NRC reports are many observations of meteors and fireballs, and these have been added into the UFO report database since 1989. Many of the reports were obtained via electronic mail and Internet newsgroups, and when social media became widely used, reports have also been received via Facebook, Youtube and Twitter and. Finally, some declassified documents of the Department of National Defence contain reports of unusual objects in Canadian airspace, and these also have been included in the database.

There were several reasons for including IFOs such as fireballs and bolides in the UFO report database. First, previous studies of UFO data have included meteor and fireball reports. In many instances, observers failed to recognize stars, aircraft and bolides, and therefore reported them as UFOs. That is why some UFO investigators often spend many hours sorting IFOs from UFOs. Historically, analyses of UFO data such as American projects Grudge, Sign and Blue Book all included raw UFO data which later resolved into categories of UFOs and IFOs. Another reason is that observed objects are sometimes quickly assigned a particular IFO explanation even though later investigation suggests such an explanation was unwarranted.

Issues with UFO data

Five Close Encounters of the Fourth Kind (CE4) were included in the data for 1994-95. CE4s are the sensational "alien abduction" cases which have received wide attention in the media. Some researchers have speculated that thousands of such abductions occur each year, based on various surveys and the number of witnesses (abductees) coming forward. Since abductions are often reported long after the fact, exact times and dates are meaningless and usually unobtainable as UFO data. Similarly, since witnesses' memories often are clouded or obscured, other data such as colour, duration and even location may be impossible to ascertain. Some skeptics suggest that abductions may be a psychological rather than a "real" phenomenon. For these reasons, we would argue that CE4s do not seem appropriate for inclusion in UFO databases. And, if abduction incident really are true close encounters, their complexity decrees that their inclusion in a raw data listing might be inappropriate as well. The few that were included were accepted only because they were reported to an official reporting body, which is usually not the case for such incidents.

Cases contributed or obtained after annual analyses were done were not included in their year's data, nor were the analyses regenerated. A long-term project is to enter this collection of excluded data for a future study.

IFOs

Studies of UFO data routinely include reports of meteors, fireballs and other conventional objects. In many instances, observers fail to recognize stars, aircraft and bolides, and therefore report them as UFOs. Witnesses often report watching stationary flashing lights low on the horizon for hours and never conclude they are observing a star or planet.

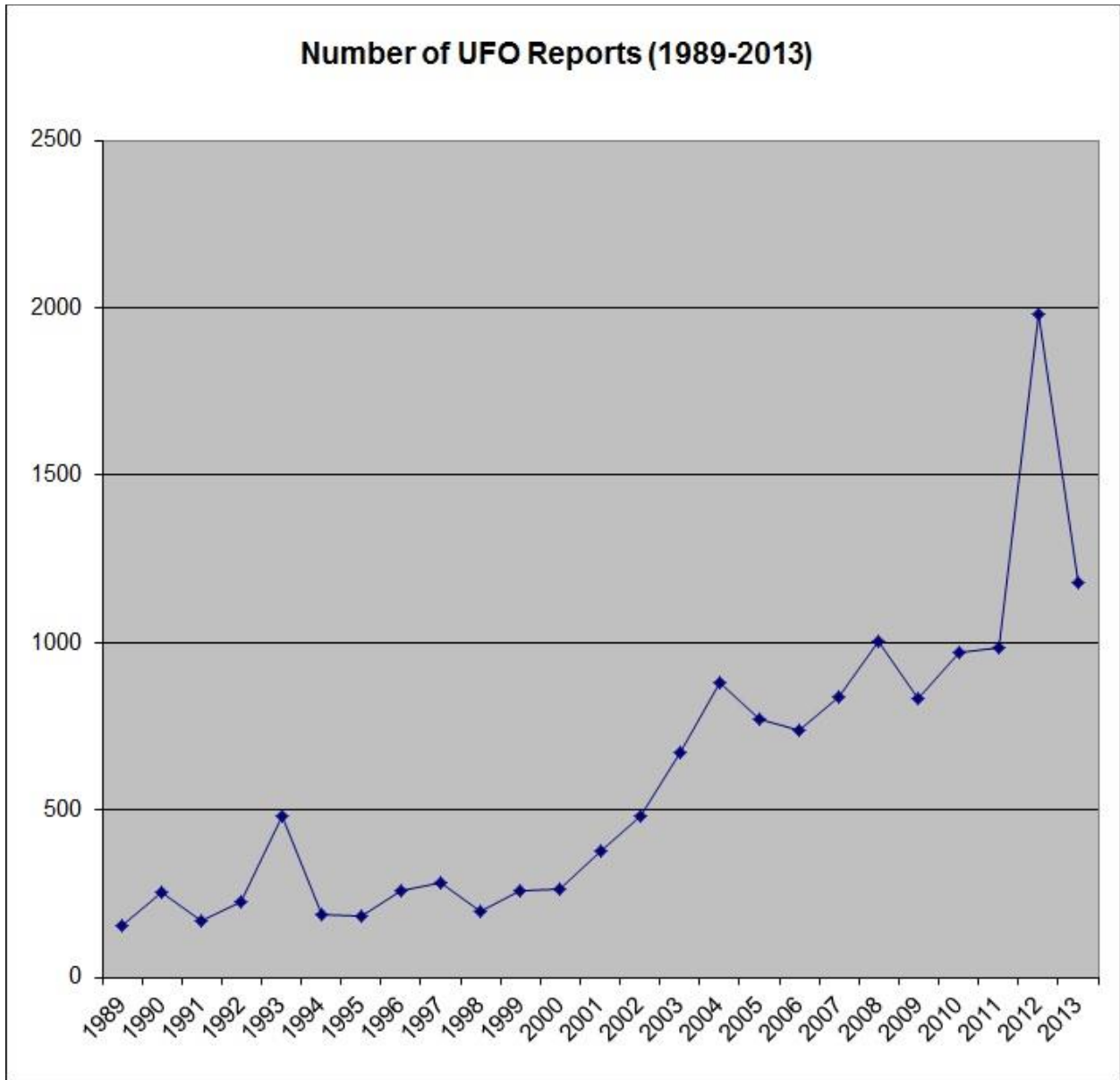
Some UFO investigators spend many hours sorting IFOs from UFOs. Historically, analyses of UFO data such as the American projects Grudge, Sign and Blue Book all included raw UFO data which later were resolved into categories of UFOs and IFOs. Sometimes, observed objects are quickly assigned a particular IFO explanation even though later investigation suggests such an explanation was unwarranted. The reverse is also true.

The issue of including IFOs in studies of UFO data is an important one. One could argue that once a sighting is explained, it has no reason to be considered as a UFO report. However, this overlooks the fact that the IFO was originally reported as a UFO and is indeed valid data. It may not be evidence of extraterrestrial visitation, but as UFO data, it is quite useful. It must be remembered that all major previous studies of UFOs examined UFO reports with the intent to explain all cases (but not quite succeeding). IFOs are definitely part of the UFO report legacy.

IFOs are problematic in that they are not interesting to most ufologists. In fact, some UFO investigators readily admit they do not record details about UFO reports that seem easily explained as ordinary objects. This may be a serious error. The UFO witness may be conscientiously reporting an object that is mysterious to him or her: the exact definition of a UFO. Therefore, even late-night, anonymous telephone calls that are obviously reports of airplanes or planets should be rightly logged as UFO reports. It seems reasonable that all UFO reports be included in statistical databases and in later studies on the phenomenon, regardless of the cases' later reclassification as IFOs.

Results of Data Mining: Reports

A total of 14,541 cases were recorded during the past 25 years of the Canadian UFO Survey. This is an average of 582 UFO reports per year, although the yearly numbers have been steadily increasing across time, from a low of 141 in 1989 to 1,180 in 2013. The all-time yearly high was in 2012 when 1,981 UFO cases were recorded.



Year	Number	Average
1989	141	141.0
1990	194	167.5
1991	165	166.7
1992	223	180.8
1993	489	242.4
1994	189	233.5
1995	183	226.3
1996	258	230.3
1997	284	236.2
1998	194	232.0
1999	259	234.5
2000	263	236.8
2001	374	247.4
2002	483	264.2
2003	673	291.5
2004	882	328.4
2005	769	354.3
2006	738	375.8
2007	794	399.8
2008	1004	430.0
2009	831	433.3
2010	968	438.2
2011	986	461.9
2012	1981	525.3
2013	1180	551.4
Total	14617	

Results of Data Mining: “Hotspots”

A frequent query from media and UFO buffs regarding geographical distribution of cases is the location of UFO “hotspots” — those places where UFOs are seen most frequently. Although there are several places in Canada with such a reputation, this was not revealed through the annual studies. One definitive result is the fact that UFO sightings are related to population density. Essentially, the greater the population density, the higher the number of reports. This is logical in that since it is UFO sightings that are being studied, and not UFOs themselves, it makes sense that the more potential UFO witnesses available, the more reports will be generated.

Because of this, more UFO sightings were reported from metropolitan centres. However, this was not completely related to population. Witnesses were invited to note the nearest town or

city as a location; in many cases, a suburb of a city was indicated, necessitating some geographical grouping.

The cities with the largest number of cases were:

Cities

Toronto	623
Winnipeg	521
Vancouver	504
Calgary	431
Edmonton	324
Montreal	287

However, when we add in suburbs of metropolitan areas, we get a slightly different result:

Metropolitan Areas

Vancouver	1,393
Toronto	1,127
Winnipeg	536
Calgary	472
Edmonton	395
Hamilton	348

The location “Vancouver” includes New Westminister, Burnaby, Surrey, Delta, etc. Similarly, “Toronto” includes Mississauga, North York, Richmond Hill, Markham, etc.

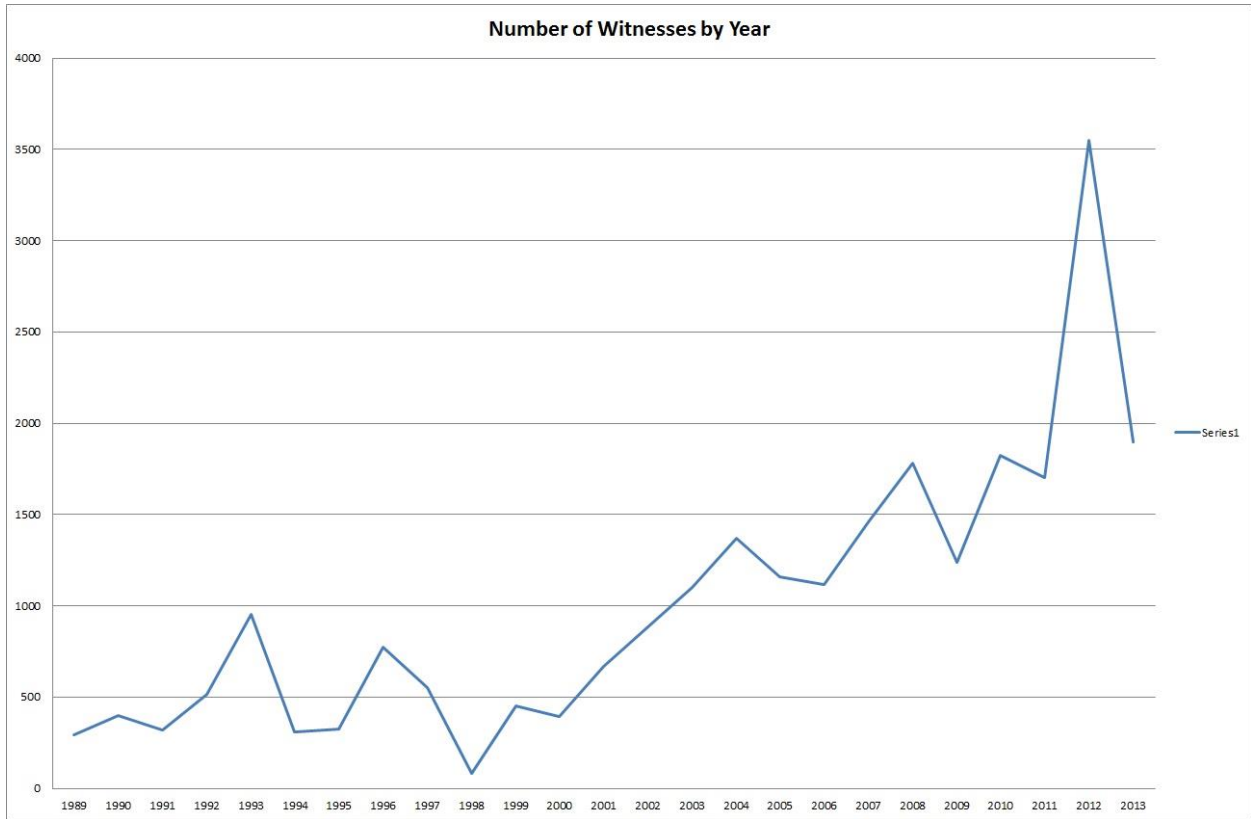
Note that the distribution of UFO reports is not directly related to population. If this were the case, the list would reflect the cities with the highest populations: Toronto, Montreal, Vancouver, Calgary, Edmonton and Ottawa.

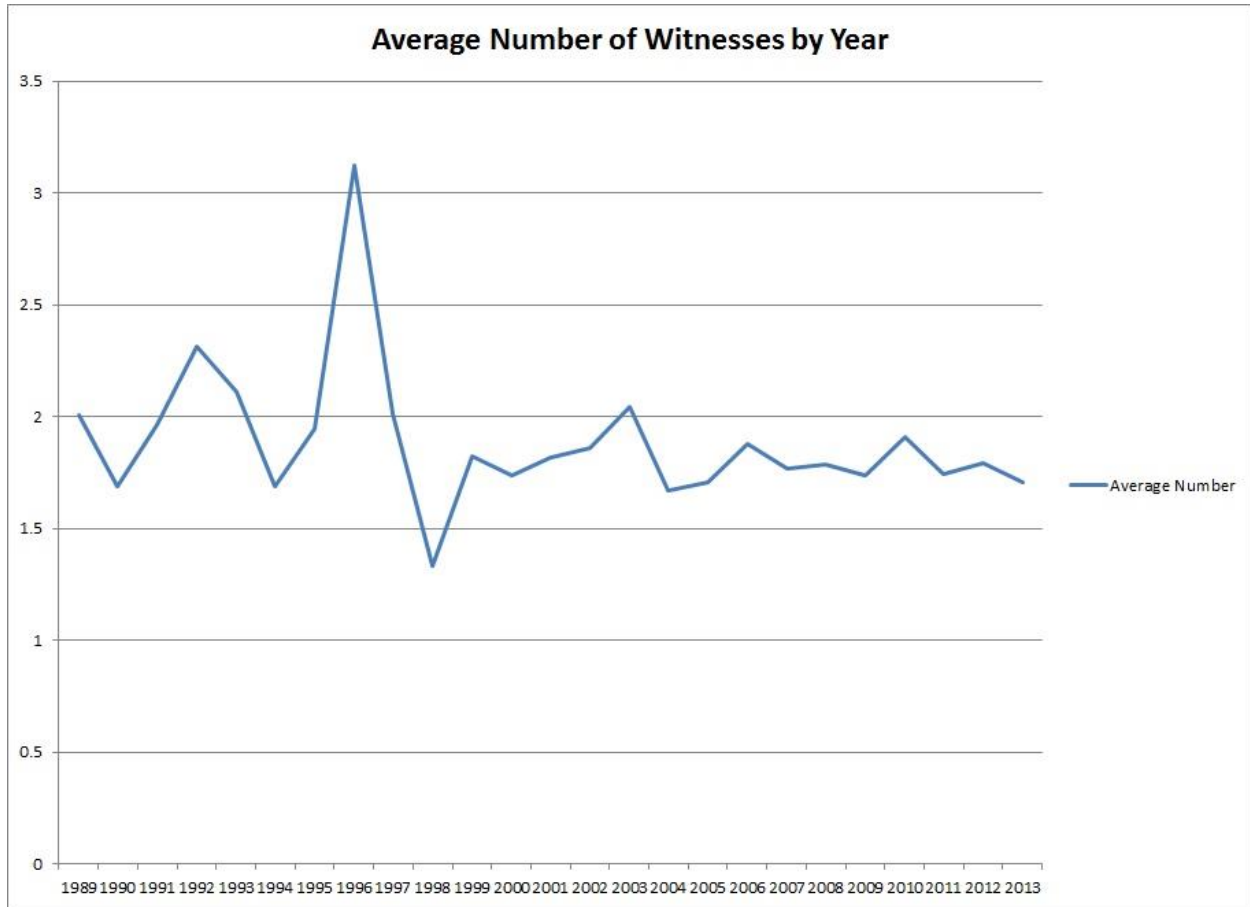
Results of Data Mining: Witnesses

The number of witnesses of UFOs has risen over time, reflecting the number of reports each year. Obviously, if there are more UFO reports, there will be more witnesses. More significant is the calculation of the average number of witnesses per UFO sighting, which has remained remarkably stable.

The number of witnesses per year has ranged from 291 in 1989 to 1,895 in 2013. But the average number of witnesses per year has ranged between a low of 1.33 in 1998 to a high of 3.13 in 1996. The overall average is 1.84 witnesses per case. This indicates that the typical UFO experience has more than one witness, and supports the contention that UFO sightings

represent observations of real, physical phenomena, since there is usually a corroborator present to support the sighting.





Results of Data Mining: Colours

In cases where a colour of an object was reported, the most common colour was white (29 per cent), followed by orange (21 per cent) and then 'multicoloured' (17 per cent). Since most UFOs are nocturnal starlike objects, the abundance of white objects is not surprising. Orange is often associated with the appearance of Chinese lanterns, sent aloft during celebrations. It should not be surprising that daylight discs are most commonly described as black or silver.

Other colours such as red, blue and green often are associated with bolides (fireballs). A separate breakdown of UFO sightings noted as being "fireballs" shows that most are green (26 per cent), then white (24 per cent), then blue (16 per cent) and orange (15 per cent).

Most Nocturnal Light cases were white (29 per cent), then orange (21 per cent) and multicoloured (17 per cent). Point source UFOs were also mostly white (31 per cent), then orange (24 per cent) and multicoloured (19 per cent).

The 'multicoloured' designation is problematic in that it literally covers a wide range of possibilities. Some studies of UFO data have adjusted the category of colour to include both

"primary" and "secondary" colours in cases where the observed UFO had more than one colour. The multicoloured label has been used, for example, when witnesses described their UFOs as having white, red and green lights. For the present study, the Colour classification refers only to the primary colour in the witness' description.

Breakdown of Cases by Colour				
ALL SIGHTINGS		COLOUR OF NOCTURNAL LIGHTS		
Colour	Number	Colour	Number	
Black	340	Black	6	
Blue	517	Blue	318	
Brown	24	Brown	2	
Other	17	Other	21	
Gold	43	Gold	21	
Green	578	Green	329	
Grey	199	Grey	7	
Multi-coloured	1303	Multi-coloured	885	
Orange	1906	Orange	1085	
Pink	27	Purple	11	
Purple	21	Red	621	
Red	1084	Silver	21	
Silver	382	White	1504	
White	2601	Yellow	299	
Yellow	512			
		COLOUR OF POINT SOURCE LIGHTS		
COLOUR OF FIREBALLS		Colour	Number	
Colour	Number	Other	10	
Other	5	Blue	157	
Blue	90	Gold	12	
Green	142	Green	103	
Muliti	14	Grey	3	
Orange	83	Multi-coloured	701	
Red	41	Orange	855	
White	131	Purple	7	
Yellow	40	Red	464	
		Silver	8	
		White	1135	
		Yellow	201	

Results of Data Mining: Duration

The category of Duration is interesting in that it represents the subjective length of time a witness believes a UFO experience lasted. Naturally, these times are greatly suspect because it is known that people tend to misjudge the flow of time. However, some individuals can be good at estimating time, so this value does have some meaning. Although an estimate of "one hour" in a particular case may be in error by several minutes, it is unlikely that the correct value would be, for example, one minute (disregarding the claims of "missing time" during the abduction category of experiences). Furthermore, there have been cases when a UFO was observed and clocked accurately, so that we can be reasonably certain that UFO events can last considerable periods of time.

The average Duration of a sighting was calculated as the summation of all cases' durations divided by the number of cases with a stated duration. The resulting value has been as low as 7 minutes in 1994-95, but has been as long as a remarkable 26 minutes! This is very long time for a witness to be observing an unusual object in the sky.

The average Duration of all sightings was 16.8 minutes (1,008 seconds). Considering Unknowns only, the Duration drops to 14.2 minutes (850 seconds).

In total, 25.76 per cent of all sightings were briefer than 10 seconds, and 8.85 per cent were between 1 minute and 2 minutes in duration. But 12.65 per cent were longer than half an hour in duration.

Unknowns show a different distribution. Only 17.78 per cent were shorter than 10 seconds. And 9.78 were longer than half an hour in Duration. In general, Unknowns were of moderate Duration: neither short nor long. This gives some insight into their nature; a case of extremely short Duration might not have enough content to be considered truly Unexplained, but a long Duration case would likely be explainable as a star or planet.

Previous analyses have shown that long-duration sightings tend to occur in the early morning hours, from about midnight until 6:00 a.m. It is probable that the majority of observations at this time are those of astronomical objects, moving slowly with the rotation of the Earth.

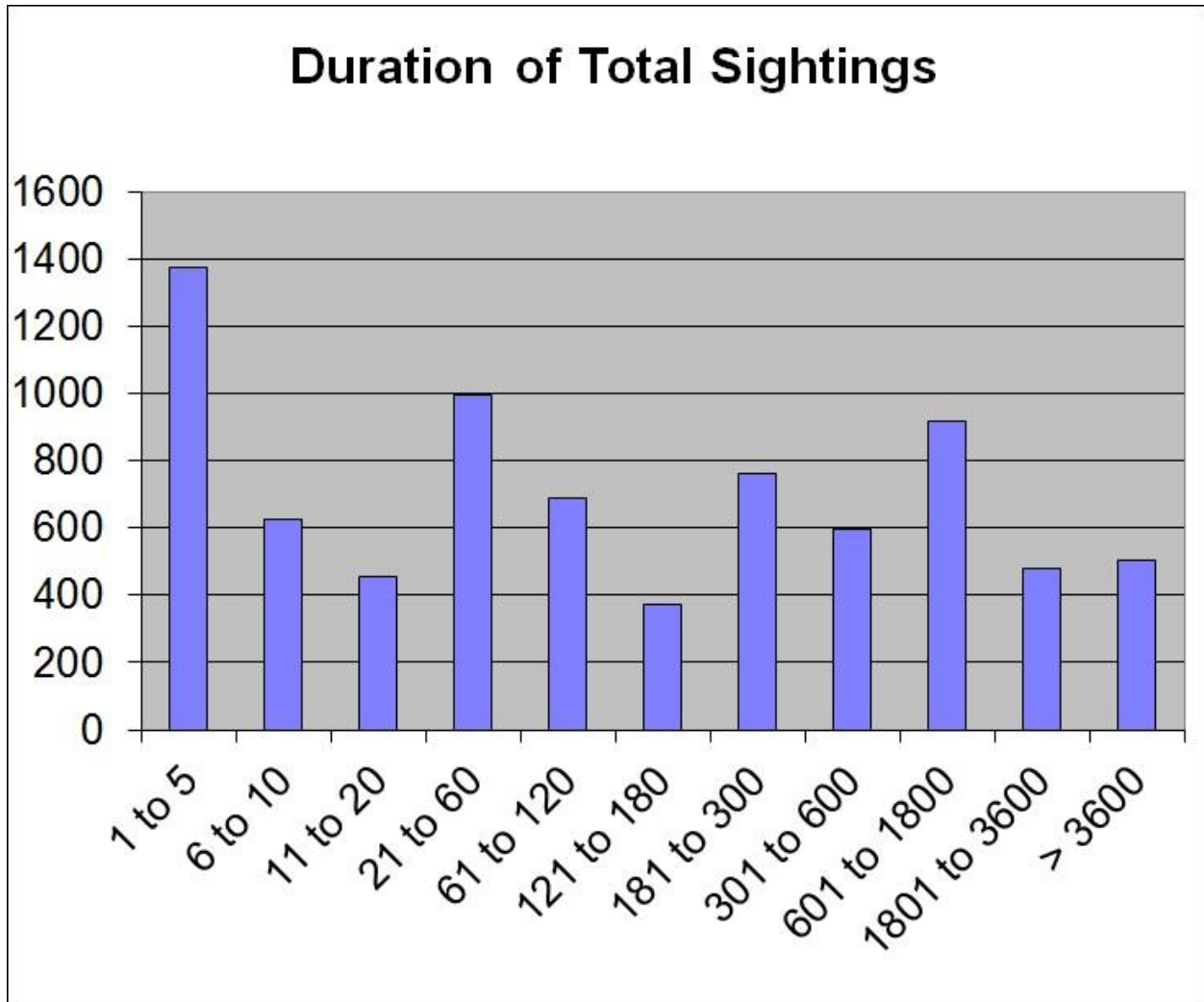
It should be noted that Duration data by itself is not wholly useful in analysing UFO behaviour.

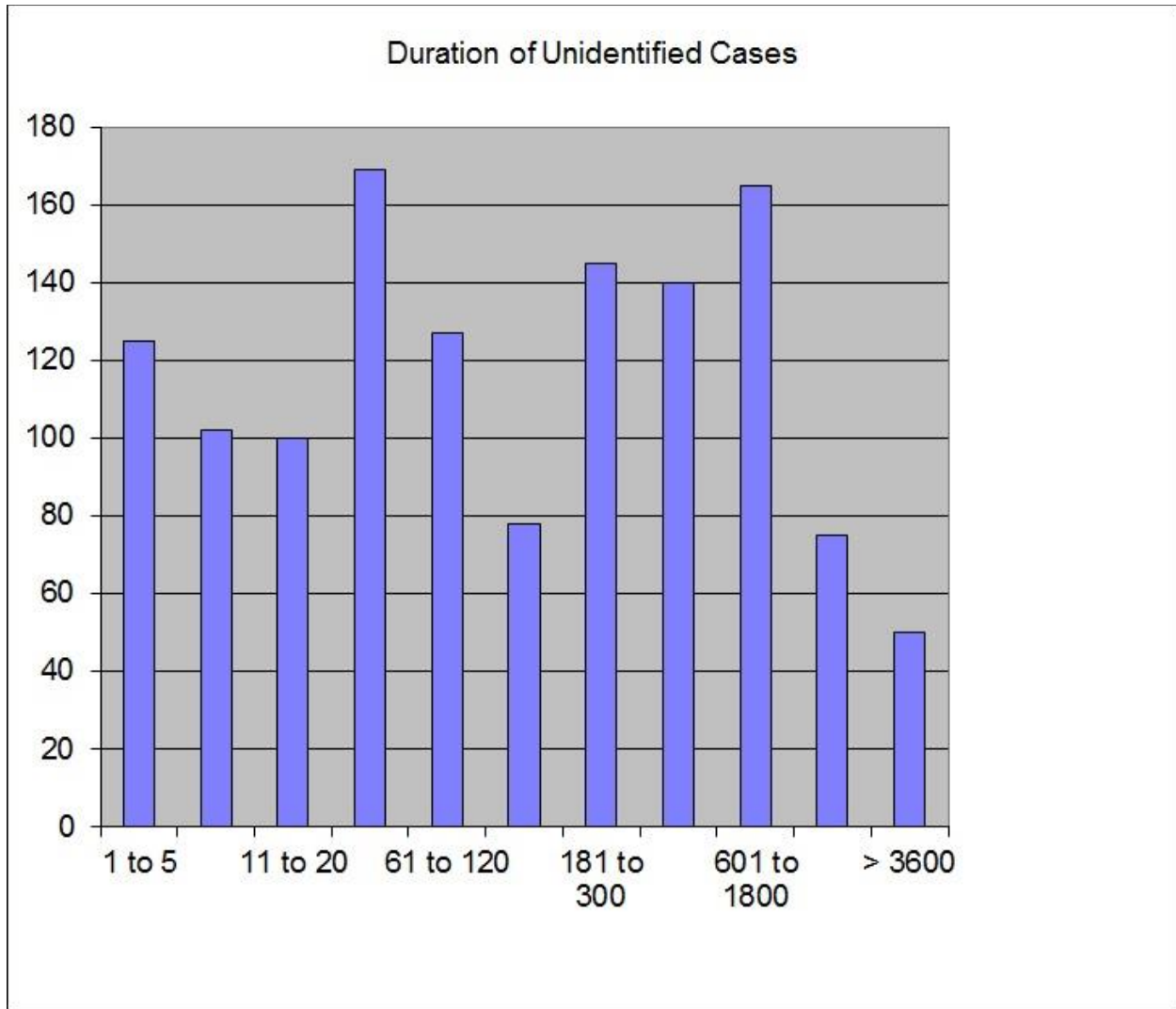
Hendry describes Duration data this way:

Duration is a powerful feature of identity when it refers to extremely short and long events, but is otherwise mostly a reflection of the witness's behaviour during the event, coupled with the fluctuating behaviour of the objects watched. (1979, p. 249)

Extremely short duration events are usually fireballs or bolides, while very long duration events of an hour or more are very probably astronomical objects. In between, there can be no way to distinguish conventional objects from UFOs solely with Duration data. (Hendry also cites a Canadian study by an Ontario UFO group which timed aircraft observations and found that the

duration of such sightings varied between 15 seconds to more than 8 minutes.) There does not seem to be a clear relationship between the number of reports and the Duration of UFO sightings.





Results from Data Mining: Source

UFO data used in this study were supplied by or obtained through dozens of different groups, organizations, official agencies and private individuals. Many of these groups and individuals have ceased investigation or collection of UFO sightings. Since the annual surveys began in the late 1980s, more and more cases have been obtained and received via the Internet.

Of all the cases collected for the study during the past 25 years, a total of one quarter (25 per cent) came through a combination (alliance) of Sightings.com and the former Houston, BC, Centre for UFOs (HBCCUFO). The two had a total of about 32 per cent in 2010 and 35 per cent in 2011, but up to 45 per cent in 2012 and down to 24 per cent in 2013. The decline in 2013 was due to HBCCUFO scaling down its activity and has announced it will be ceasing operation.

13.60 per cent came from the private and non-profit National UFO Reporting Center (NUFORC) in the USA. NUFORC has a toll-free telephone number for reporting UFOs and a large sightings list created through voluntary submission of online report forms by witnesses.

About 11.54 per cent of Canadian cases were reported to the large organization, the Mutual UFO Network (MUFON), which has a good online reporting system.

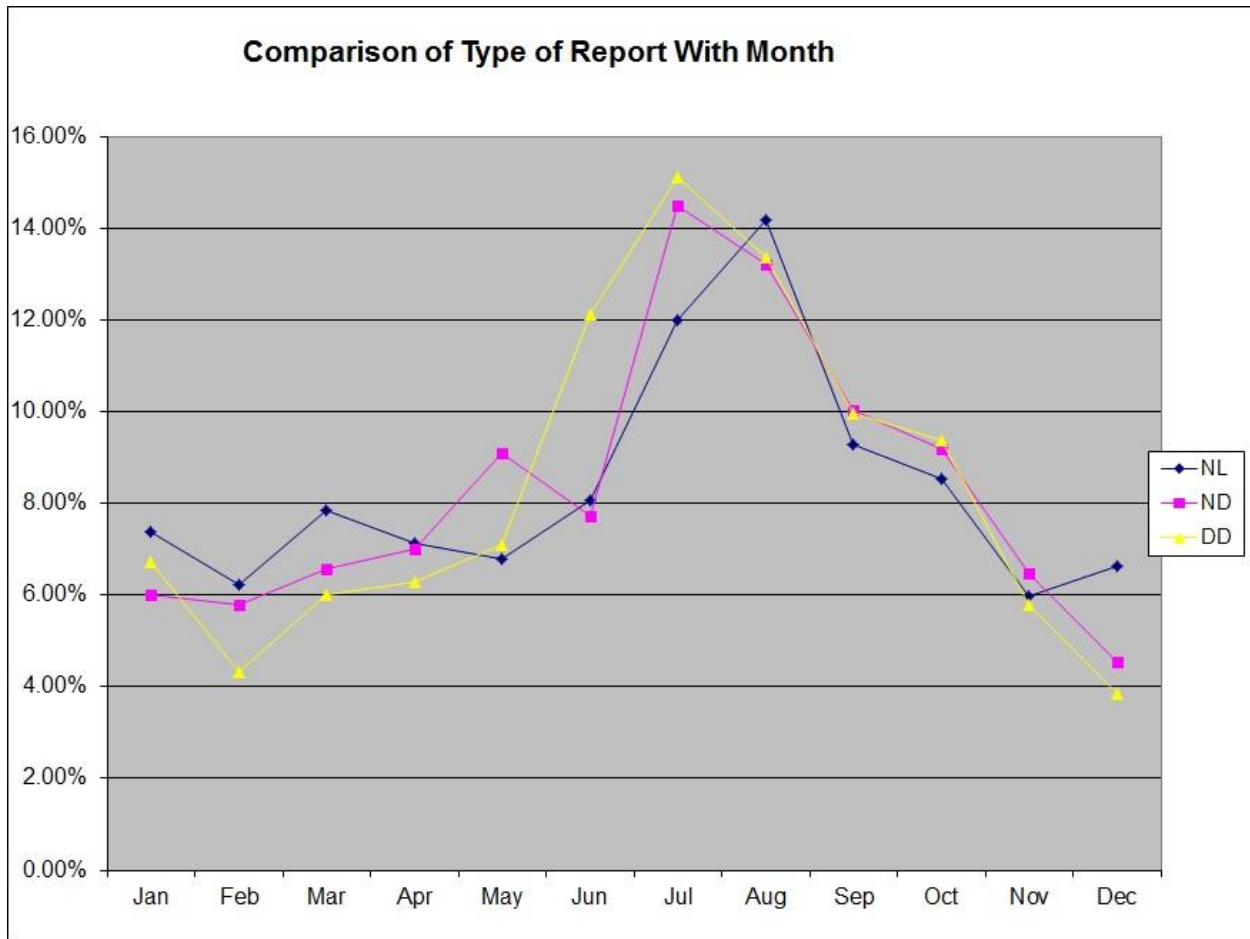
About 6.18 per cent of all UFO sightings reported in were communicated directly to Ufology Research or the former Ufology Research of Manitoba.

A significant 5.83 per cent of all cases came as a result of information obtained through sources considered “government” or “official,” including Transport Canada, the Department of National Defence, the National Research Council of Canada and the Royal Canadian Mounted Police.

It should be noted that the preparation of annual Surveys is quite challenging. Few UFO investigators or researchers actually submit case data to Ufology Research, requiring considerable searching of online sources. And, although many sites post information about UFO sightings, very little actual UFO investigation is being conducted. In fact, it could be said that the science of UFO investigation has nearly become extinct. This does not bode well for an area of study that is under constant criticism by debunkers wishing to prove the unscientific nature of the subject.

Results of Data Mining: Type Versus Month

Daylight Discs were most common in the Summer months of June, July and August (40.71 per cent). Nocturnal Lights were much more evenly distributed throughout the year.



Results of Data Mining: Shape

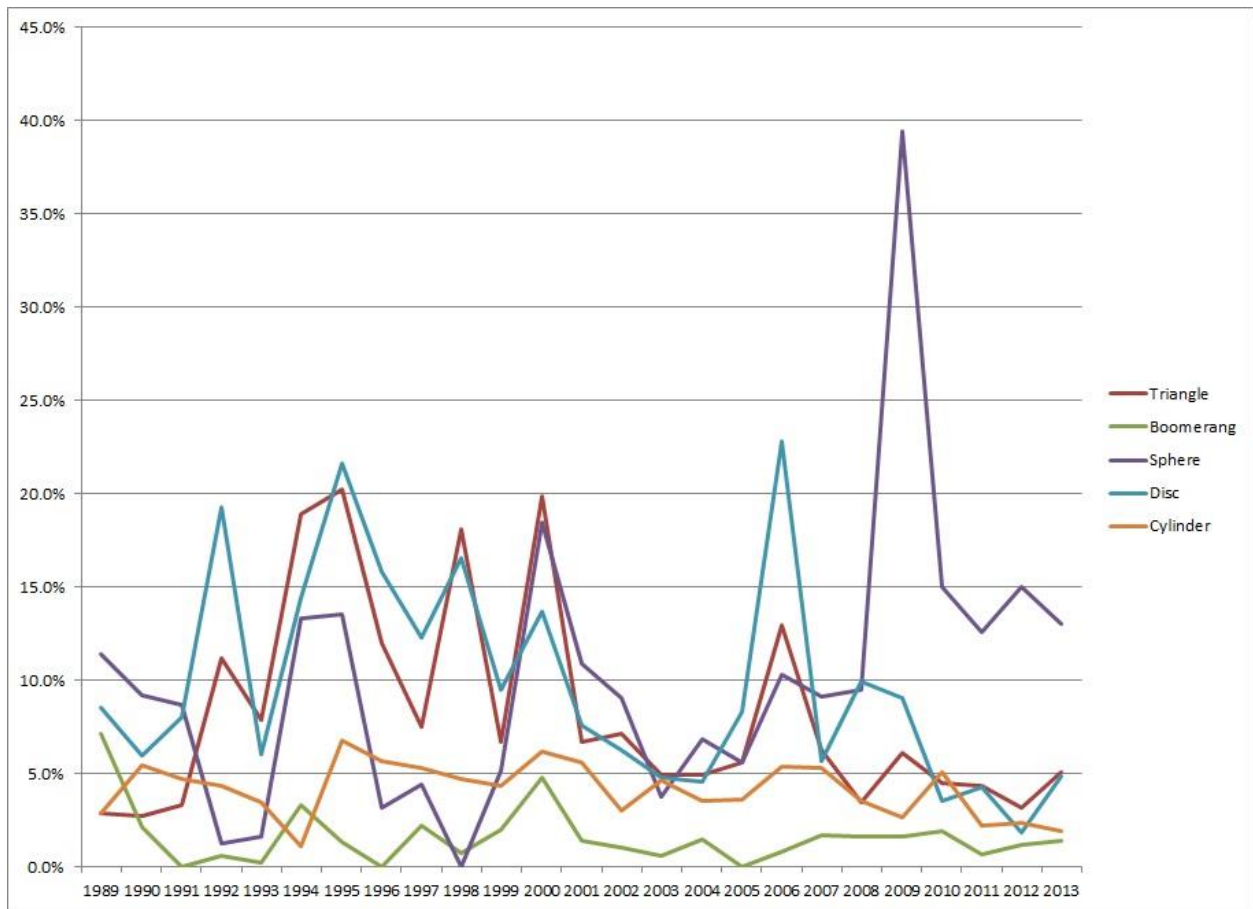
For the purposes of the 25-year study, reported UFOs were grouped into eight basic shapes:

- Triangles (including V's)
- Boomerangs (including crescents, U's and wedges)
- Spheres (including balls and orbs)
- Discs (including circles, donuts, rings, round and saucers)
- Cylinders (including bars, barrels, bullets, capsules, cigars and pencils)
- Fireballs
- Point Sources
- Other (including things like hexagons, swords, boxcars, winged craft, etc.)

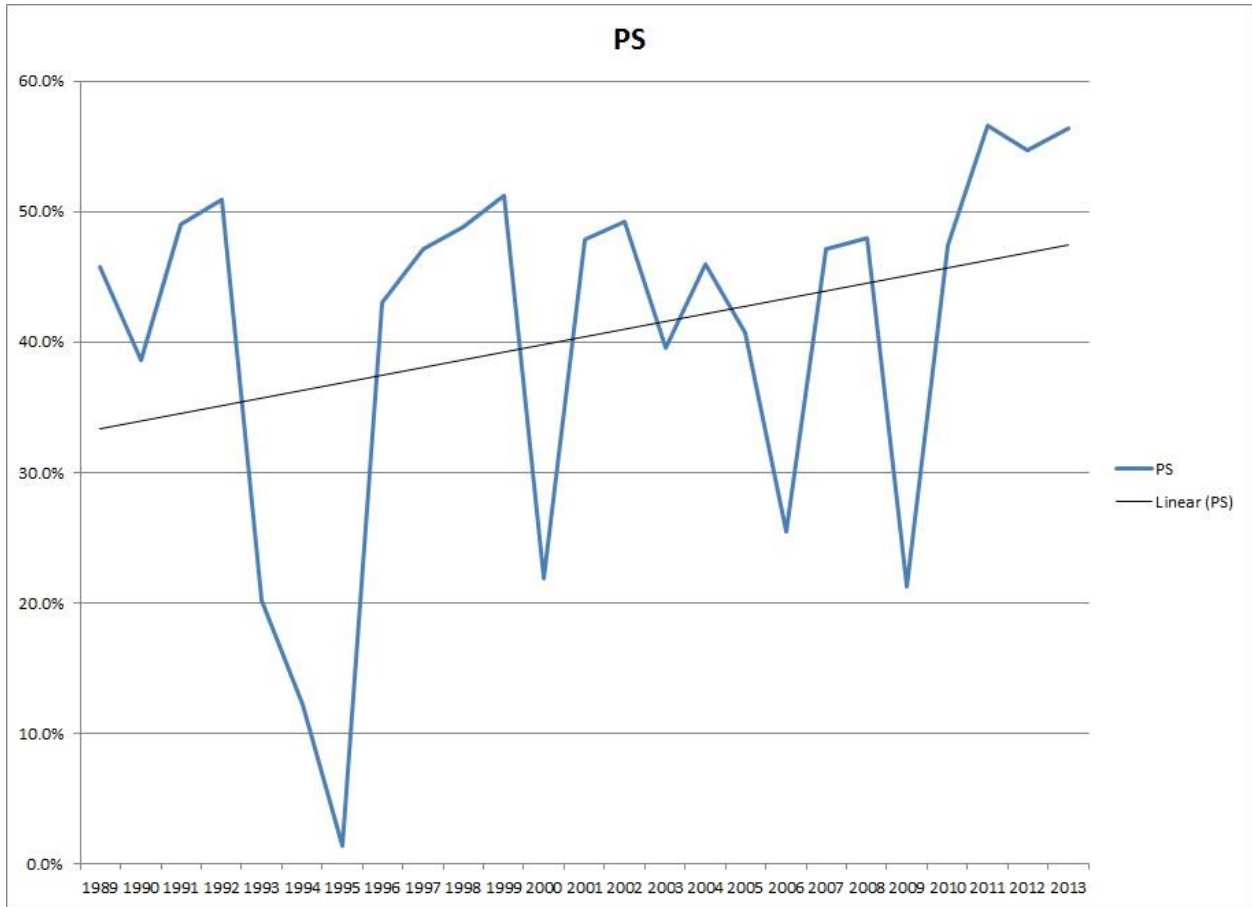
The shape of a perceived object depends on many factors such as the witness' own visual acuity, the angle of viewing, the distance of viewing and the witness' own biases and descriptive abilities. Nevertheless, in combination with other case data such as duration, shape can be a good clue towards a UFO's possible explanation.

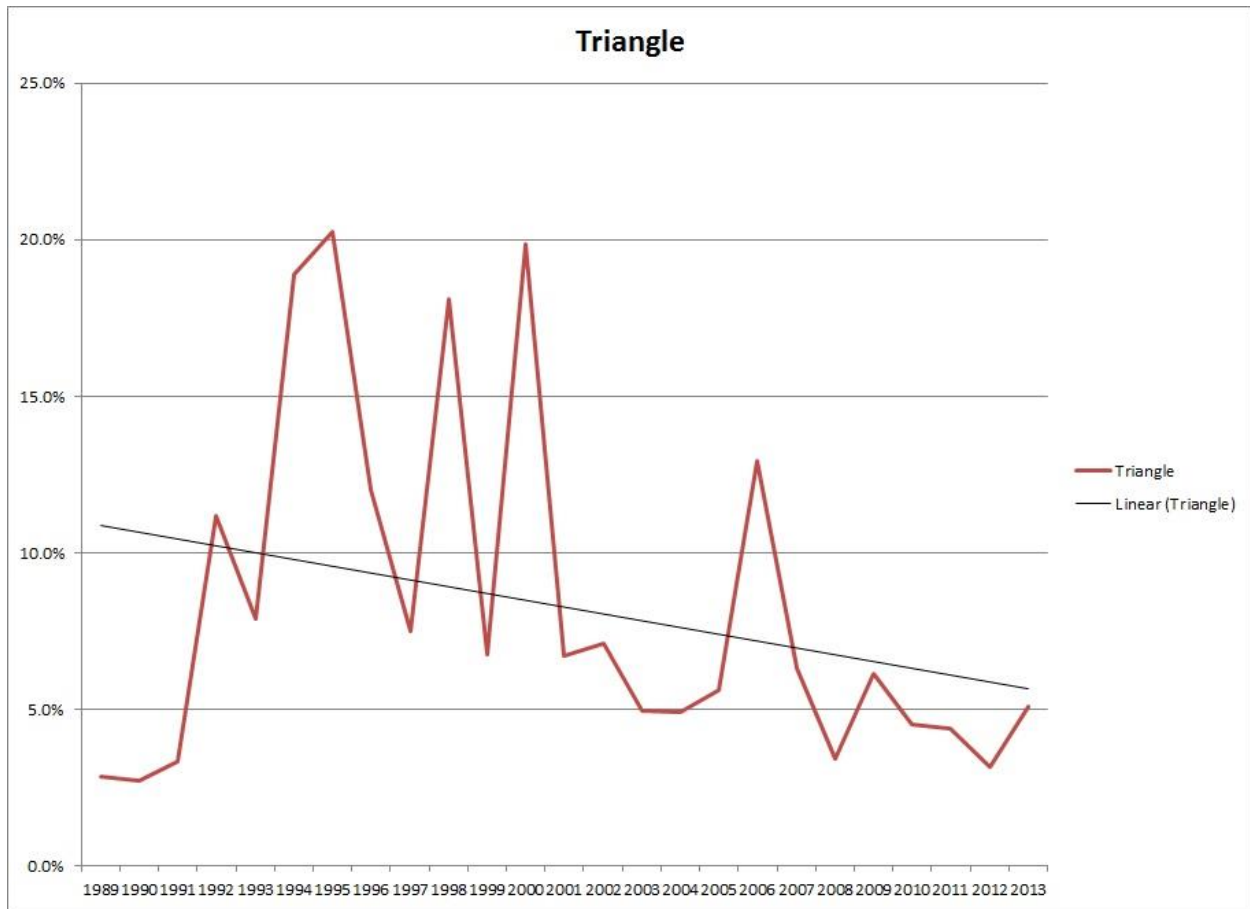
Witnesses' descriptions of the shapes of UFOs vary greatly. In 2013, about 54 per cent were of "point sources"—that is, "starlike" objects or distant lights, about the same as previous years. The classic "flying saucer" or disc-shaped object comprised only around five per cent of all UFO reports in 2013, contrary to popular opinion. Even the "triangle" shape, which some ufologists have suggested has supplanted the classic "saucer," was only five percent of the total in 2013.

While there was no definitive proof of this, there seemed to be a general decline in number of reports of triangles and discs over the past 25 years. There was no particular turning point where this occurred, and there certainly were years where there were exceptions. With triangles for example, their numbers almost alternate from one year to the next: one year the numbers are up, the next down, then back up again, then back down. But there seemed to still be an overall downward trend for these particular shapes of UFOs.



25 Years of Canadian UFO Reports





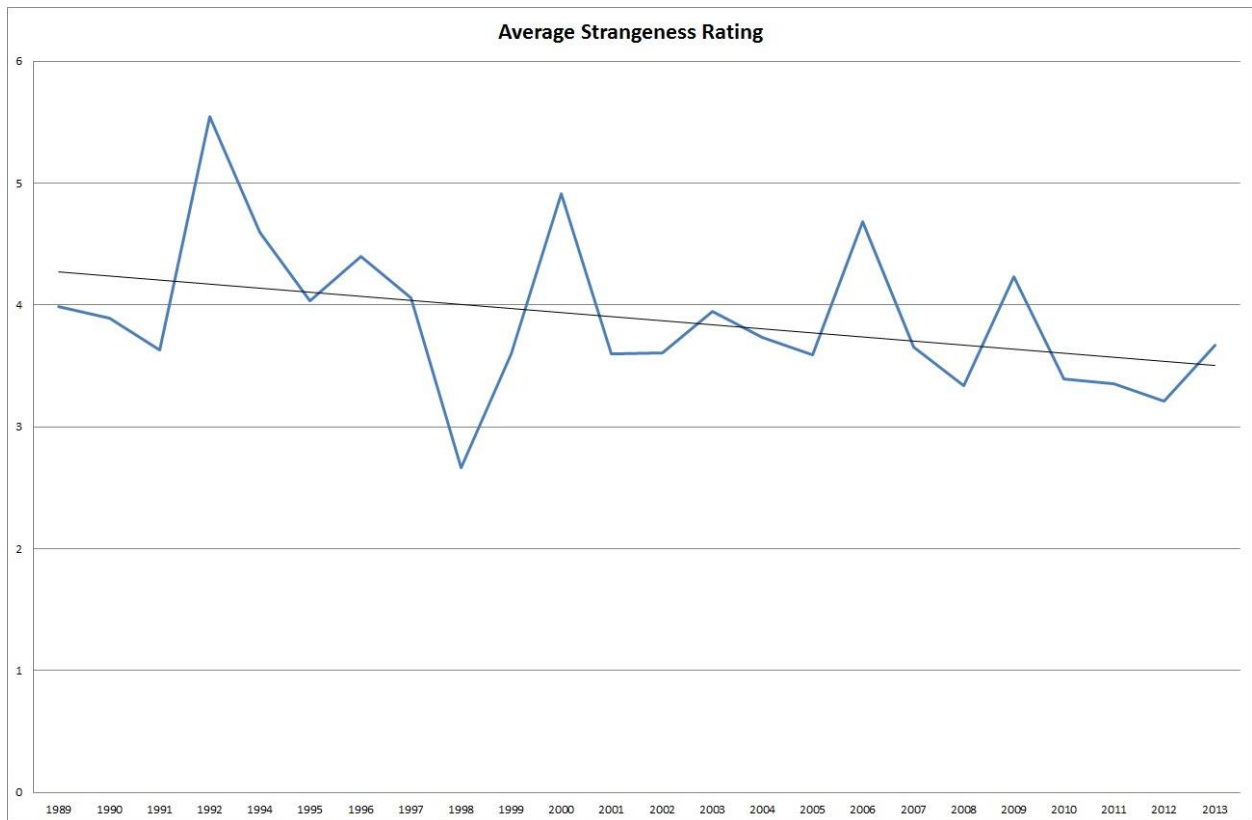
Results of Data Mining: Strangeness

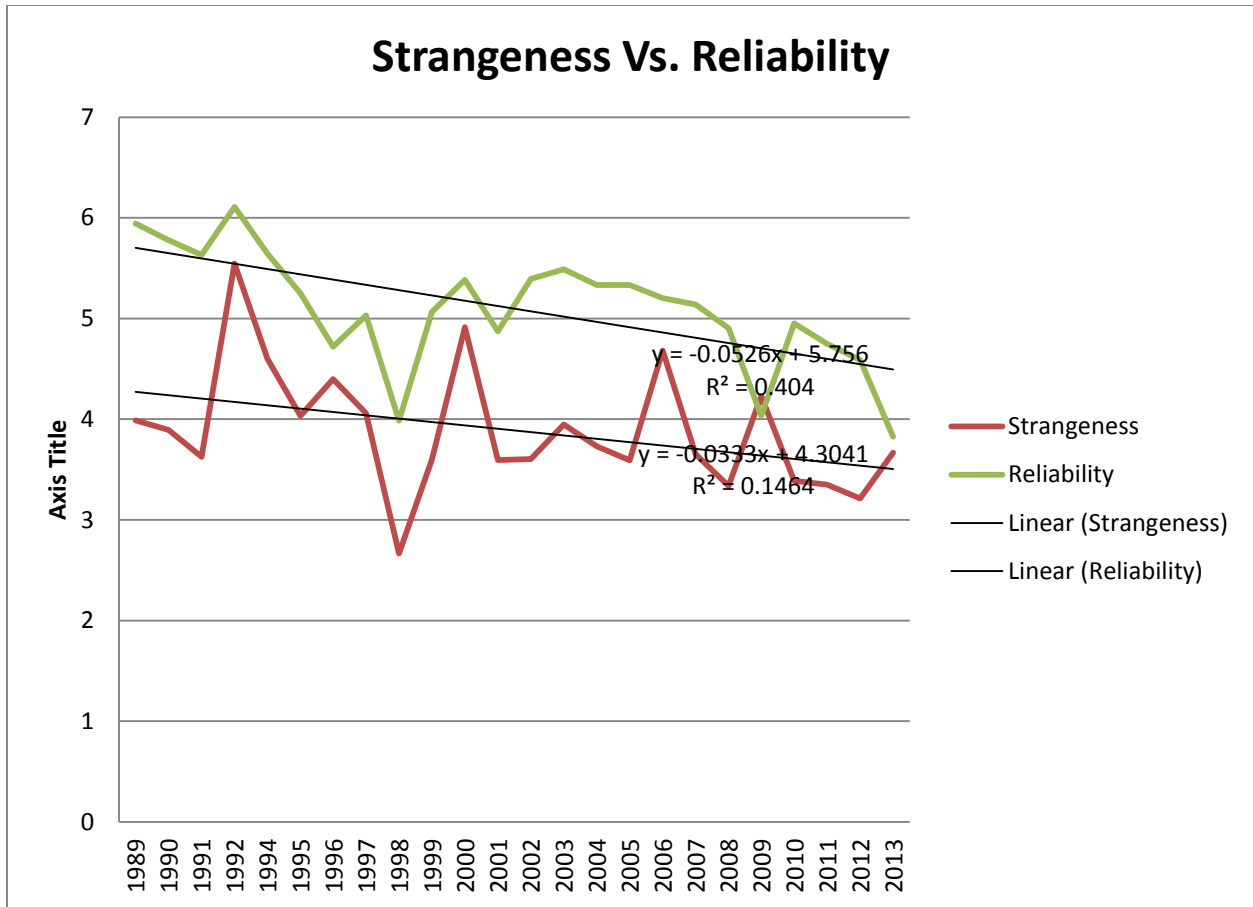
The assigning of a Strangeness rating to a UFO report is based on a classification adopted by researchers who noted that the inclusion of a subjective evaluation of the degree to which a particular case is *in itself* unusual might yield some insight into the sighting. For example, the observation of a single, stationary, starlike light in the sky, seen for several hours, is not particularly unusual and might likely have a prosaic explanation such as that of a star or planet. On the other hand, a detailed observation of a saucer-shaped object which glides slowly away from a witness after an encounter with grey-skinned aliens would be considered highly strange.

The numbers of UFO reports according to strangeness rating show an inverse relationship such that the higher the strangeness rating, the fewer reports. The one exception to this relationship occurs in the case of very low strangeness cases, which are relatively few in number compared to those of moderate strangeness. It is suggested this is the case because in order for an observation to be considered a UFO, it must usually rise above an *ad hoc* level of strangeness, otherwise it would not be considered strange at all.

Using a scale of 1 to 9, in which 1 is not very unusual at all and 9 is outstanding and bizarre, most UFO reports have a Strangeness below 5, meaning that most cases are of a relatively prosaic nature. Each year, cases rated 7 or higher, combined with a high Reliability, are considered as High Quality Unknowns.

During the past 25 years of the Canadian UFO Surveys, the average Strangeness rating has decreased slightly, from about 4.25 to about 3.5. This is possibly due to the decrease in the number of Close Encounter cases and an increase in the number of sightings which are simply lights in the sky, with often simple explanations.





Results of Data Mining: Conclusions

The breakdown by Evaluation (or Conclusion) for the entire set of cases yielded results similar to those of individual years during the last three decades. There were four operative categories: Explained, Insufficient Information, Possible or Probable Explanation, and Unknown (or Unexplained). It is important to note that a classification of Unknown does not imply that an alien spacecraft or mysterious natural phenomenon was observed; no such interpretation can be made with certainty, based solely on the given data (though the probability of this scenario is technically never zero).

In most cases, an Evaluation was made subjectively by both the contributing investigators and the survey data handlers and analysts. The category of Unknown was adopted if the contributed data or case report contained enough information such that a conventional explanation could not be satisfactorily proposed. This does not mean that the case will never be explained, but only that a viable explanation was not immediately obvious.

Since 1989, the average proportion of Unknowns has been about 13 per cent per year. In the 25-year analysis, this was 12.63 per cent. This is a relatively high figure, implying that almost one in six UFOs cannot be explained. However, there are several factors which affect this value. The level and quality of UFO report investigation varies because there are no explicit and rigorous standards for UFO investigation. Investigators who are “believers” might be inclined to consider most UFO sightings as mysterious, whereas those with more of a skeptical predisposition might tend to subconsciously (or consciously) reduce the Unknowns in their files.

This inherent bias in UFO investigators’ evaluation of UFO cases was more significant during the early years of the Canadian UFO Survey. It was known that some UFO groups and investigators were reluctant to provide UFO report information for parochial reasons, so allowances were made in years such as 1991 and 1992 for limited data to be accepted for the annual surveys. Because it was made clear that the witnesses’ details and contact information were not required by UFOROM for the annual surveys, some contributors of UFO data chose to code the cases themselves and send lists of reports. Unfortunately, this led to some contributors greatly exaggerating the levels of strangeness and reliability of their reports, skewing a small quantity of data in the early years. However, this was avoided in later years by having UFOROM researchers re-evaluate cases contributed for the annual studies, setting uniform baselines for criteria in all categories.

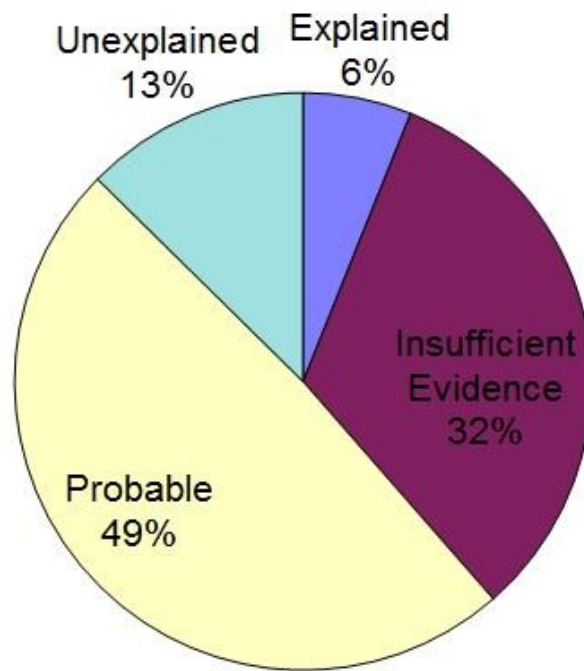
During the first few years of the annual surveys, an evaluation of Explained was almost nonexistent. At first, contributors tended to ignore UFO sightings that had a simple explanation and sometimes deleted them as actual UFO data. Hence, the only UFO reports submitted by some contributors tended to be high-strangeness cases.

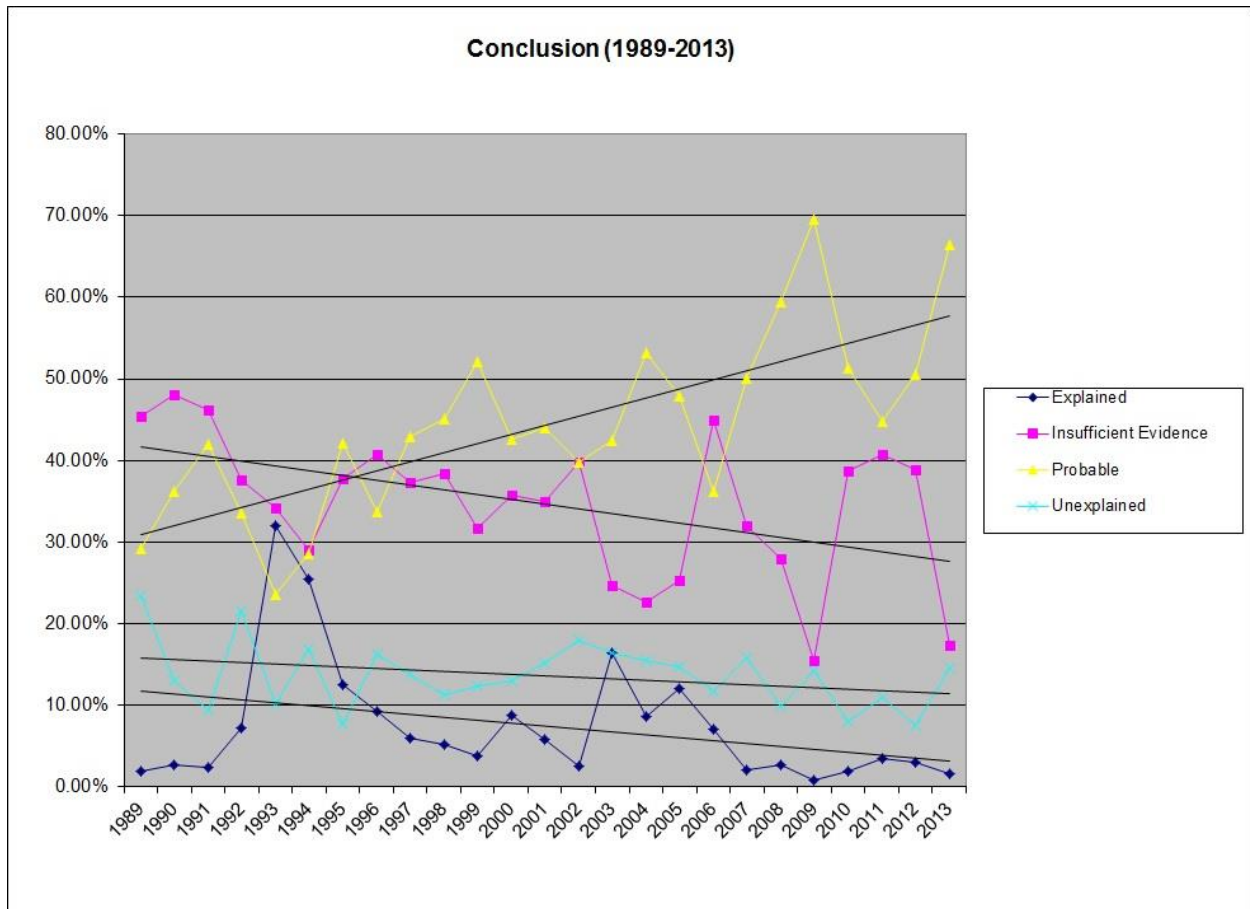
Once this was realized, contributors were then encouraged to submit data on all UFO reports they received, so that a more uniform assessment and evaluation process could be realized. Because many IFO cases such as fireballs and meteors are initially reported as UFOs, the Explained category was considered necessary for a full review of UFO data. Early American studies of UFO data (such as Projects Grudge, Sign and Blue Book) included such cases, so present-day comparative studies should include such data as well. Furthermore, since there are no absolutes, the subjective nature of assigning Evaluations is actually an interpretation of the facts by individual researchers.

Over the course of the past 25 years, cases with Probable or Possible Explanations have increased in number, drawing the increase from all other categories (Explained, Insufficient Information, and Unexplained), which decreased with time.

(Note: The process of evaluating UFO sightings is ideally complex, involving a series of steps that take into account errors of observation and unpredictable but natural phenomena. Checks with star charts, police, air traffic control operators and meteorologists should be performed. Where possible, witnesses should be interviewed in person and sketches or photographs of the area should be examined. The intent of UFO investigation is to eliminate as many conventional explanations as possible before allowing an evaluation or conclusion.)

Breakdown of Total Reports by Conclusion

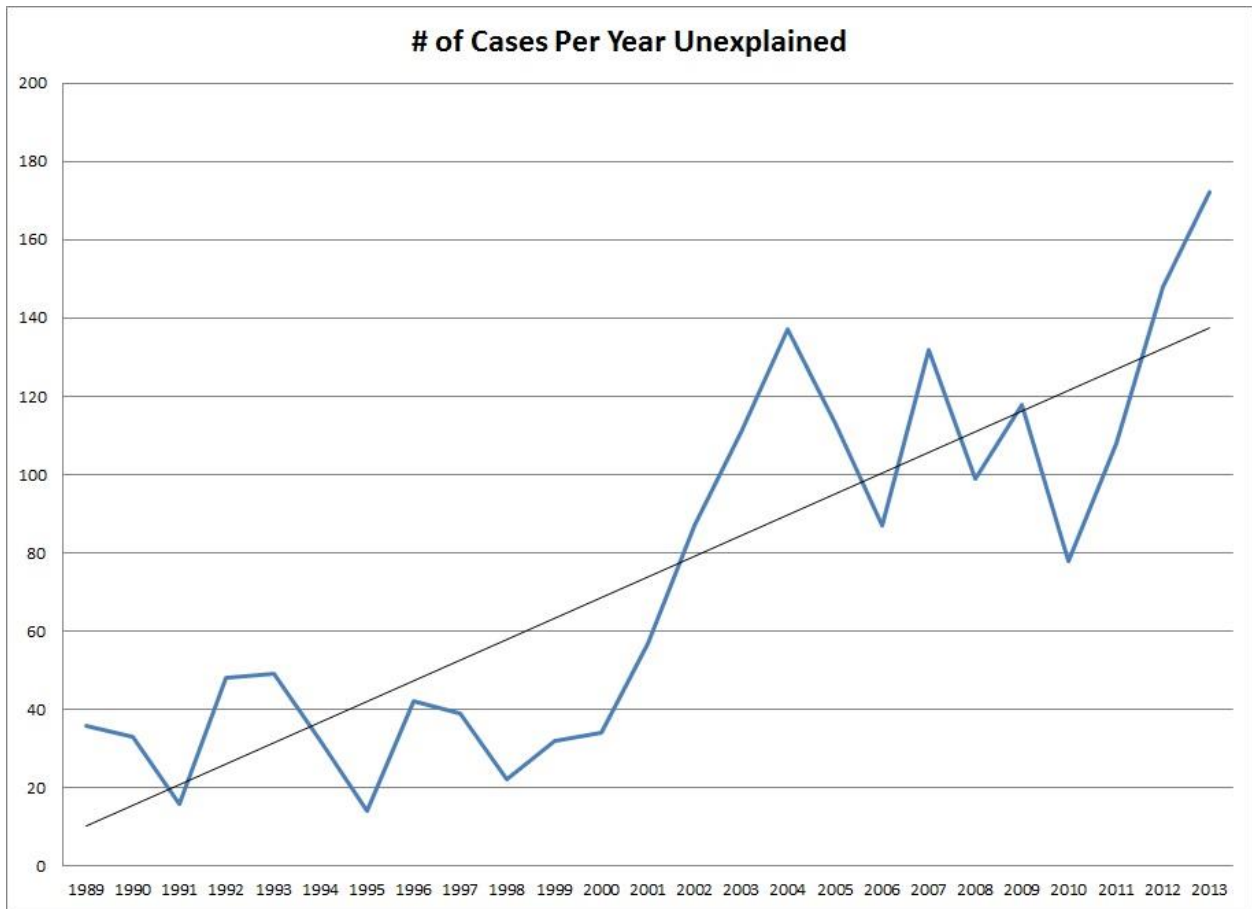


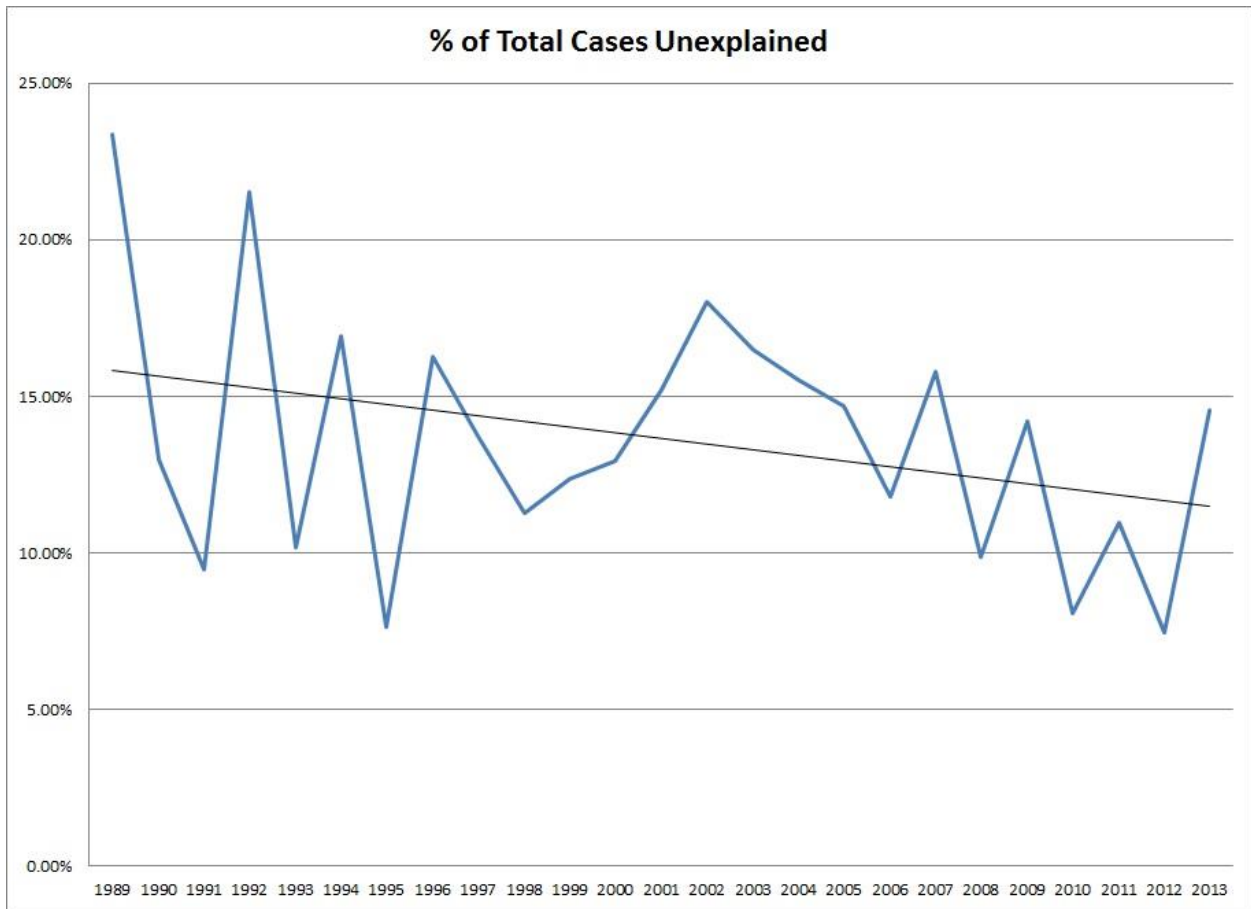


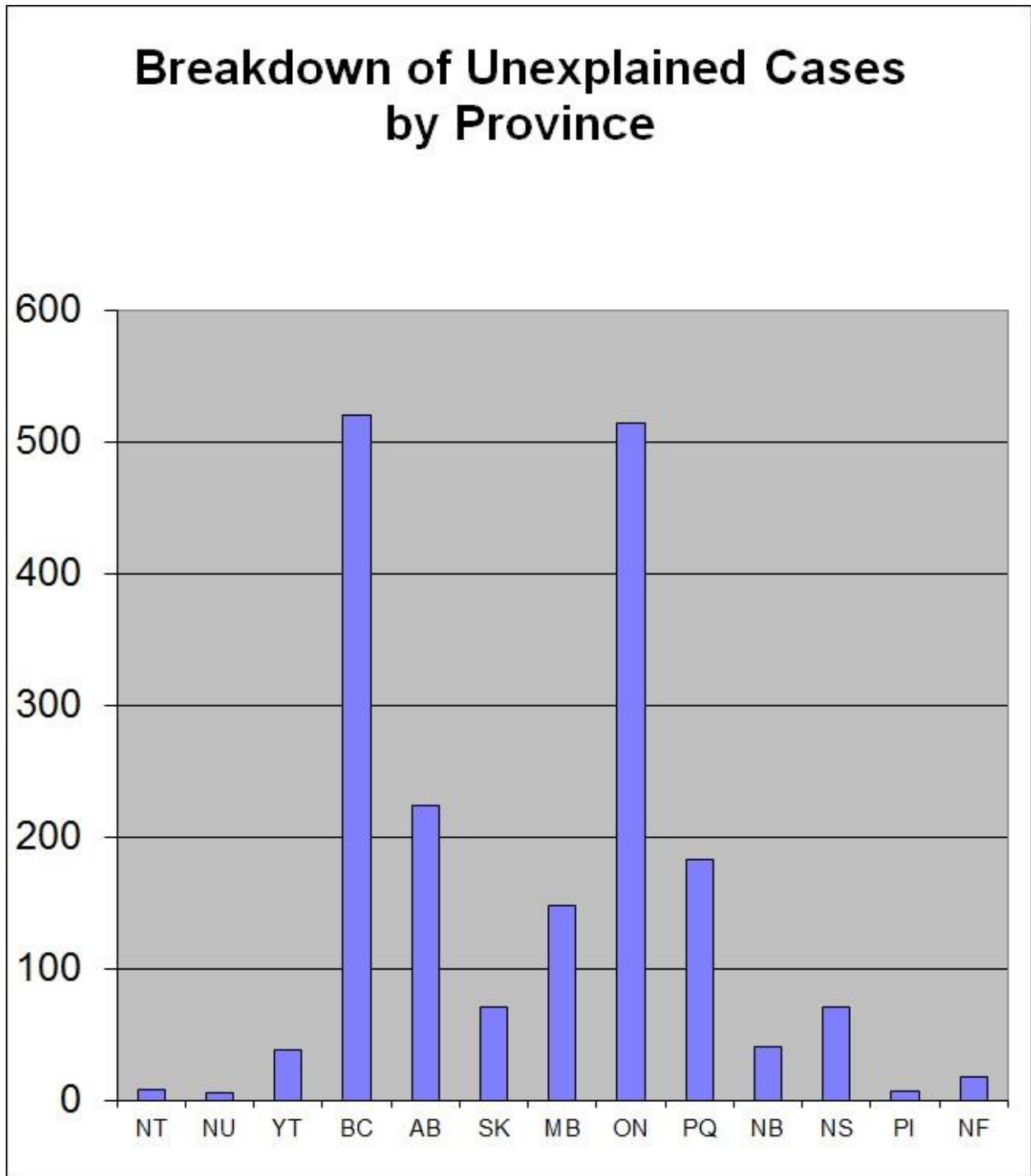
Results of Data Mining: Unknowns

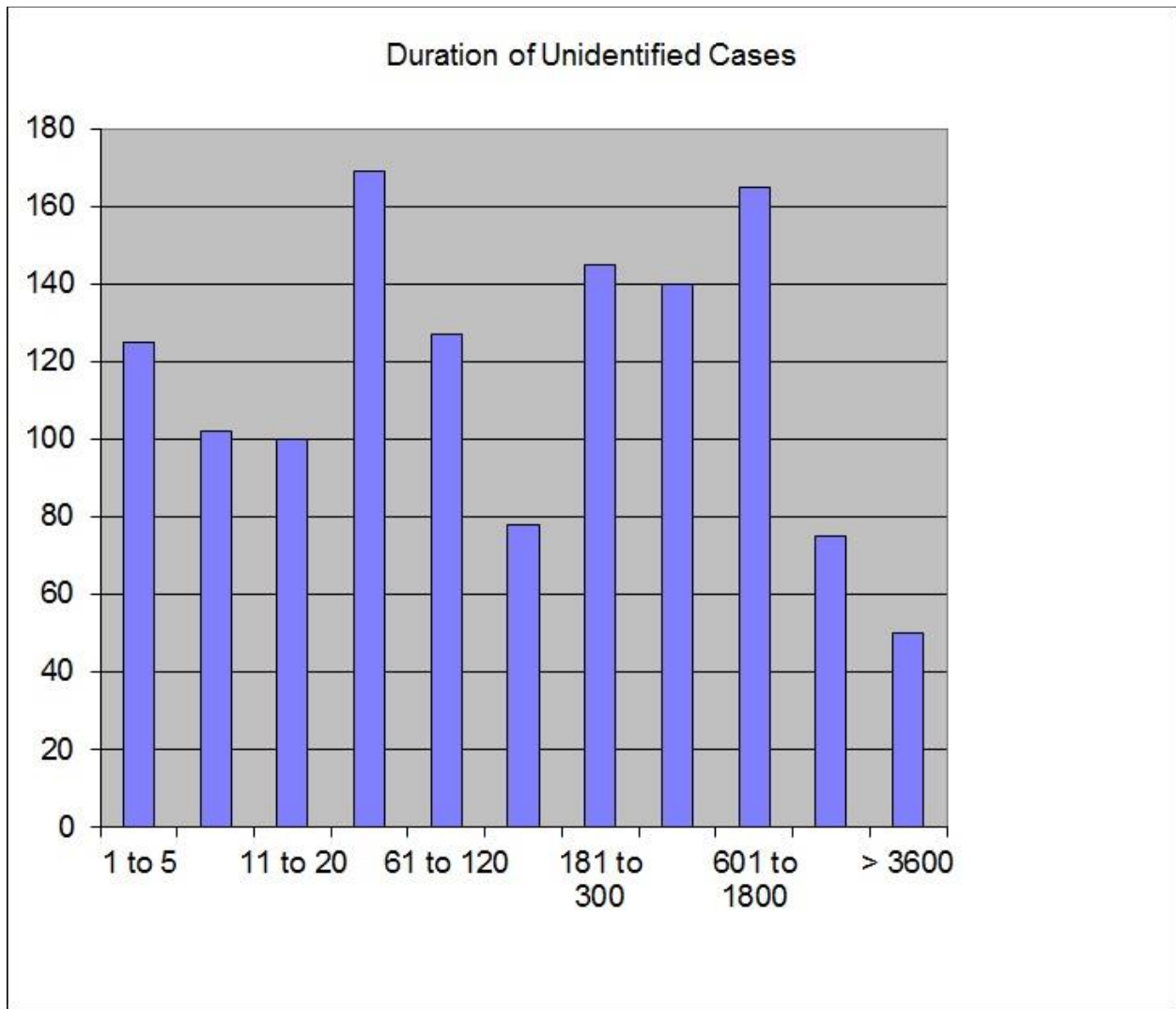
As the number of cases reported each year has increased with time, so has the number of Unknowns. However, the percentage of Unknowns relative to the number of cases each year has decreased with time. This percentage was at an all-time high of 23.38 per cent in 1989, but has been as low as 7.47 per cent in 2012. The average percentage during the past 25 years is 13.65 per cent.

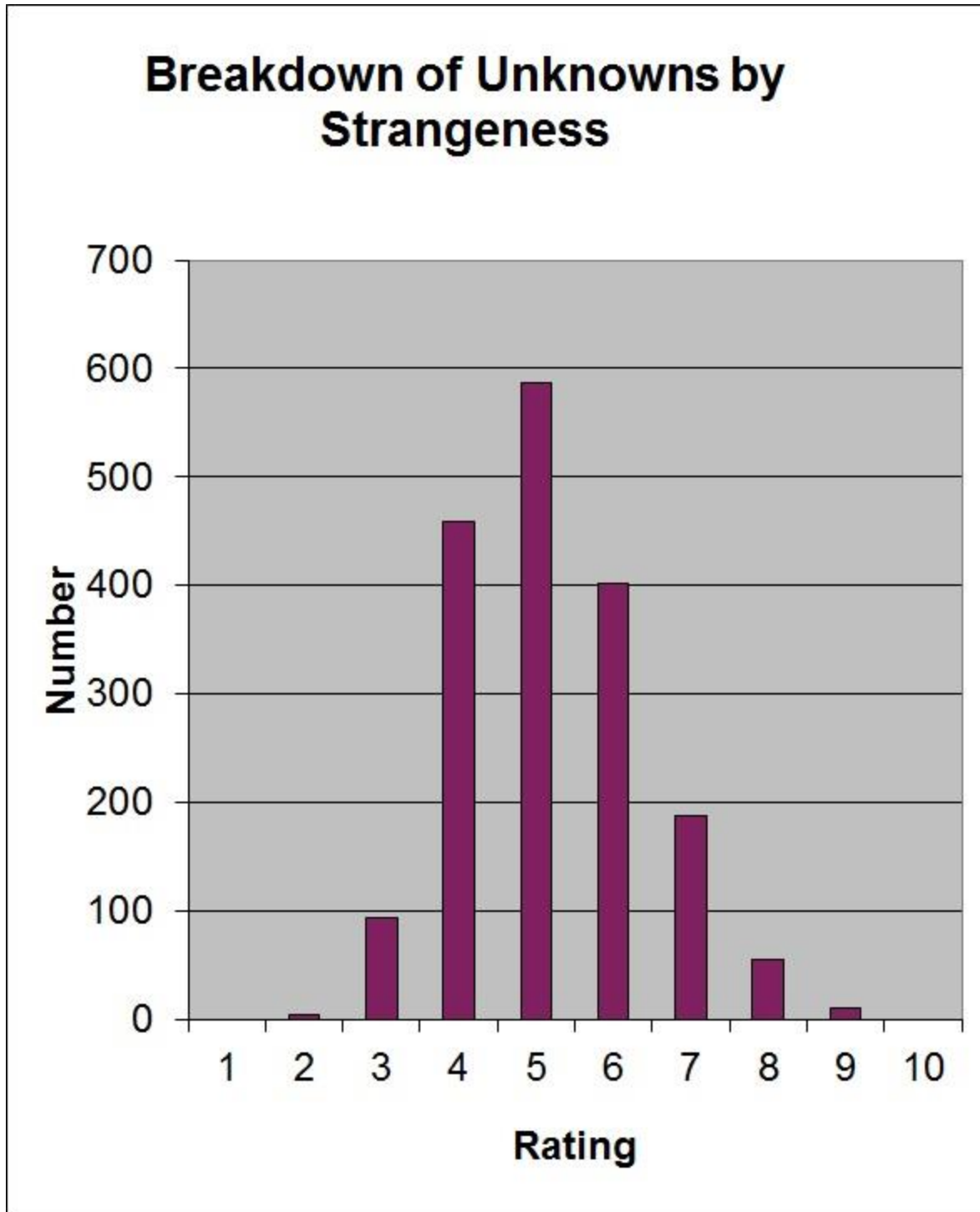
This percentage should not be surprising. It is well-known that most UFO sightings have possible or probable explanations, and there are many cases which are classified as having Insufficient Information. A small percentage is easily and definitively explained. The fact that there is a remainder of unexplained cases is not a proof of alien visitation, but simply that some reports cannot be resolved. An analogy is homicides under criminal investigation. Some remain “on the books” without resolution, not because aliens were the murderers, but because the evidence does not point to a specific culprit or cause with enough authority to make a conviction.

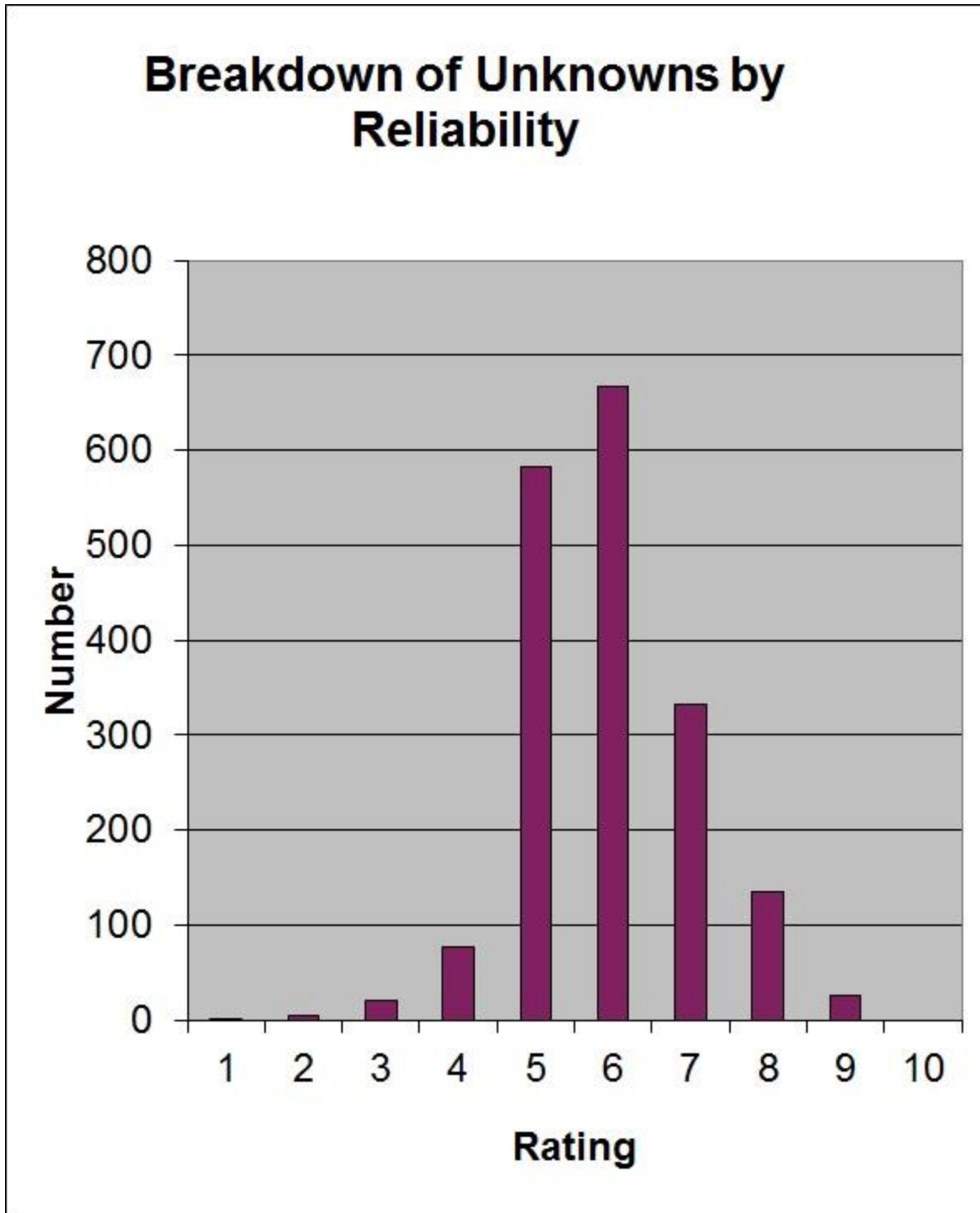


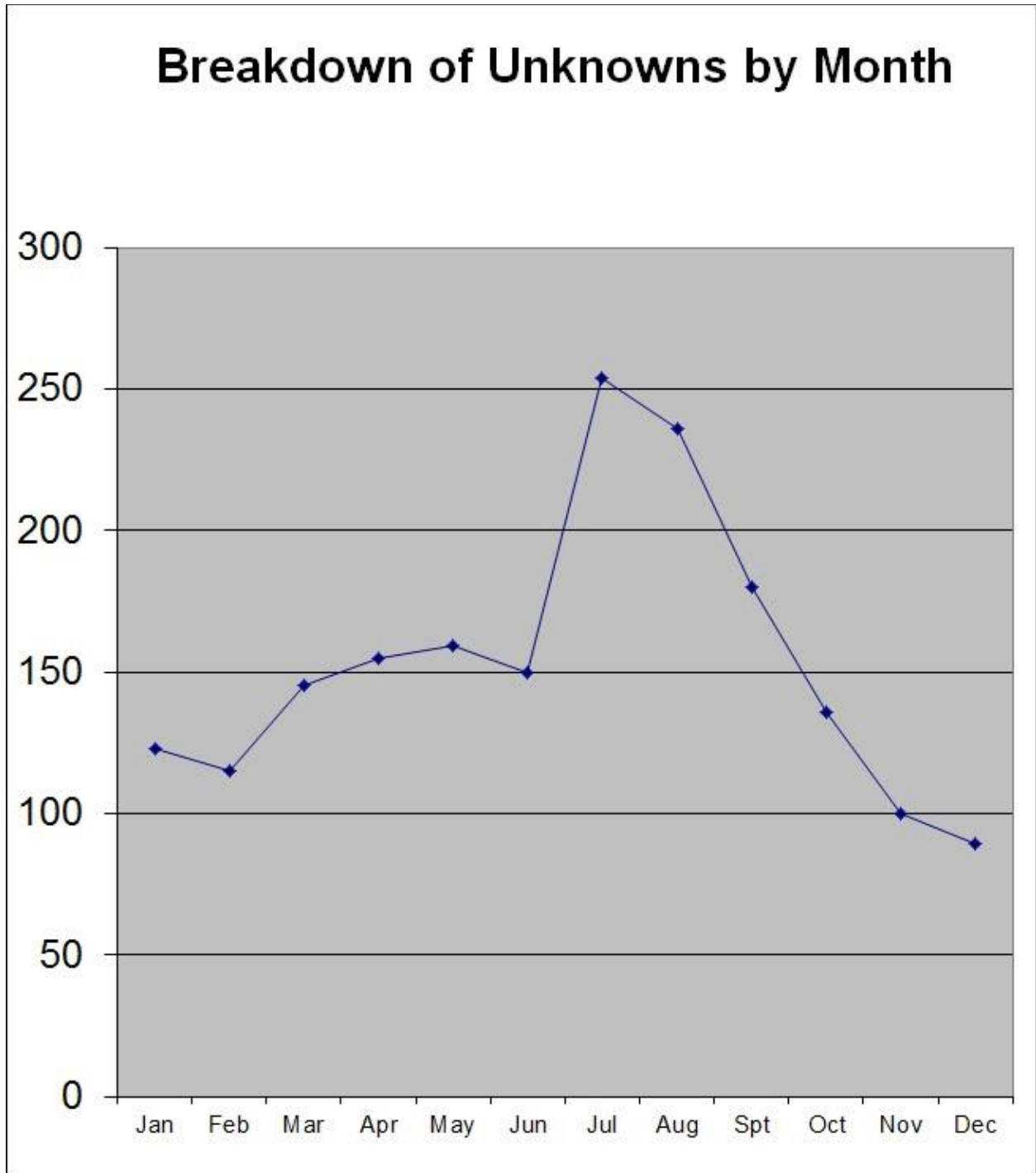


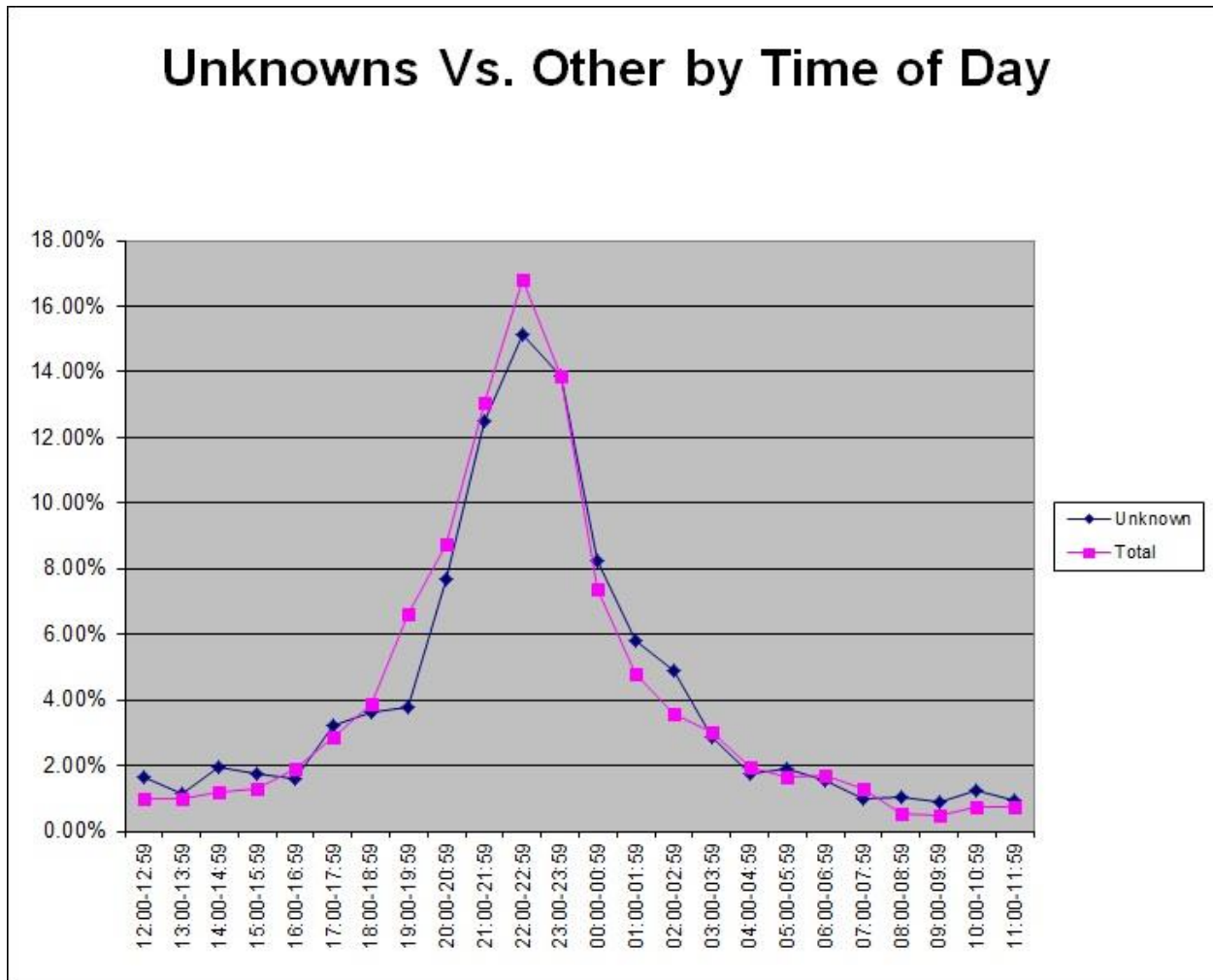












Results of Data Mining: High Quality Unknowns

In contrast to the data on raw Unknowns, the High Quality Unknowns display a different pattern of numbers and percentage over time.

In general, High Quality Unknowns are those cases which are classified as Unknown but are also rated highest in both Strangeness and Reliability. The reasoning behind this is that UFO reports which are highly unusual in nature often do not have credence. For example, hoaxes may be very elaborate and involve bizarre elements, but once investigated will usually have very low credibility. The opposite effect is true of low strangeness cases, where a simple light seen in the sky can be witnessed by dozens of people and have a great amount of support for its observation, but will likely have an explanation.

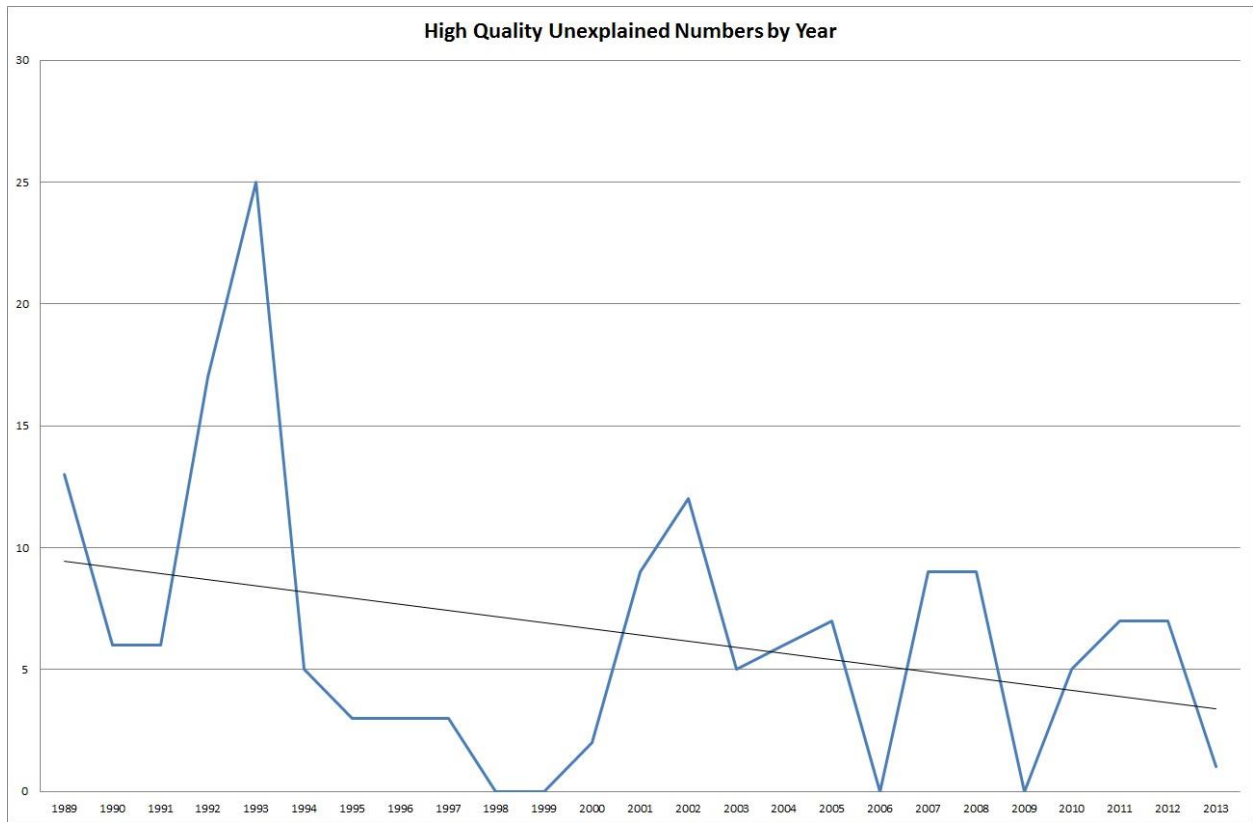
The pairing of Strangeness with Reliability is therefore viewed as a good indication of the quality of a case classified as Unknown.

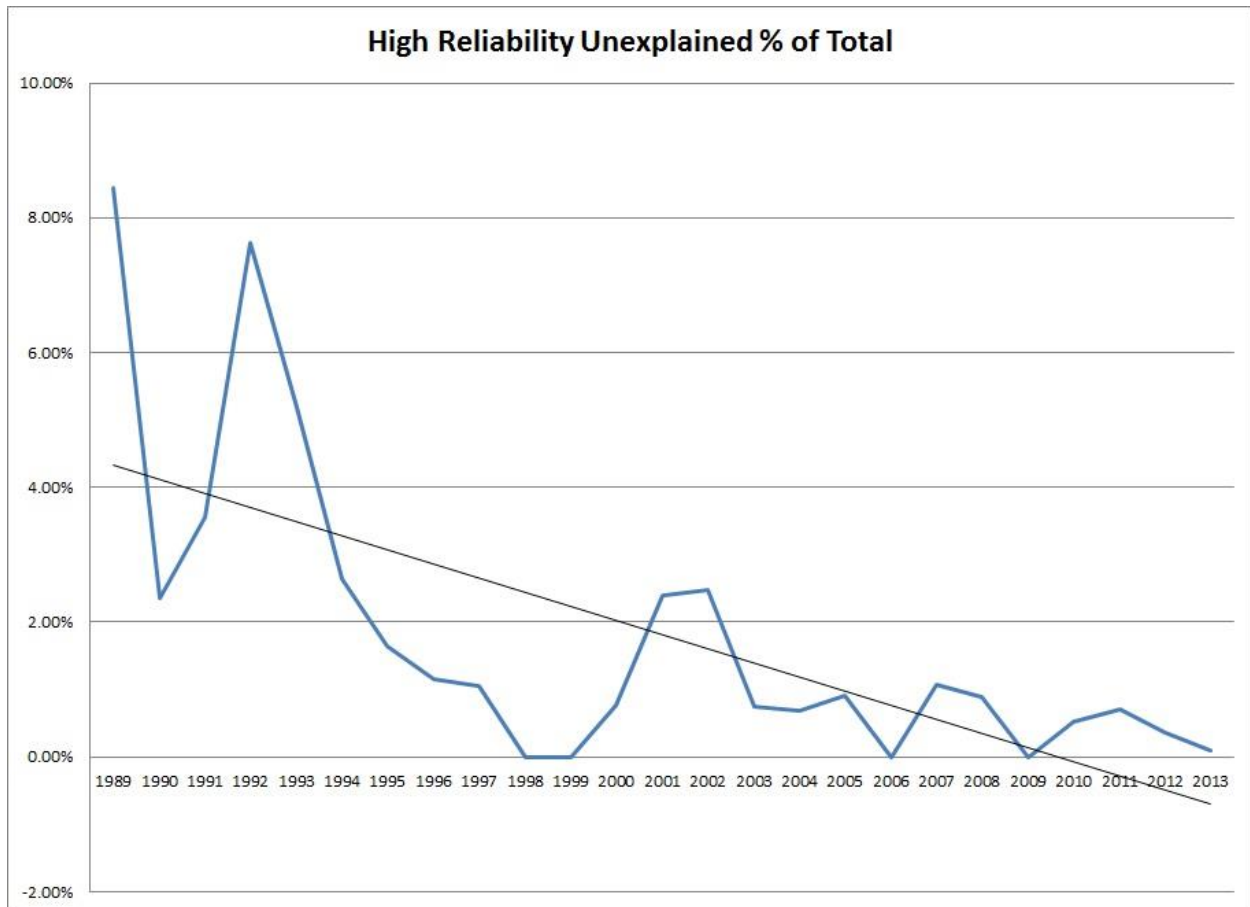
While the number of Unknowns rose with time, the number of High Quality Unknowns has decreased over the past 25 years. The percentage of such cases has also decreased sharply.

The identification of High Quality Unknowns changed slightly during the past 25 years. Initially, the High Quality Unknowns were those cases with a Reliability rating of 8 or greater. This was later adjusted to a Reliability pairing of 6 or greater, depending on the number of cases which were categorized in a particular year. Although the numerical value changed slightly in some year's surveys, the selection of those cases deemed High Quality Unknowns was consistent each year.

Regardless of the variance in selection through the years, the analysis of the 25-year data still shows the expected result: that High Quality Unknowns have, overall, been decreasing in number. Selecting out only those cases with Reliability of 8 or greater, the percentage of cases has dropped from 8.44 per cent in 1989 to less than one per cent in 2013. (There were a total of 160 cases in this subset.)

There are several reasons speculated for this result. First, the number of cases that are well-investigated is decreasing. This means that many cases of potentially High Quality are classified as Insufficient Information and are not in the Unknown category. Second, more witnesses are choosing to report sightings anonymously, whereas in the past investigators would be able to speak with witnesses in most instances. With the addition of the Internet over the course of this study, it has become easier for witnesses to report sightings, so simple Nocturnal Light observations that would not have been reported in the past can now be reported online.

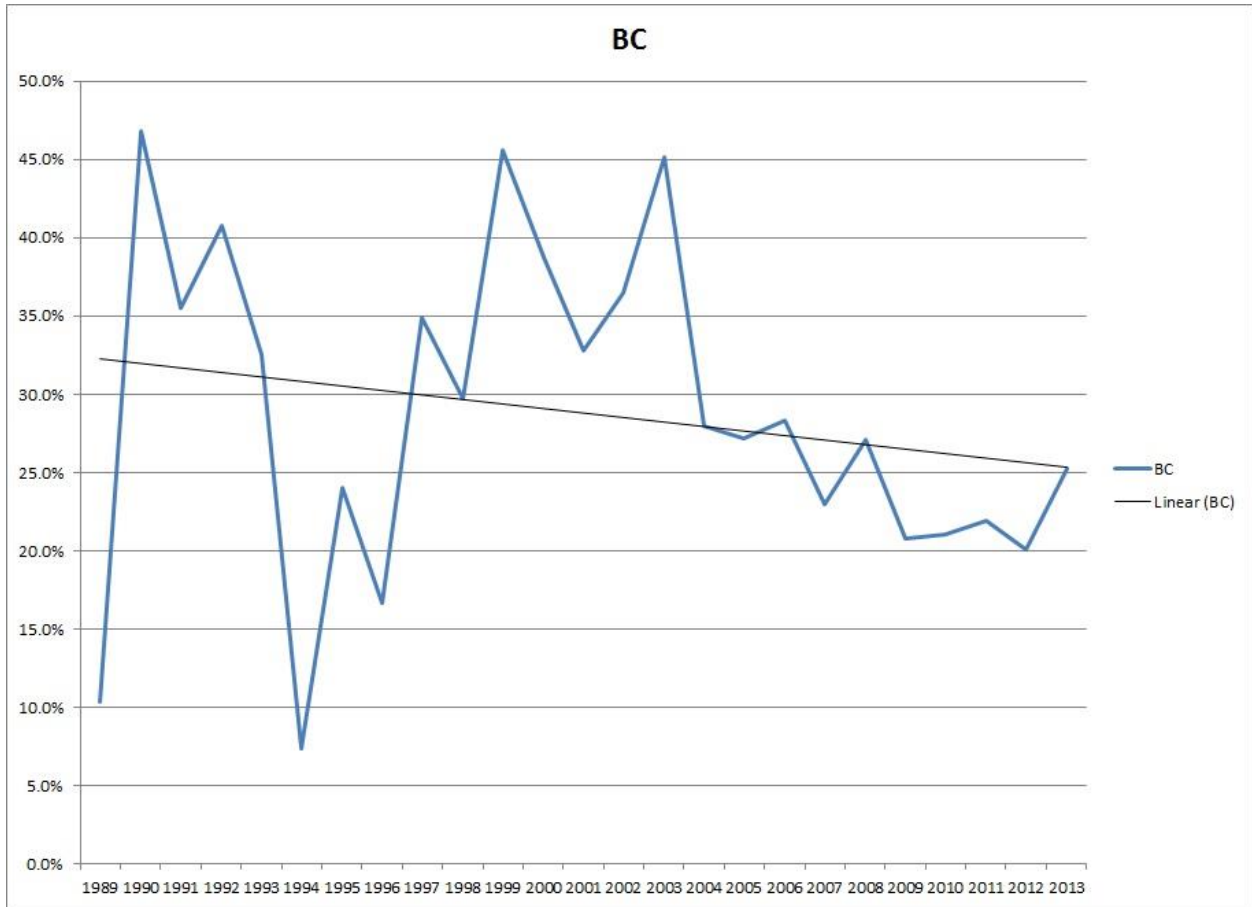




Results of Data Mining: British Columbia

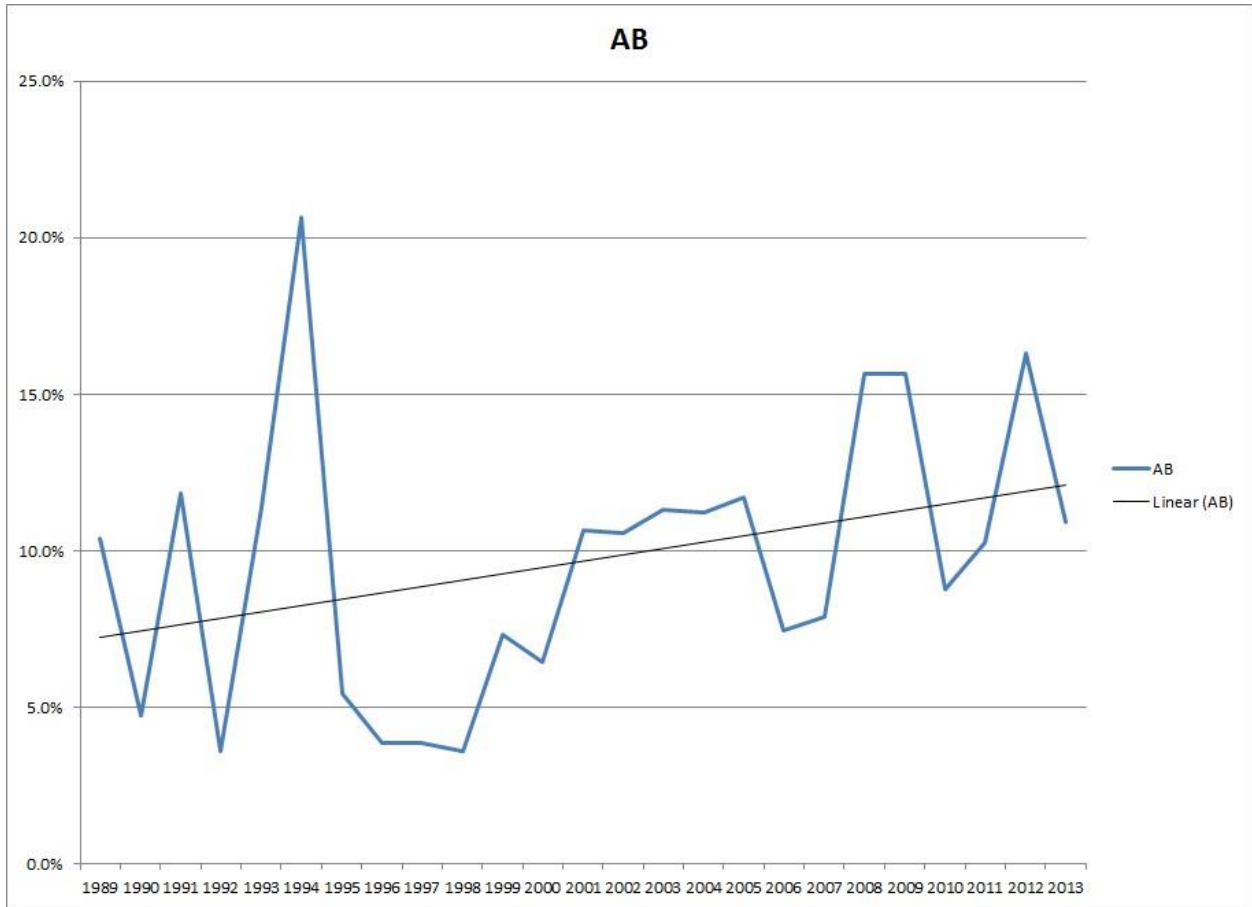
As one of Canada's most populous Provinces, British Columbia has a large percentage of the country's UFO reports. During the study, the percentage of cases ranged from a high of 46.9 per cent in 1990 to a low of only 7.4 per cent in 1994. Overall, the percentage has averaged about 27 per cent.

Certainly one factor in this significant percentage of cases is the local effect caused by BC having several very vocal and public UFO groups and investigators. These have included Michael Strainic, Lorne Goldfader, Brian Vike and Graham Conway, and associated groups UFOBC and HBCCUFO.



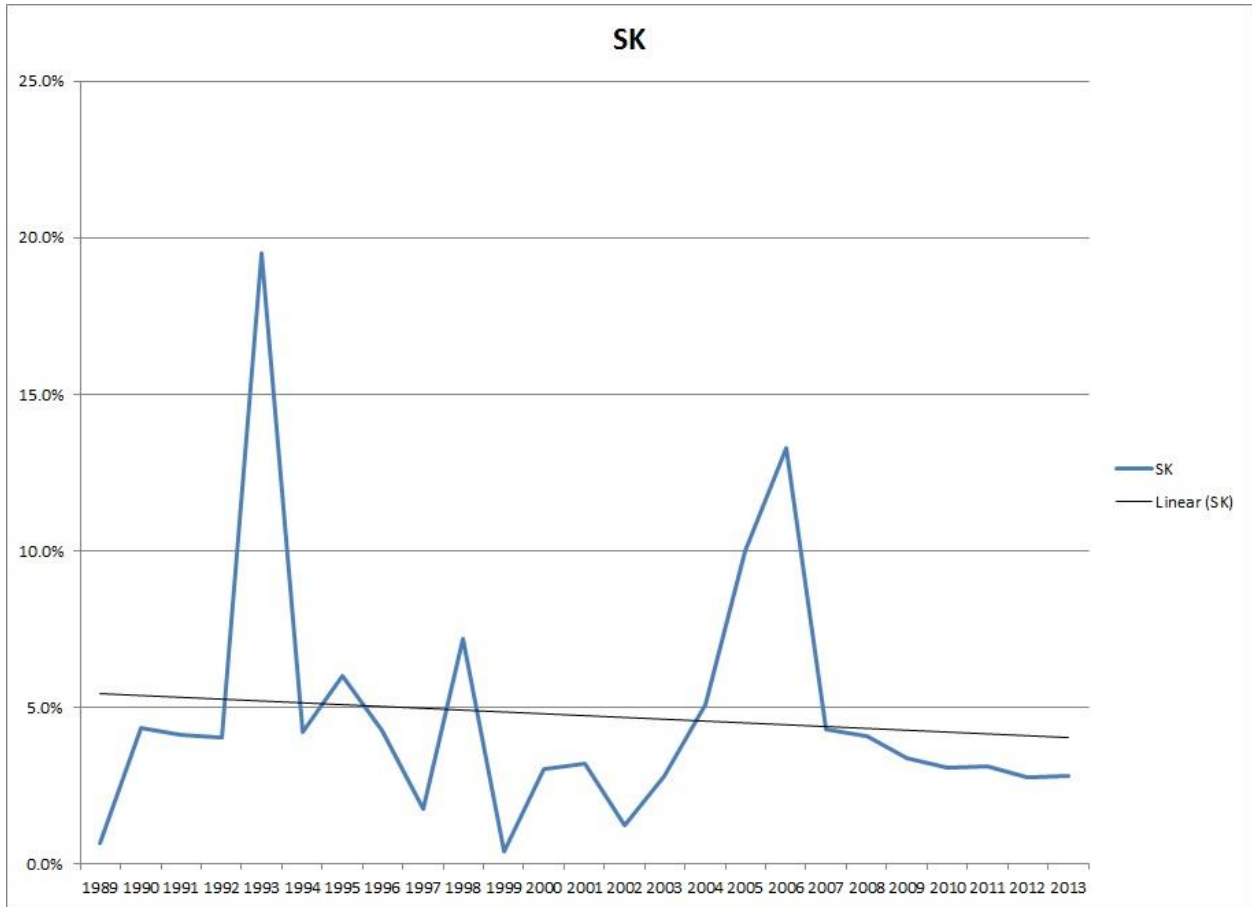
Results of Data Mining: Alberta

Alberta has contributed an average of about 11 per cent of all Canadian UFO reports, ranging from a high of just over 20 per cent in 1994 to a low of less than 4 per cent in 1998.



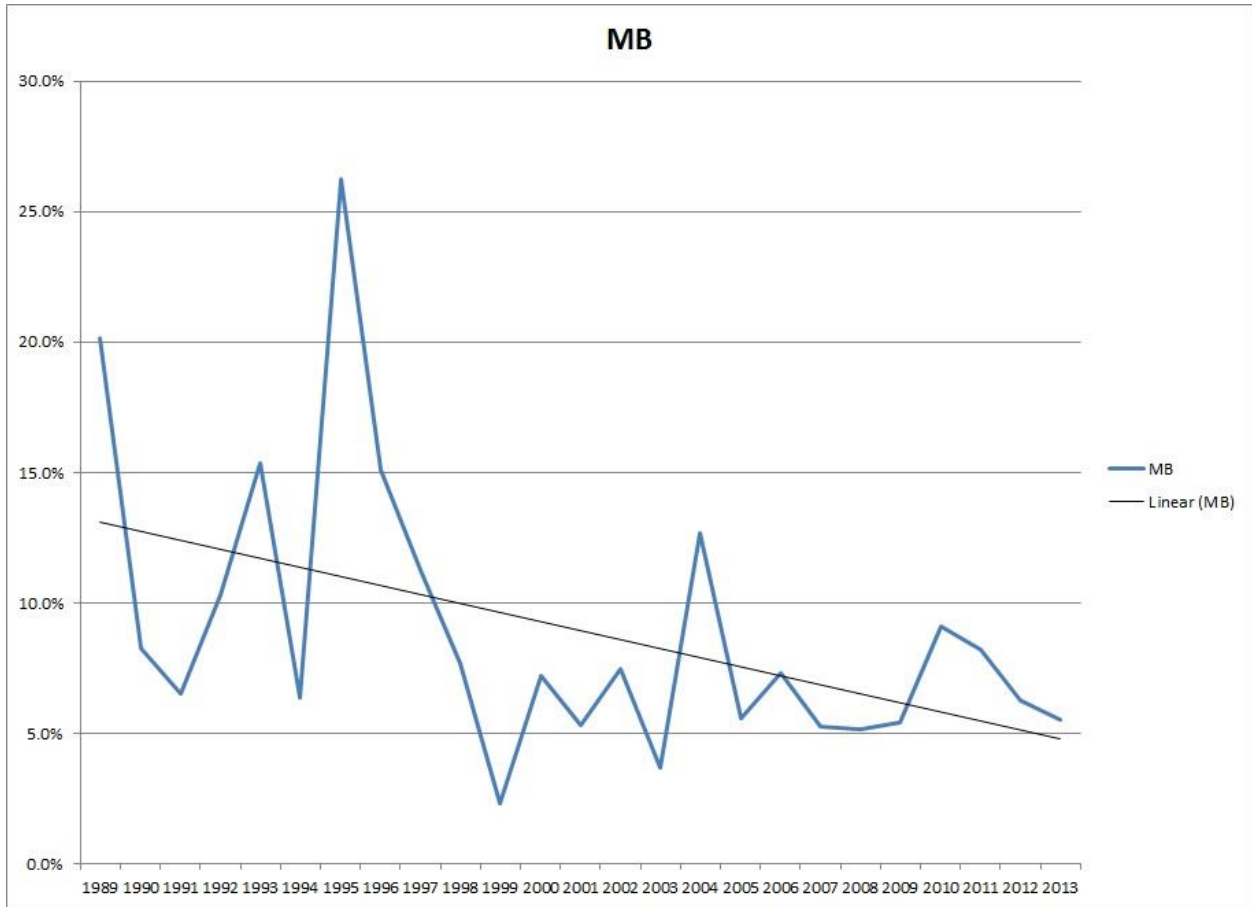
Results of Data Mining: Saskatchewan

Saskatchewan has contributed about 5 per cent of all Canadian UFO reports each year. This has ranged from a peak of almost 20 per cent in 1993 to less than 1 per cent in 1999.



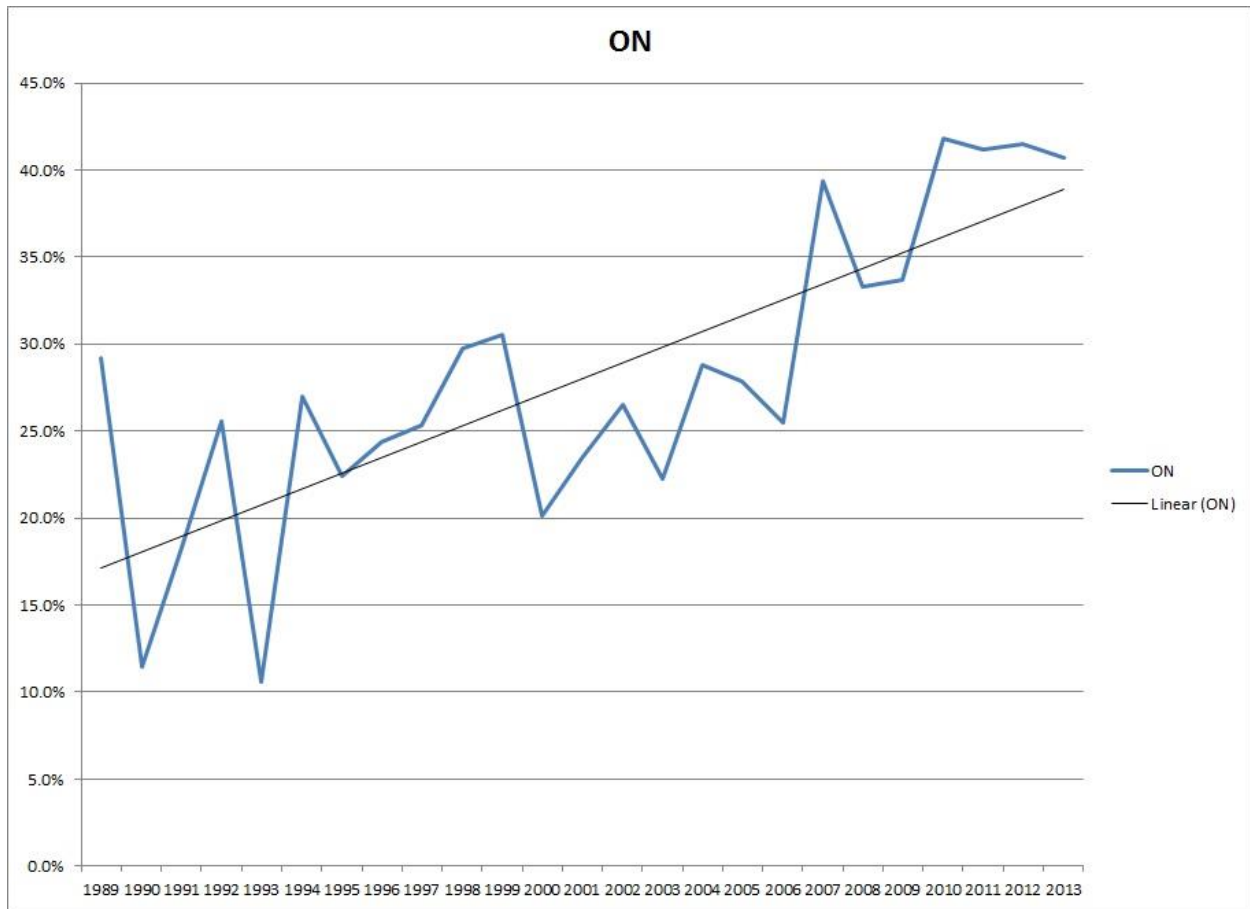
Results of Data Mining: Manitoba

Manitoba has contributed an average of 7.7 per cent of all Canadian UFO reports each year. This has ranged from a peak of 26.2 per cent in 1995 to only 2.3 per cent in 1999.



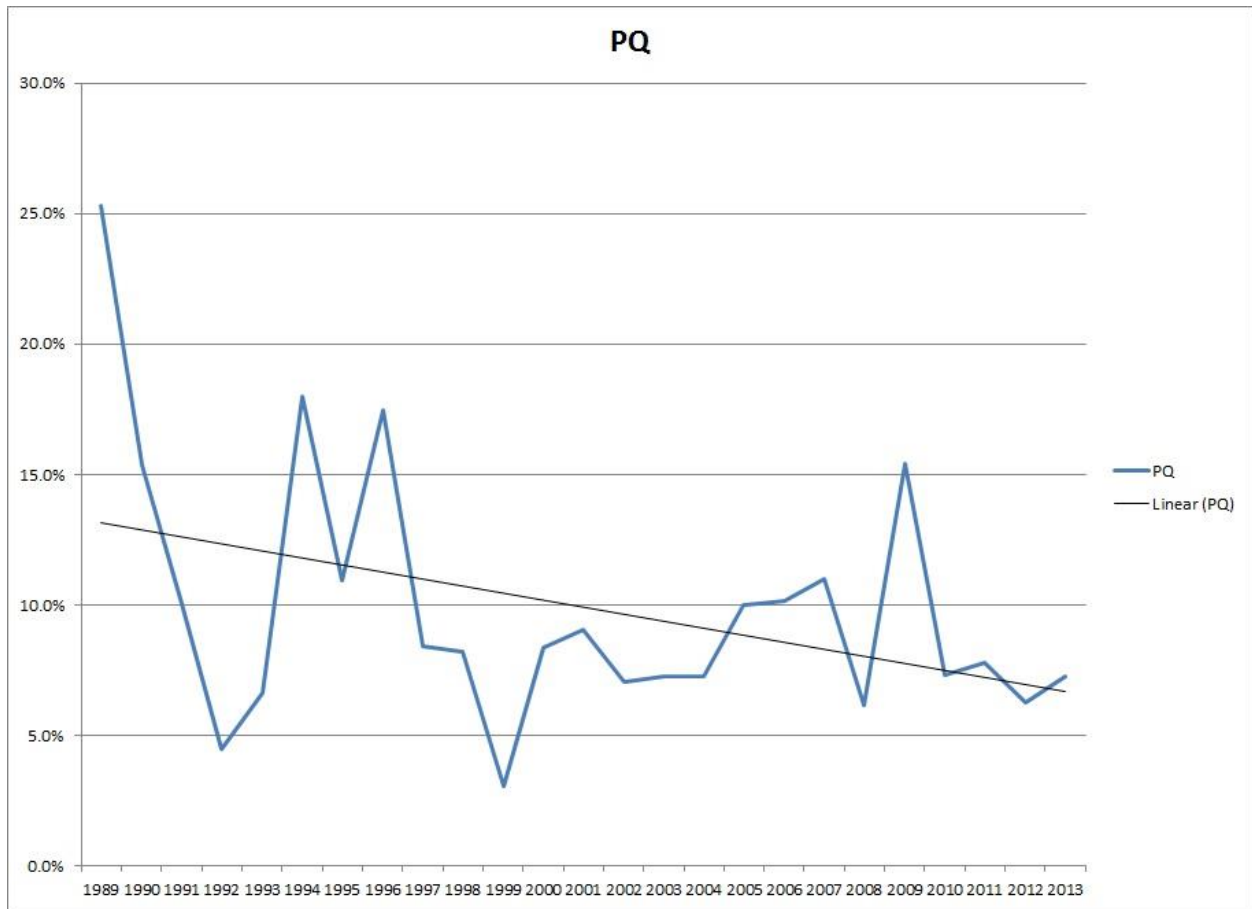
Results of Data Mining: Ontario

Ontario is Canada's most populous Province. Ontario has contributed an average of 32.2 per cent of all Canadian UFO reports each year. This has ranged from a peak of 41.8 per cent in 2010 to only 10.6 per cent in 1993. Overall, however, the percentage of Ontario cases has been steadily increasing during the past 25 years.



Results of Data Mining: Quebec

Quebec is Canada's second-most populous Province. Quebec has contributed an average of 8.7 per cent of all Canadian UFO reports each year. This has ranged from a peak of 25.3 per cent in 1989 to only 3.1 per cent in 1999. Overall, the percentage of Quebec cases has been steadily decreasing during the past 25 years. Quebec is significantly underrepresented in terms of number of UFO reports.

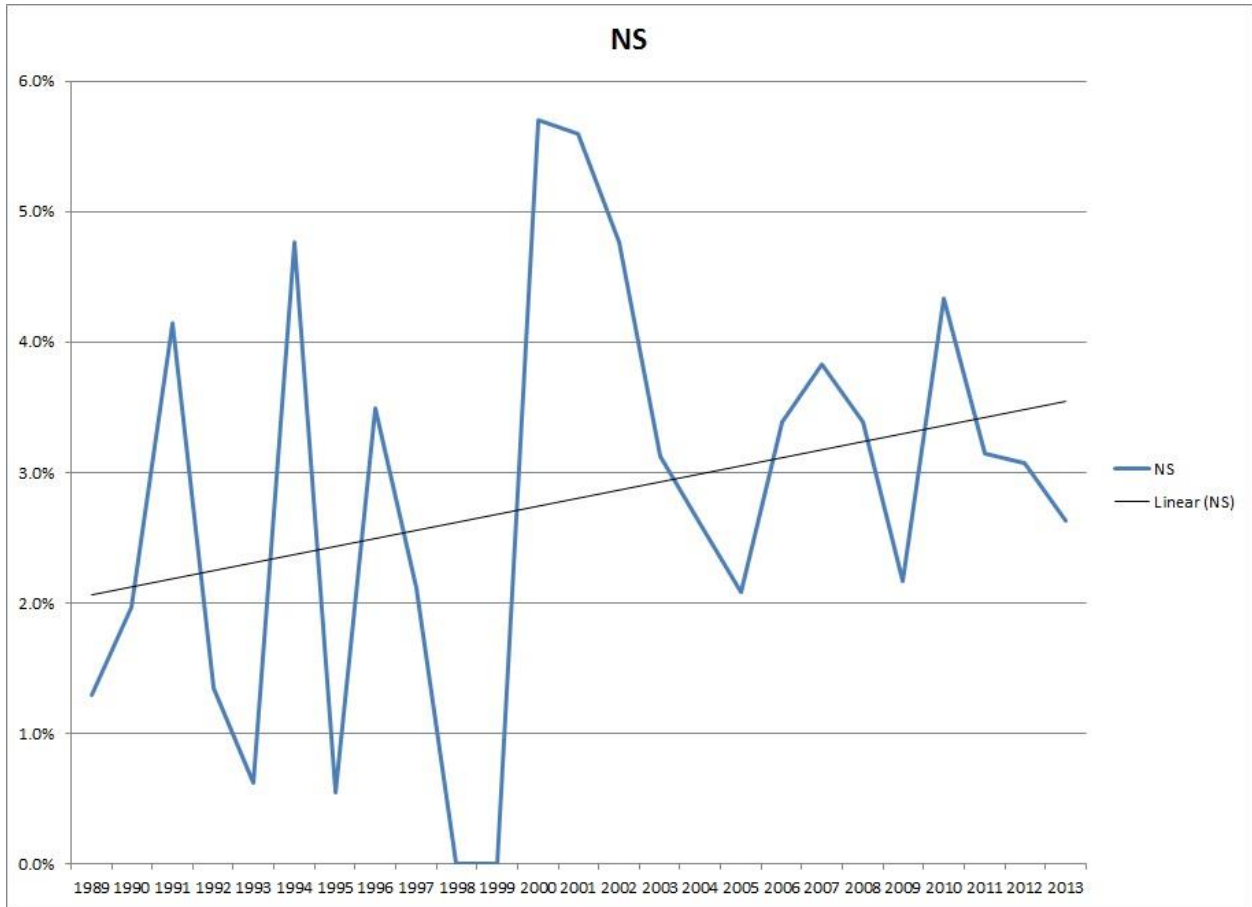


Results of Data Mining: New Brunswick

New Brunswick has contributed an average of about 2 per cent of all Canadian UFO reports each year. This has ranged from a peak of 5.3 per cent in 1991 to none whatsoever in some years.

Results of Data Mining: Nova Scotia

Nova Scotia has contributed an average of 3 per cent of all Canadian UFO reports each year. This has ranged from a peak of 5.7 per cent in 2000 to no cases at all in some years.



Results of Data Mining: Prince Edward Island

PEI is Canada's least populous Province. PEI has contributed an average of only about 0.2 per cent of all Canadian UFO reports each year.

Results of Data Mining: Newfoundland and Labrador

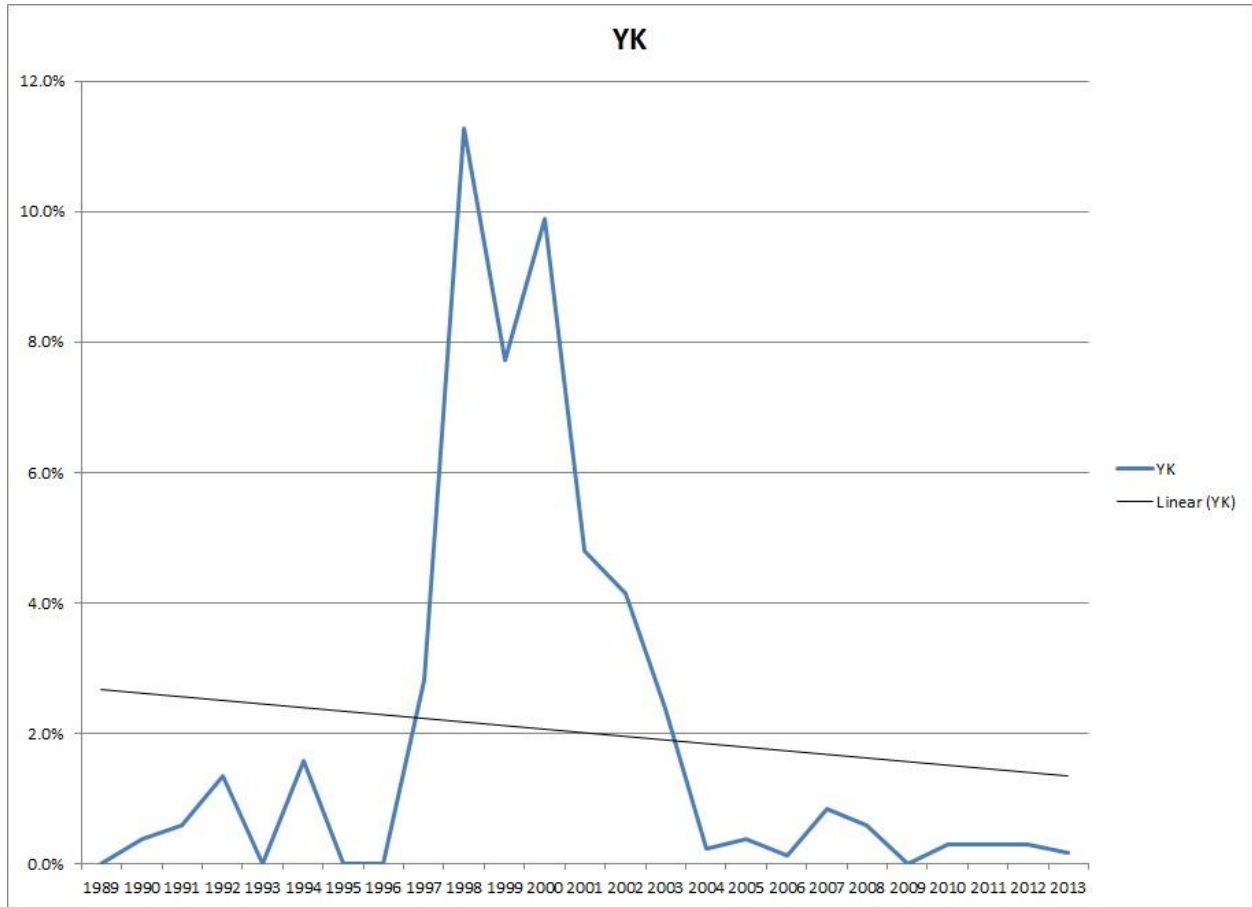
The province of Newfoundland and Labrador has contributed an average of about 1 per cent of all Canadian UFO reports each year.

Results of Data Mining: Northwest Territories

The Northwest Territories is sparsely populated. Reports from here are few, and yet the contribution is 0.7 per cent of all those in Canada. It is unknown as to why such an overrepresentation exists in the data. However, since 1999, the numbers of UFO reports from the Northwest Territories has declined, likely due in part to the creation of Nunavut.

Results of Data Mining: Yukon

Yukon has contributed an average of 1.2 per cent of all Canadian UFO reports each year.



Results of Data Mining: Nunavut

Nunavut was established in 1999. Previously, it had been part of the Northwest Territories. Since its existence, Nunavut has contributed about 0.2 per cent of all Canadian UFO reports.

Results of Data Mining: Population

It is easy to see that the distribution of UFO reports in Canada is related to population, but not directly. The population order of Canadian Provinces is as follows (2011 Census):

Population Percent

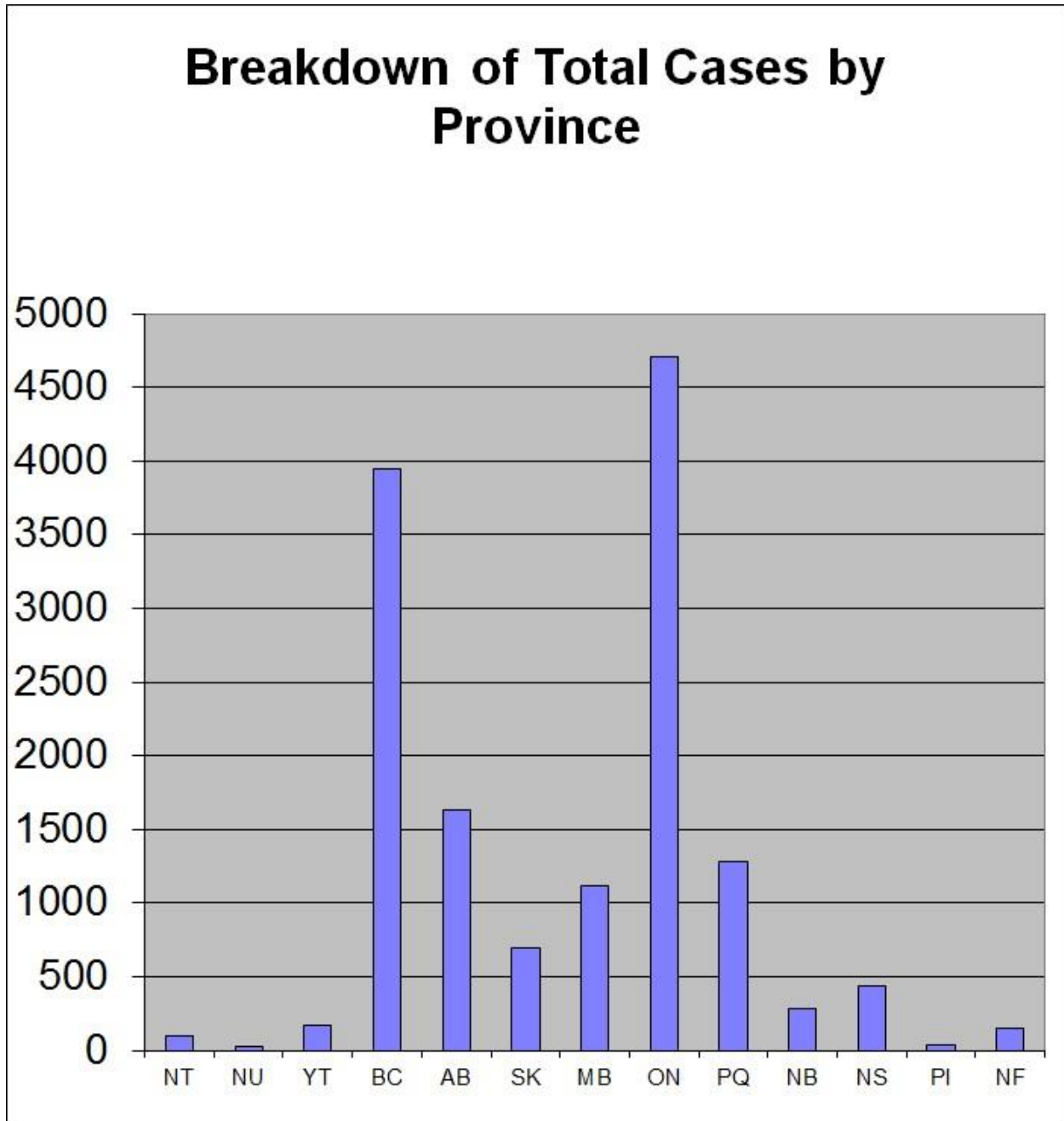
25 Years of Canadian UFO Reports

Ontario	12,851,821	38.4%
Quebec	7,903,001	23.6%
British Columbia	4,400,057	13.1%
Alberta	3,645,257	10.9%
Manitoba	1,208,268	3.6%
Saskatchewan	1,033,381	3.1%
Nova Scotia	921,727	2.8%
New Brunswick	751,171	2.2%
Newfoundland and Labrador	514,536	1.5%
Prince Edward Island	140,204	0.4%
Northwest Territories	41,462	0.1%
Yukon	33,897	0.1%
Nunavut	31,906	0.1%

Yet the order of provincial contributions to Canadian UFO reports is:

	Reports	Percent
Ontario	4708	32.2%
British Columbia	3943	27.0%
Alberta	1626	11.1%
Quebec	1279	8.7%
Manitoba	1120	7.7%
Saskatchewan	691	4.7%
Nova Scotia	438	3.0%
New Brunswick	284	1.9%
Yukon	171	1.2%
Newfoundland and Labrador	145	1.0%
Northwest Territories	97	0.7%
Prince Edward Island	36	0.2%
Nunavut	22	0.2%

There is significant underrepresentation from Quebec, and overrepresentation from Yukon.



Results of Data Mining: Monthly Distribution

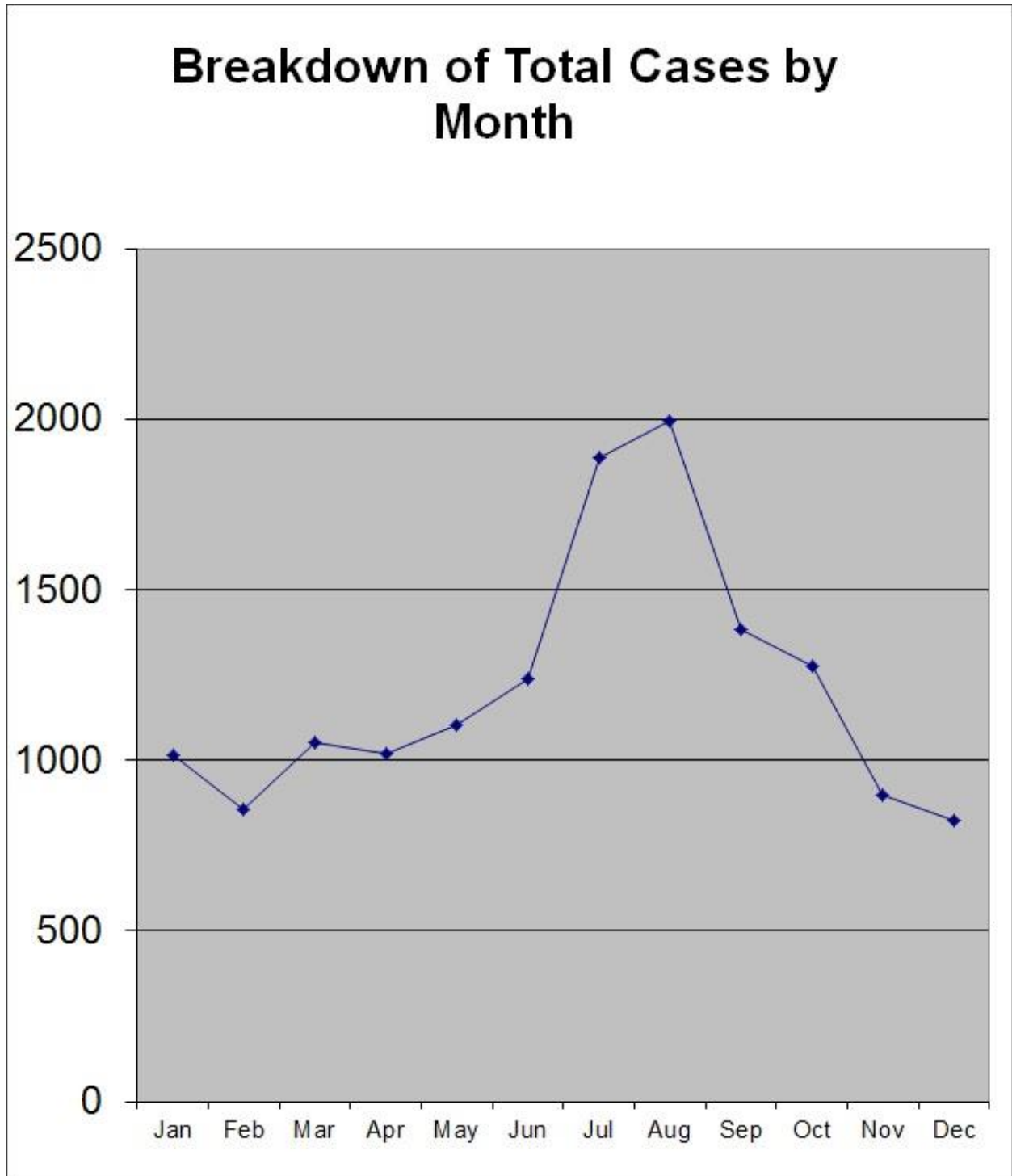
The monthly breakdown of reports during each year show slightly different patterns from year to year. In 1989, there was a significant increase in UFO reports in the late Fall, with other months maintaining what appeared to be a fairly constant "normal" level of reports. 1990 saw two major increases in report numbers in two months: April and August. The "normal" level of monthly report numbers appeared to be constant in other months, with minor fluctuations. In 1991, reports peaked in August, but there was no single obvious trough.

The 1992 breakdown again showed no clear peaks in monthly report numbers. This is most curious, because UFO reports often are said to peak in summer and trough in winter, presumably due to the more pleasant observing conditions during the summer months, when more witnesses are outside. In 1993, the opposite of what is usually imagined was true: there were peaks in winter and troughs in summer. The October 1993 peak is easily explained as due to a brilliant fireball. Even taking this into account, there were more cases in fall that year than in summer, and more in winter than spring and early fall.

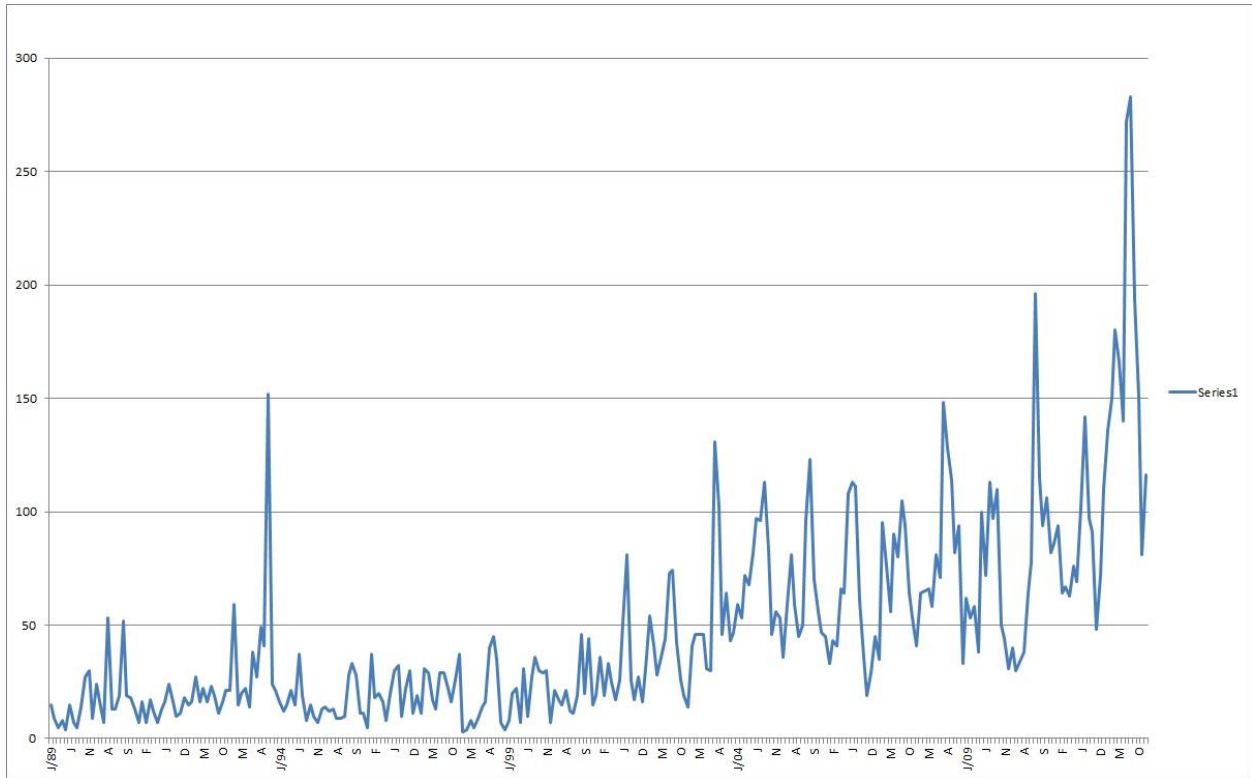
In 1994, there was a noticeable increase in UFO reports in the late spring and early summer, whereas in 1995, the peak months were in the late summer and early Fall. In 1996, there were three separate peak months for UFO sightings in Canada: January, July/August and November. The January peak was almost entirely due to the flap in the Northwest Territories. For 1997, peaks appeared in March-April, July-August and November-December. There was no obvious seasonal peak or trough. The March flap appeared due to a concentration of activity in Quebec while the December peak seemed due to sightings in the Northwest Territories.

Similar kinds of monthly variations can be pulled out of each year of the Canadian UFO Survey. In general, however, there appear to be no definite, regular monthly trends for UFO reports across Canada. The one obvious result is that UFO reports peak in the summer months of July and August, with a combined 26.69 per cent of cases for a year. This is no doubt because of the climate effect, where more Canadians are outside and in a position to observe the sky more often in the summer. Unknowns follow a similar pattern, with a peak in cases in July and August.

In a historical analysis of 480 Manitoba UFO cases in UFOROM's MANUFOCAT, a distinct June peak and December trough was found. Analyses of 13,000 cases in Project Blue Book found a similar June peak and December trough, though Hendry (1979) suggested that this was a statistical artefact.



UFO Cases (1989-2013) by Month												
	J	F	M	A	M	J	J	A	S	O	N	D
1989	15	9	5	8	4	15	7	5	14	27	30	9
1990	24	14	7	53	13	13	19	52	19	18	13	7
1991	16	7	17	12	7	13	16	24	16	10	11	18
1992	15	16	27	16	22	16	23	19	11	16	21	21
1993	59	15	20	22	14	38	27	49	41	152	24	21
1994	16	12	15	21	15	37	19	8	15	10	7	13
1995	14	12	13	9	9	10	28	33	28	11	11	5
1996	37	18	20	16	8	20	30	32	10	22	30	11
1997	19	11	31	29	17	13	29	29	22	16	26	37
1998	3	4	8	5	9	14	16	40	45	35	7	4
1999	8	20	22	7	31	10	27	36	30	29	30	7
2000	21	17	15	21	12	11	19	46	20	44	15	19
2001	36	19	33	25	17	26	51	81	26	17	27	16
2002	31	54	41	28	36	44	73	74	42	26	19	14
2003	41	46	46	46	31	30	131	102	46	64	43	47
2004	59	53	72	68	82	97	96	113	83	46	56	53
2005	36	59	81	59	45	50	96	123	70	56	47	45
2006	33	43	41	66	64	108	113	111	61	36	19	29
2007	45	35	95	76	56	90	80	105	94	64	50	41
2008	64	65	66	58	81	71	148	128	114	82	94	33
2009	62	53	58	38	100	72	113	97	110	50	44	31
2010	40	30	34	38	64	78	196	115	94	106	82	86
2011	94	64	67	63	76	69	102	142	97	91	48	72
2012	110	136	150	180	166	140	272	283	194	151	81	116
2013	117	43	69	53	122	153	156	146	83	98	63	68
	J	F	M	A	M	J	J	A	S	O	N	D
	1015	855	1053	1017	1101	1238	1887	1993	1385	1277	898	823



Results of Data Mining: Report Type

For those unfamiliar with the classifications, a summary follows:

- NL (Nocturnal Light) - light source in night sky
- ND (Nocturnal Disc) - light source in night sky that appears to have a definite shape
- DD (Daylight Disc) - unknown object observed during daytime hours
- C1 (Close Encounter of the First Kind) - ND or DD occurring within 200 metres of a witness
- C2 (Close Encounter of the Second Kind) - C1 where physical effects left or noted
- C3 (Close Encounter of the Third Kind) - C1 where figures/entities are encountered
- C4 (Close Encounter of the Fourth Kind) - an alleged "abduction" or "contact" experience
- EV (Evidence) - a case where physical traces left by an event are the primary claim
- RD (Radar) - UFOs observed on radar
- PH (Photograph) - photographs of a UFO, but no actual sighting
- UX (Unexplained Event) – reported effects without an associated object seen, such as cases of unusual sounds, odd animals, cattle mutilations, etc.

The category of Nocturnal Disc was created by UFOROM for differentiation within its own report files. Similarly, Evidence is also an *ad hoc* creation, and may not be applicable in other

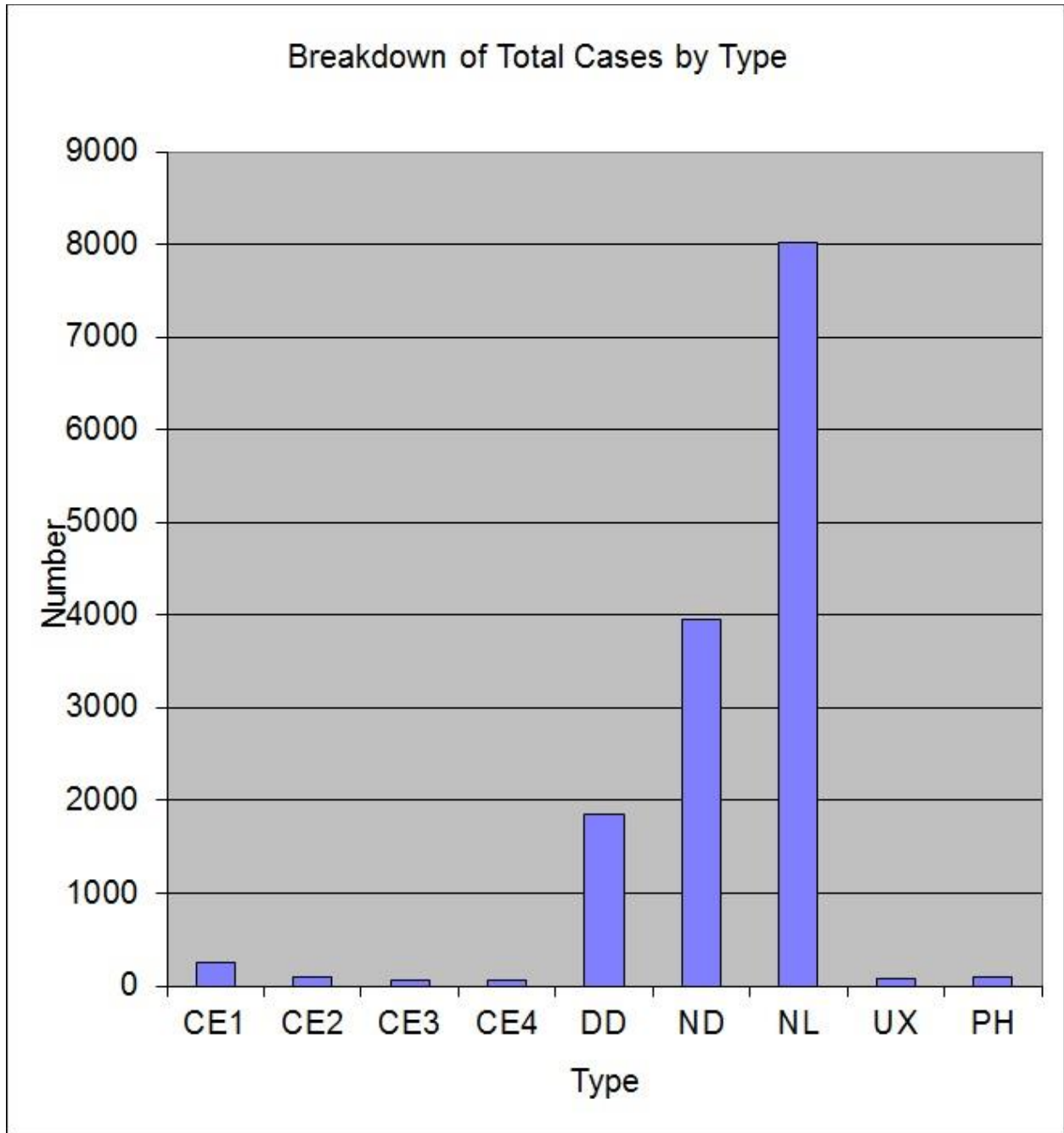
studies. Evidence includes such physical traces as "crop circles," "landing rings" and "saucer nests."

An analysis by report type shows a consistent distribution. The percentage of cases of a particular type remains roughly constant from year to year, with minor variations. Nocturnal Lights (NLs), for example, comprised 60 per cent of all reports in 1989, with high of 76 per cent in 1993 and a low of 51 per cent in 1997. The average was 55.43 per cent each year.

The percentage of DDs has increased considerably over the years. In 1991, there were only 7.9 per cent, but in 1996 and 1997 there were 10.5 and 18.4 per cent, respectively. The average of DDs was 12.81 per cent. The number of NL reports declines somewhat as a balance. NL and ND cases together comprise an average 82.74 per cent of all UFO reports in Canada each year. The vast majority of cases therefore occur at night.

Only 3.22 per cent of all cases were Close Encounters of any kind. Still, out of the nearly 15,000 cases recording in Canada during the past 25 years, this translates into 467 Close Encounters of the First, Second, Third or Fourth Kind.

As for Unknowns, the majority were Nocturnal Discs instead of Nocturnal Lights. This is reasonable, because a simple light in the sky is less likely to be classified as unknown as an object with some structure in the case of a Nocturnal Disc. Close Encounters were 9.16 per cent of the Unknowns, a not unexpected result because a complicated case with some detail would stand a better chance of being classified as Unknown rather than Explained.



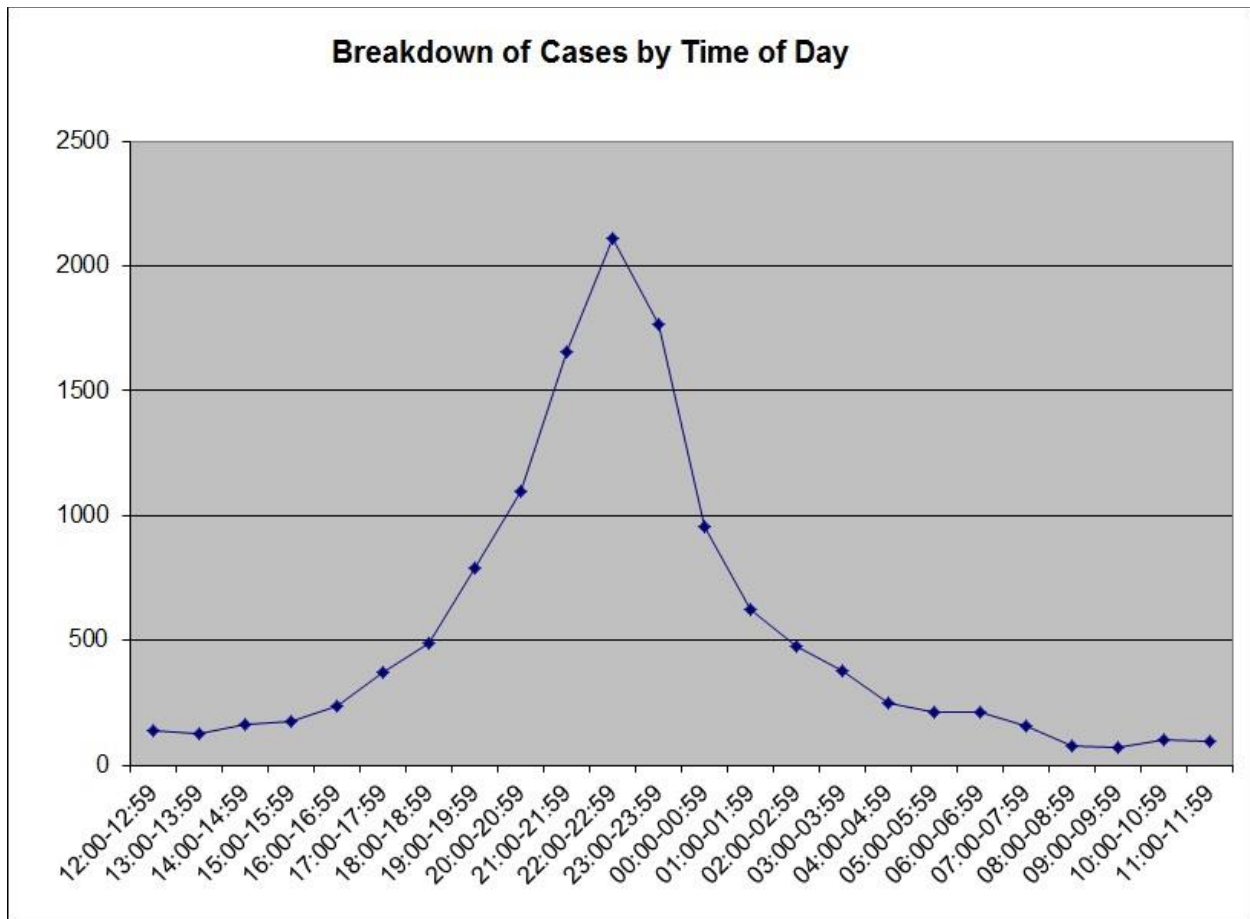
Results of Data Mining: Provincial Distribution of Unknowns

The distribution of Unknowns by Province is almost identical with the distribution of the entire body of cases, with one slight variance. Ontario has slightly fewer Unknowns than expected for a parallel distribution of all cases (27.9 per cent versus 32.2 per cent). This may be statistical variance, but other external factors might be involved.

Results of Data Mining: Time of Day

The hourly distribution of cases has usually followed a similar pattern every year, with a peak around 2300 hours local and a trough around 0900 hours local. Since most UFOs are nocturnal lights, most sightings will occur during the evening hours. Since the number of possible observers drops off sharply near midnight, we would expect the hourly rate of UFO reports would vary with two factors: potential observers and darkness.

However, one thing should be noted: some skeptics dismiss UFO sightings by pointing to the hourly distribution, arguing that most UFO sightings occur “after the bars close” after 0100 or 0200 hours. The actual hourly distribution shows that the peak in sightings is between 2200 and 2300 hours, long before closings of such establishments.



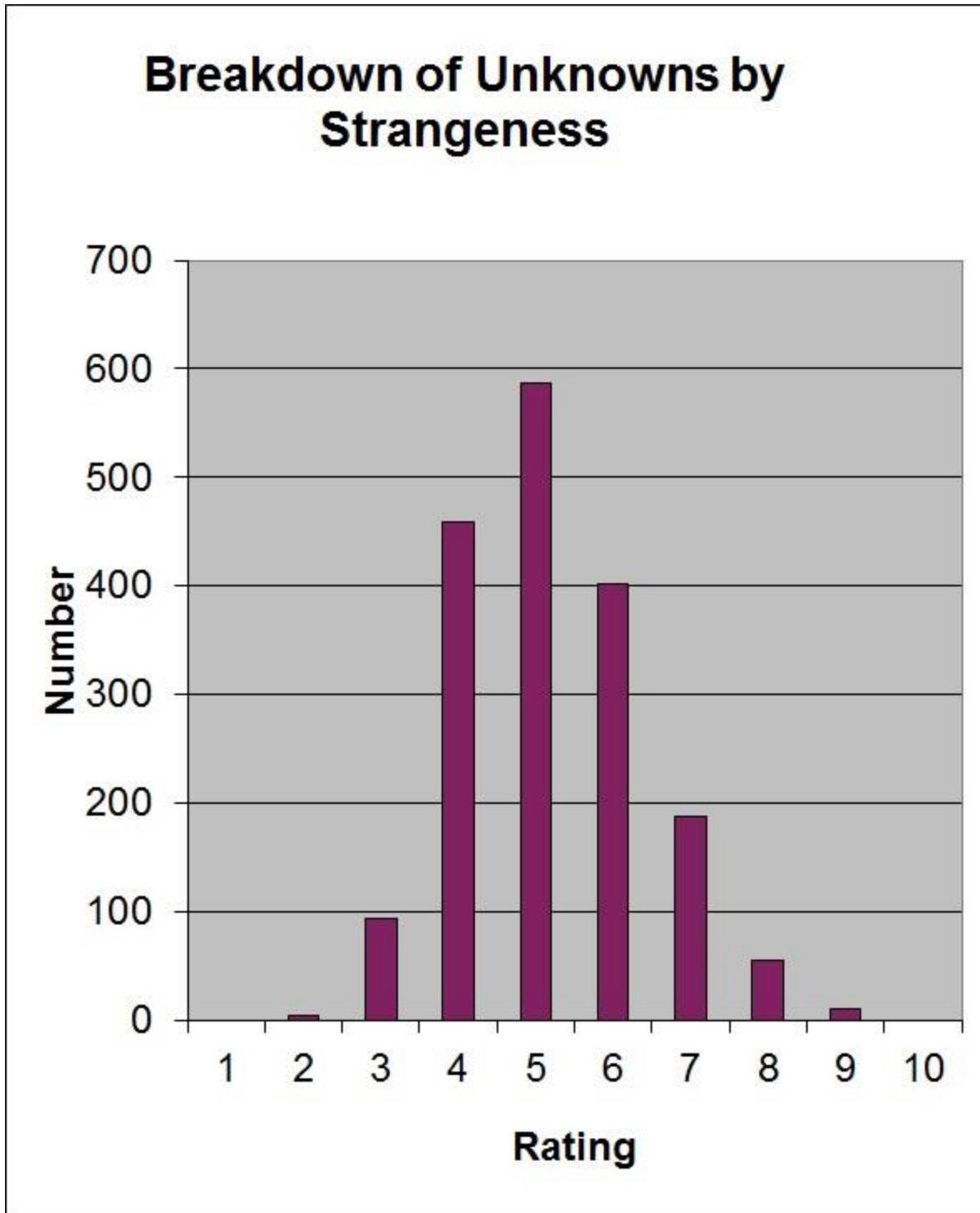
Results of Data Mining: Witnesses of Unknowns

Whereas the average number of witnesses to a UFO sighting is 1.84, for Close Encounters, this average is slightly higher, at 2.08 witnesses per case. The small increase is logical, since a

structured object at close range could be potentially be seen by several observers, rather than a tiny light moving in the night sky that might be missed by most people. Note that this value for Close Encounters includes all Kinds, including CE4s that are usually considered “alien abductions.” Most CE4s are single-witness experiences, but since relatively few of these are in the data set, they did not noticeably shift the average number of witnesses downward. In addition, because of the nature of CE4s, they would likely be classified as Insufficient Information rather than Unknowns.

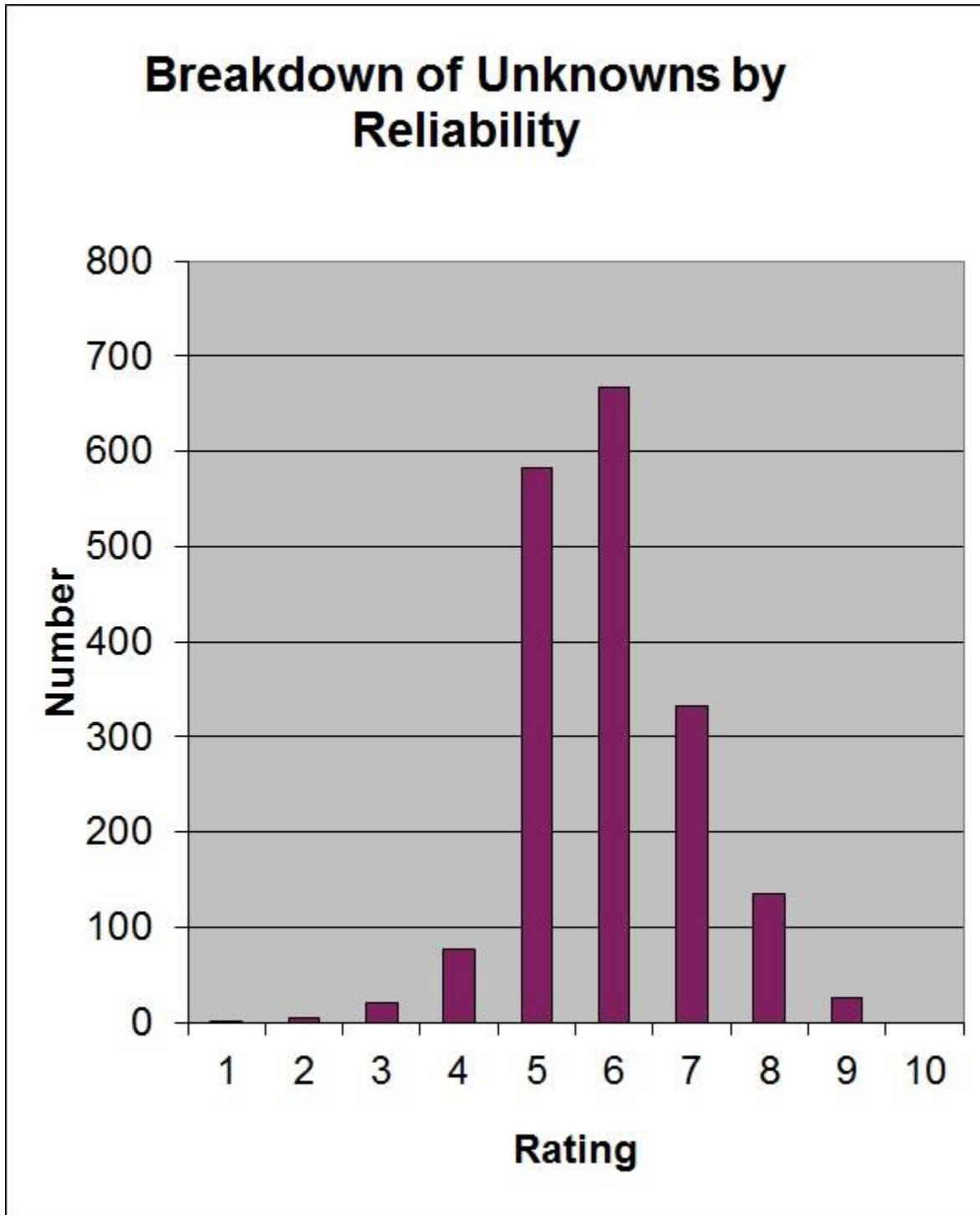
Results of Data Mining: Strangeness of Unknowns

Whereas the average Strangeness of all reports is 3.72, if we look only at Unknowns, the value is much higher, at 5.17. Again, this is intuitive because an Unknown would need to have some unusual features or characteristics to have it classified as such.



Results of Data Mining: Reliability of Unknowns

Whereas the average Reliability of all reports is 4.96, if we look only at Unknowns, the value is higher, at 5.92. Again, this is intuitive because an Unknown would need some significant documentation or support to have it classified as such.



Additional Analysis of Unknowns

For the first few years of the Canadian UFO Survey, it was practical for UFOROM associates to meet together and examine each and every case reported that particular year. The reports were assessed on content, possible explanations and the degree to which they had been investigated. In later years, in order to gain a greater understanding of cases classified as Unknown, UFOROM members and associates met to study and discuss those reports. Available information about each of the cases originally listed as Unknown was discussed in detail and the cases re-assessed. Original classifications of Strangeness and Reliability were also re-examined for each case. Through this process, the identification of only higher-reliability and higher-strangeness cases was made.

It was the consensus of the group that this process was most revealing in that a better appreciation of the difficulties in using UFO data was gained. Many reports were good as "stories" but seemed to have possible or probable explanations. Some witnesses' descriptions were deemed less than accurate and a significant fraction of cases appeared to need more investigation.

In short, such exercises showed that the analysis of UFO reports is a very tricky procedure, relying heavily upon mere text of subjective estimates and interpretations of witnesses' less-than-accurate observations. Members of the group recommended that accounts of UFO sightings should not be taken at face value and that caution be used in interpreting what was "really" seen.

In later years, the sheer number of cases combined with an attrition of investigators and researchers made such meetings to examine every report problematic.

Comparisons with Other Analyses of UFO Data

It is most instructive to compare the UFOROM analyses with those of other organizations, particularly the National Sighting Research Center of New Jersey, headed by Paul Ferrughelli. The NSRC results were reported in a series of publications, including the National Sighting Yearbook which was published for several years in the 1990s. A comparison was made between UFOROM results and that of the NSRC in 1992.

The NSRC collected UFO reports from newspaper clippings, UFO publications and MUFON case files and analyzed the raw UFO data. Because of the difference in data sources, a comparison with the UFOROM results will not be true. However, it is still interesting to compare the two studies.

The NSRC found a total of 197 UFO reports in 1992. This number was slightly less than that of Canada for the same year. Because of its larger population, it is likely that the USA had many, many more sightings that were never accessed through the NSRC's sampling technique.

The NSRC study revealed that there was no clear trend in the monthly distribution of UFO reports in the USA. Peaks were found in June and December. Grouping the American and Canadian studies together yields a monthly distribution with troughs in mid-summer and mid-winter, with slight variations month-to-month. It is possible to speculate that with adequate report sampling, there would be no monthly variation in the number of sightings, except for major flaps which would be more noticeable in an international survey. This is somewhat counter-intuitive and suggests that UFO reporting is independent of climate and seasonal variations. That is, people do not see more UFOs in summer because they spend more time outdoors during that season. We can ask: Is the American result of no clear monthly trends the result of the greater climate variability in the US? Were there more reports coming from the warmer South than the colder North during the winter?

Like the Canadian study, the American data was unevenly distributed throughout the country. Most reports came from just two states, Florida and Indiana. The Florida flap is likely due to the Gulf Breeze reports which receive a great deal of media attention. The distribution of sighting duration was nearly identical to the Canadian study. The average duration of a typical American UFO sighting is between 3 and 9 minutes.

For the hourly distribution of UFO cases, the American study found a symmetrical distribution with a pronounced peak at 9 PM local time and a trough at around 9 AM local time. This is in complete agreement with UFOCAT studies by Hendry (1979) and others cited by him. Canadian distributions are normally about one hour later in each peak, but are otherwise identical in distribution. It is possible that there is a "Daylight Savings" effect within the time data. Breakdown by Hynek classification yields identical distributions within both American and Canadian studies, with NLS being overwhelmingly predominant.

A major difference between the Canadian UFO Survey and other studies of UFO data is that Close Encounter cases appear to be under-represented in the former database. CEs comprised an incredible 30 per cent of the NSRC data and nearly 50 per cent (!) of the cases in David Spencer's MUFON UFO Report Database. There is no question that some screening and/or selection was occurring in the studies with high proportions of CEs. Hendry (1979) noted that CEs comprised 13 per cent of the Blue Book unknowns and 14 per cent of his own unexplained cases. (There were four unexplained CEs in the 1993 Canadian study.) In each of these studies, CEs represented slightly less than one percent of the total cases.

In summary, Ferrughelli's analyses of American UFO data yielded results remarkably similar to the UFOFOROM Canadian studies, despite the differences in collection procedures.

Comparisons with Project Blue Book and other studies

Project Blue Book was the largest and most thorough study of UFO reports by the United States Air Force. It started in 1952, following two lesser studies, Projects Sign (1947) and Grudge (1949). The USAF study was concluded in January 1970. Between 1952 and 1970, through 18 years of UFO report collection from all around the globe, the USAF recorded 14,613 cases, although the number of cases was originally noted as 12,618 (<http://web.archive.org/web/20030624053806/http://www.af.mil/factsheets/factsheet.asp?fsID=188>). Of these, 701 were originally noted as Unexplained (although this value is a matter of debate) among ufologists and the number of Unexplained cases has been revised upward to 1,600. (See, for example: http://www.cufos.org/BB_Unknowns.html)

With these numbers in mind, it is interesting to make a comparison with the Canadian UFO Survey database. Although the Survey has run 25 years, seven years longer than Blue Book officially existed, the total number of cases is similar. One striking difference is that the percentage of Unknowns in the Canadian UFO Survey is more than twice that noted by Project Blue Book's official statement, but is close to the revised calculations by researchers based on the original case files. However, when only High-Quality UFO cases in the Canadian UFO Survey database are considered, the percentage drops far below even the original Blue Book value.

The earlier USAF UFO projects were Sign and Grudge. Their results were summarized in Special Report 14, which was released as part of the Project Blue Book study. There were 3,201 cases in this database, of which 21.5 per cent were considered Unknowns. (see, for example, <http://www.ufocasebook.com/pdf/specialreport14.pdf>)

On the other hand, The MUFON Case Management System database study of worldwide UFO reports during the 9 years between 2001 and 2009 recorded similar numbers to both the Canadian UFO Survey and the original Blue Book Study, but found an astonishing 44.46 per cent Unknowns. This in itself suggests there is a difference in the way cases were evaluated in relation to the MUFON and the Canadian and Blue Book studies. Curiously, the MUFON CMS only listed 48 Canadian UFO reports from this time period, even though the Canadian UFO Survey lists MUFON as a source for 577 cases during 2001 to 2009.

UFO Study	Years	# Cases	# Unknowns	% Unknowns
Project Blue Book (official)	1952-1970	12,618	701	5.56
Project Blue Book (revised)	1952-1970	14,613	1,600	10.95
Canadian UFO Survey	1989-2013	14,617	1,844	12.62
Canadian UFO Survey HQ	1989-2013	14,617	160	1.1
MUFON CMS	2001-2009	14,362	6,402	44.58
Special Report 14	1947-1952	3,201	689	21.5

Earthquakes and UFOs

One popular theory regarding the identity of UFOs is that they are "earth lights." These are poorly-understood natural phenomena with yet-to-be-determined characteristics and mechanisms that occur due to geological or geophysical forces. Some earth lights are thought to occur in areas near seismic activity or active fault zones. The implication is that stresses within the Earth generate electromagnetic energy which may become luminous and be observed by witnesses. It should be noted that no such mechanism has been determined and recognised by the geologic and geophysical community. However, independent studies by some researchers suggest there are correlations between seismic events and UFOs.

With this in mind, in 1996, Canadian seismic data was obtained from geophysical sources. There were 51 earthquakes of magnitude 4 or greater in Canada in 1996. Seven were of magnitude 5 or greater. One was of magnitude 6 or greater. Almost without exception, all earthquakes were located along the coast of British Columbia or in southern Quebec, both areas of high seismic activity. Few were strong enough and near enough to population centres to be significantly noticed.

In previous earth lights and related tectonic strain theory (TST) studies, earthquakes and UFOs were not directly linked. That is, earthquakes and UFO sightings did not occur simultaneously nor in geographical proximity. In some studies, seismic events and UFOs were geographically separated by more than 700 kilometres. In terms of time correlations, UFO and seismic data were considered correlated if events occurred within six months of each other.

Given that a large number of UFOs were reported from both Quebec and British Columbia, many Canadian UFO cases could be correlated with weak to moderate seismic events within the country. In fact, in 1996, 40% of all Canadian cases occurred in earthquake-prone regions in BC and Quebec. If we allow that southern Ontario is within a few hundred kilometres of seismically-active regions in Quebec, then more than 60% of all cases in 1996 fall easily within these parameters. If no direct causality is required, and if large time separations are allowed, the majority of cases could be explained as earth lights or TST effects.

One problem with this interpretation is that most UFOs already have plausible conventional explanations such as misidentifications of aircraft, fireballs and stars. If a misidentified airplane is "correlated" with a distant, weak earth tremor, one could wonder whether this was in fact a significant result beyond the statistics.

What does the UFO data tell us?

We can now take another look at the questions posed by Hendry about the quality of UFO data:

1) Does the report collection reflect truly random sampling?

The randomness of the UFO sample is of course dependent on whether UFO reporting is itself random. Can we be sure that UFO witnesses represent a true cross-section of the

population or is there some bias in favour of those who 'believe in UFOs' and therefore may report IFOs as UFOs? Are there other biases involved? We know, for example, that military observations of UFOs are not routinely made available to civilian UFO researchers. Are these cases somehow different from civilian-reported cases?

2) Have the individual cases been adequately validated?

In a perfect world, each UFO case would be documented fully and thoroughly investigated by trained researchers with unlimited time and expenses, as well as through perfect cooperation with civilian and military authorities. In reality, though, this hardly is the situation. UFO investigation is often done by untrained UFO enthusiasts with little free time and working in isolation from official sources of useful information. Many UFO investigators do not have backgrounds in astronomy, meteorology or aviation, each of which would be useful in evaluating reports of unidentified flying objects. Thus, there is no way to ensure that all cases contributed were 'adequately' validated.

3) Are apples and oranges being compared? Are NLs necessarily the same kind of UFO as DDs?

We do not know the answer to this question. However, since nocturnal objects constitute the vast majority of UFO cases in the sample, this may not be a problem. However, we can also ask if all nocturnal objects are themselves homogeneous. Is UFO data concurrently valid with itself?

4) Are differing details among cases obscured through simplification for the purpose of comparisons?

This is true to a certain extent. A witness who chooses red as a primary colour of a UFO with red and white lights may have made an error of judgement. Similarly, when the data is encoded, 'red and white' is considered differently from 'white and red.' So, in some categories, this would be a valid concern. In others, such as date and location, this is not a problem. However, when evaluations of cases are made, subjective interpretations will certainly cause some difficulties.

5) Does the study imply the question: "Surely this mass of data proves UFOs exist?"

No. The present study only shows that people are reporting sightings of unusual objects, some of which have no simple explanation.

6) Do the correlations really show causality?

No. No correlative studies were performed on the data.

Final Comments

Polls have shown that about 10 per cent of the Canadian population believe they have seen UFOs. This means that about 3.5 million Canadians have seen UFOs.

Studies have also shown that only about 10 per cent of all witnesses of UFOs report their experiences (although this percentage is thought to be much lower). In the case of the Canadian UFO Survey, there were 14,617 reports recorded. Given an average number of witnesses per case of 1.88, this would suggest that 25,108 people saw UFOs in Canada during the last 25 years. But if only one in ten people report UFO experiences, this figure should be ten times as high; so 251,080 people saw UFOs in Canada between 1989 and 2013. Curiously, this number is only about a factor of ten different from the number of people who are thought to have seen UFOs. Regardless, it can be said that if you have seen a UFO, you are in good company with many others.

UFO witnesses range from farmhands to airline pilots and from teachers to police officers. Witnesses represent all age groups and racial origin. What is being observed? In most cases, only ordinary objects. However, this begs a question. If people are reporting things that can be explained, then the objects they observed were "really" there. Were the objects we can't identify "really" there as well? If so, what were they?

These are questions that only continued and rational research can answer, and only if researchers have the support and encouragement of both scientists and the public.

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Appendix:

The Anomalous Event of October 30, 1993

At 9:39 PM CST on October 30, 1993 (0339 UT on October 31, 1993), a brilliant object was seen streaking through the night sky over the Canadian prairie provinces. Literally hundreds of people witnessed the event, which lasted less than 10 seconds. Most observers thought the object was greenish-blue in colour, though some thought it was orange-red. Reports were received from witnesses in Alberta, Saskatchewan, Manitoba and Ontario, with some outliers in North Dakota and as far away as Indiana. Because of its trajectory and appearance, the object was assumed by scientists to have been a fireball or very large meteor. It appears that the burn started over eastern Alberta, headed east across Saskatchewan and terminated somewhere over Manitoba. Dozens of people near Dauphin were jarred by a tremendous "sonic boom" that some compared to "a car hitting the house." The noise followed the passage of the object by approximately two minutes. Witnesses in eastern Manitoba generally saw the object somewhere to their west, so it may have fallen over Lake Manitoba.

A complication of the investigation is that a check with NORAD revealed that a booster rocket from a Russian space mission had apparently re-entered the Earth's atmosphere over Canada at precisely the time of the observation. It was thus postulated that the observations were consistent with that of the space hardware re-entry, and that there had not been a meteoric event. However, one researcher was told by another military spokesperson that an orbiting camera directed at Canada had recorded two separate events occurring within a few minutes of each other. It was possible, then, that some witnesses had seen the re-entry, while others had seen the fireball. A problem was that the predicted impact point of the rocket booster was near Nova Scotia, and there were no reports farther east than northwestern Ontario. In addition, if the booster was low enough to create a sonic boom over Manitoba, it likely could not survive to the Atlantic Ocean. And what could be made of the outlier reports in the United States? Finally, it is most curious that no observer saw two events. It would seem logical that at least one person would have seen two objects, given the large number of witnesses and recorded observations.

Another interesting aspect is that recently, a list was published of visually observed natural re-entries of earth satellites (http://satobs.org/seesat_ref/misc/Visually_Observed_Natural_Re-entries_DRAFT_7.pdf). Unfortunately, it did not contain an entry for any event on October 30 or 31, 1993.

Is it possible that a rocket booster re-entered the Earth's atmosphere at the same point and the time as a meteoroid? Although the statistical probability of such a unique tandem event is not zero, it is very unlikely. Something very remarkable and still not completely explained was seen by hundreds of people that night.

The “Top 10” Strangest Canadian UFO Reports

Canadian UFO researchers and investigators were polled for their personal picks of the most remarkable Canadian cases of the past century (or so). They are, in chronological order:

Ottawa, Ontario February 15, 1915

A “phantom invasion” of unusual aerial objects caused enough panic throughout the National Capital Region that the lights on Parliament Hill were extinguished in order to prevent targeting by the “enemy.”

Gander, Newfoundland February 10, 1951

A US Navy Transport plane was reported to have nearly collided with a giant circular orange object that almost literally flew circles around the American aircraft as it flew between Iceland and Newfoundland.

Shirley’s Bay, Ontario August 8, 1954

Wilbert Smith, a Defence Department engineer, set up a “flying saucer detection station” at a government facility. On this date, his instruments recorded a large magnetic disturbance overhead, which Smith believed to be from an alien craft.

Fort Macleod, Alberta August 23, 1956

RCAF Squadron Leader Robert Childerhose and his flight lieutenant were attempting to set a cross-Canada speed record in their Sabre jet when they observed and photographed a bright oval object near their plane at an altitude of 36,000 feet.

Falcon Lake, Manitoba May 20, 1967

Weekend prospector Stefan Michalak was burned by an object which had landed near him. Later radioactivity at the site was considered high enough to consider closing the Provincial park entirely. Despite investigations by American and Canadian officials, the case was listed as “unexplained.”

Shag Harbour, Nova Scotia October 4, 1967

Many witnesses, including RCMP constables, observed a bright object fall from the sky into the ocean. Later, a patch of luminous foam was found on the surface of the water where it was presumed to have sunk. Rumours that a US Navy recovery operation located and removed a mysterious object persist to this day.

Langenburg, Saskatchewan September 1, 1974

Farmer Edwin Fuhr was swathing when he came upon several metallic bowl-shaped objects spinning rapidly in a hayfield. The objects took off and left behind circular impressions which predated “crop circles” found years later in England.

Carman, Manitoba May 13, 1975

Hundreds of people observed a bobbing, bright reddish-orange light in the sky beginning about this date and continuing for several months. The object was seen so frequently, it was affectionately named “Charlie Redstar.”

Montreal, Quebec January 6, 1977

Ms Florida Malboeuf watched as a saucer-shaped object appeared to land on the roof of a building across from her home. Two spindly creatures in tight-fitting suits appeared on the edge of the roof and then disappeared before the object took off.

Duncan, British Columbia November, 1980

Granger Taylor was a teenager who was obsessed with aliens and UFOs to the point of building his own huge full-size model in his backyard. One day, following a series of UFO reports in the area, he announced to his friends he was going to be taken away by aliens—and he was never seen again.

Although there are many, many more examples of Canadian UFO cases, these are among the most significantly unusual on record. Whether or not they are “real” is irrelevant. They each have helped fire the Canadian imagination and fascination with the possibility of life elsewhere in the universe.

Remarkable Canadian UFO Reports Received During the Past 25 Years of the Canadian UFO Survey, from 1989-2013

Based on the Reliability and Strangeness classification of cases in the annual Canadian UFO Surveys, and re-evaluated by Ufology Research members based on criteria including report detail, documentation and other factors, the following are those cases which were most remarkable among the nearly 15,000 reports received during 1989 to 2013.

May 9, 1989 9:58 pm Vancouver, British Columbia
Two witnesses saw seven different formations of objects moving across the sky, including a group of seven or eight “grey, dull metallic objects” that flew directly over a downtown apartment building.

November 19, 1989 11:30 pm Kenora, Ontario
Many residents of the town reported seeing glowing objects in the sky, lights moving through the trees and balls of light following cars. Concurrently, telephone service was disrupted and electrical power cut out intermittently.

November 20, 1989 5:30 am Ste-Marie-de-Monnoir, Quebec
A bright light was seen and a loud “electrical generator” noise was heard in the area around one particular family’s farmhouse. A circle of flattened grass 65 feet in diameter was found in their field, and this grass retained its green colour long after other nearby grass had turned brown and died.

November 7, 1990 7:20 pm Montreal, Quebec
A woman swimming in the 17th floor outdoor pool of Place Bonaventure saw a stationary, round, metallic object projecting a series of brilliant light beams in the sky. Police were called and eventually dozens of people observed the odd sight for almost three hours.

December 28, 1991 5:40 pm London, Ontario
The pilot of a commercial airliner at 33,000 feet was surprised when the Airborne Avoidance Collision radar detected three objects directly ahead of his plane. The objects moved to beside the aircraft at a range of six miles, then followed the airliner. The objects then flew away. Toronto ATC reported the objects on radar as well, though nothing visual was ever seen.

January 22, 1992 7:40 pm Woodstock, New Brunswick
Two witnesses observed and video recorded a stationary, triangular object with multicoloured flashing lights. It made a sound like a jet aircraft and seemed to be “doing sweeps as if on a grid pattern.” It eventually moved off and out of sight. Nearby military bases said there were no flights that evening.

July 20, 1992 11:58 pm Winnipeg, Manitoba

A former air traffic controller and pilot saw a formation of six round, "reddish-pink" objects flying in a "V" from NE to SW across the sky in about ten seconds. A check with Winnipeg air traffic control could not confirm any objects in the air at the time.

November 1, 1992 2:00 am Winnipeg, Manitoba

A nurse returned home from a shift and prepared for bed but was startled by a noise in her home. Investigating, she found two small humanlike creatures. She found herself taken inside a "hangar" with several spacecraft and was taken inside one for a brief trip around the Earth. She soon found herself back at home, with several hours of time missing from her life.

February 26, 1994 8:05 pm Pickle Lake, Ontario

A pilot flying over Northwestern Ontario saw a saucer-shaped object with a curved top and bottom, brown and orange on color with "dark spots" along its rim. It was below his plane and then rose to his altitude, closed to within 300 yards, and then suddenly dove to the ground.

April 15, 1994 10:45 pm Red Deer, Alberta

Two witnesses saw a large, black, triangle-shaped object "about three times the size of a plane," and with no running lights, fly silently overhead. It was gone from sight behind buildings after about 30 seconds.

August 4, 1997 7:20 pm Hadashville, Manitoba

Two forest rangers in different towers simultaneously observed a "silver ball" which hovered over the trees some distance away from them. A second identical object approached the first and the two travelled away together.

March 30, 2000 5:00 am Little Fox Lake, Yukon

A witness driving on a deserted highway came upon a blue disc-shaped, domed object hovering silently 90 metres away, about 60 metres above the ground. The object suddenly moved quickly across the road, then stopped again. The car's tape deck stopped working and the headlights dimmed during the encounter.

May 15, 2000 10:50 pm North Vancouver, British Columbia

While skygazing, two witnesses observed a large, silent, boomerang-shaped object gliding silently overhead. It had a dark infrastructure but had seven dim triangular objects on its underside.

April 1, 2001 10:30 pm Etzikom, Alberta

"Funnel shaped flames" were observed descending and then rising again over a field. Later, a 100-foot-wide "crater" was discovered in the field.

August 10, 2003 2:22 pm Whitehorse, Yukon

A large, bullet-shaped object flew low over a road, under a guy wire and among trees. Its surface was like "brushed aluminum" and made no sound as it passed directly in front of the

startled witness driving on the highway, who had no time to react to the appearance of the object.

May 9, 2005 11:25 pm Kuujjuaq, Quebec
Witness saw a “big circular object which reminded me of a barge on its bottom but with big lights above the protruding center part.” The grey, saucer-shaped object had several windowlike lights around its middle section as it flew slowly over the village.

August 7, 2005 2:08 pm Vita, Manitoba
A silver, cigar-shaped object like a “wingless missile” flew over three witnesses. A fast-flying conventional aircraft followed the object on the same trajectory after a few seconds.

June 12, 2010 10:30 am New London, Prince Edward Island
Two people saw a ball of fire fall from the sky and hit a hay field nearby. The hay was set on fire and the couple were able to put the fire out. Astronomers who were called in to investigate the “meteorite” said the observation and physical traces were “not consistent with natural meteoroids or space debris.”

October 5, 2010 9:05 pm Montreal, Quebec
Several witnesses observed a large structured object hovering or moving slowly over buildings downtown. It was oval, with two “tails” and had a lighted “cabin” at the “bow.”

February 10, 2012 7:15 pm Winnipeg, Manitoba
A couple driving on a road in an isolated part of the city was shocked to encounter a black, flat, octagonal object with flashing lights. After they drove directly underneath it, it moved across a field and away from them.

February 25, 2012 7:00 pm Winnipeg, Manitoba
Two witnesses observed a flat, disc-shaped object with red lights around its perimeter. As it flew it in horizontal flight, it turned on its side and then darted towards the witnesses’ vehicle, then vanished before their eyes when it was within five metres of them.

January 8, 2013 5:30 pm Musquodoboit, Nova Scotia
Two children had been sledding on a small hill when they saw a large object coming towards them over the trees. They heard a beeping noise and watched the object shaped like “a massive hotel” with protrusions and windows flew over a nearby house and out of sight.

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