ADJUSTMENT OF TIME TO RESPONSE FROM THE CRIMINAL EXPERTISE

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Abstract: The measurement of the productivity of Criminal Experts in the Division of External Expertise of the Institute of Criminalistics Leonardo Rodrigues is dependent on the working relationship and the time of preparation. Therefore, it is essential to determine, as faithfully as possible, the time required for each type of report to be produced. The objective is to make the period available to public servants compatible and produce a regulated workload. The application of a questionnaire to the civil servants and the statistical treatment of the collected data are adequate ways of relating the report with a corresponding load for its preparation. Furthermore, knowing which activities take time and are not related to the core activity is necessary so that the manager can identify and eliminate them, or at least reduce them, aiming to make the process more efficient. The results achieved indicate that the relationship between the report and available workload needs to be readjusted and that the aforementioned activities demand considerable periods of time.

Keywords: Expert Examination. Report. Productivity. Time

INTRODUCTION

Much is said about productivity in the public service, that is, how it has been the response of public bodies to the citizen. There are several ways to measure it. In the Division of External Expertise of the Institute of Criminalistics, a technical-scientific police agency of Goiás, this is done through the number of reports that are made up. Those reports refer to to the occurrences answered, at the case, expert surveys. However, it is known that the workload of a worker It is regulated, that is, there is a limit from time to the realization of work.

The definition of the minimum number of expert reports that must be made up in one determined period becomes necessary for if measure the productivity of the criminal expert server. In addition, several activities that they are connected directly the confection in reports no they are taken in account, masking the time real spent at confection in report, harming the optimization of that process.

A relationship what It is practiced at the moment at the scope from the DPE if show inadequate for what is practiced by the criminal experts working in this division, since what has not been scientifically obtained and is not regulated.

The present study presented values that represent the reality of criminal experts assigned to the DPE, in addition to determining the "dead" period in activities what could be eliminated or at least reduced.

The work showed the reality of the DPE experts and it is within the context of the Technical-Scientific Police. Next, the method used will be defined. to obtain the values that are practiced by the servers currently. In then, these data will be tabulated and treated through statistical tools specific, will return values in tables and graphs that represent in a more faithful what It is practiced. Those data will evidence the need in if readjust the relationship currently existing between workload and prepared report, including being able be implemented by the manager responsible for the Division.

ADJUSTMENT OF THE TIME IN CONFECTION IN REPORTS EXPERTS

Basically, criminal expertise in Brazil is divided into criminal expertise of laboratories or sections and local criminal expertise, as shown by the study carried out by the Ministry of Justice, called: Diagnosis of Criminal Expertise in Brazil (BRASIL, 2014)[1]. In the

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1 http://www.gabinetecivil.goias.gov.br/decretos/numerados/1992/decreto_3751.htm

state of Goiás it is no different, according to the decree follow:

Decree Number 3751 of 1992:

> Art. 1st stay maids to the next units administrative at structure organizational General Board basic from the Civil Police:
>
> [...]
>
> III Technical-Scientific Police Superintendence: [...]
>
> It is) Institute in Criminalistics:
>
> 1. Division in Skills External;
>
> 2. Internal Forensics Division.

The following is an organizational chart showing the location of the Division of External Expertise, which has a responsible coordinator. That Division is linked to the Institute of Criminalistics Leonardo Rodrigues, which has one manager as responsible, which it is subordinate The Oversight from the Police Technical-Scientific. The same applies the division of Skills Internal.
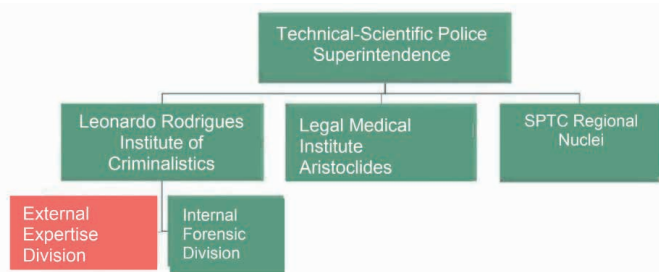

Figure 01. Location of the External Expertise Division (DPE) in chart of the Superintendence of the Police Technical-Scientific.

Source: Elaborate for the author (2017)

As it can be seen in the figure above, the Instituto de Criminalística Leonardo Rodrigues is hierarchically at the same level as the Instituto Médico Cool Aristoclid teixeira It is you Cores Regional. in these they are offered you criminal expertise and forensic services. In those, only exams are performed medicolegal (cadaverous, exams of injury body, rape, between others).

The various careers of the Technical-Scientific Police are distributed in divisions mentioned in figure 01. In the External Expertise Division (DPE), in addition to other categories, there are criminal experts responsible for the following examinations: homicides, suicides, occurrences in Traffic with victim fatal, fires, burglaries, among others (SPTC, 2017).

PHASES FROM THE ACTIVITY FROM THE EXPERTISE CRIMINAL

The service provided by local criminal expertise is subdivided, for didactic, in two stages: site survey and preparation of reports. This is the complementation of that, and each of these actions requires a range of time specific.

Regarding the activity of preparing reports, Decree -Law Number 3689, of 3 of October 1941 (Criminal Procedure Code):

> Art. 160. The experts will elaborate the expert report, where will describe thoroughly O what examine, It is will answer to the questions formulated. (Wording given by law number 8,862, of 3.28.1994)
>
> Single paragraph. The expert report will be prepared within a maximum period of 10 days, being able This one term to be extended, in cases exceptional, The application of the experts. (Wording provided by Law number 8,862, of 3.28.1994).

In general, the site survey stage takes less time what that one fired for the respective confection of report, according to researches carried out with the criminal experts assigned to the DPE. It is understood as time location survey that between the communication of the occurrence until the release of the local for the Expert criminal designated.
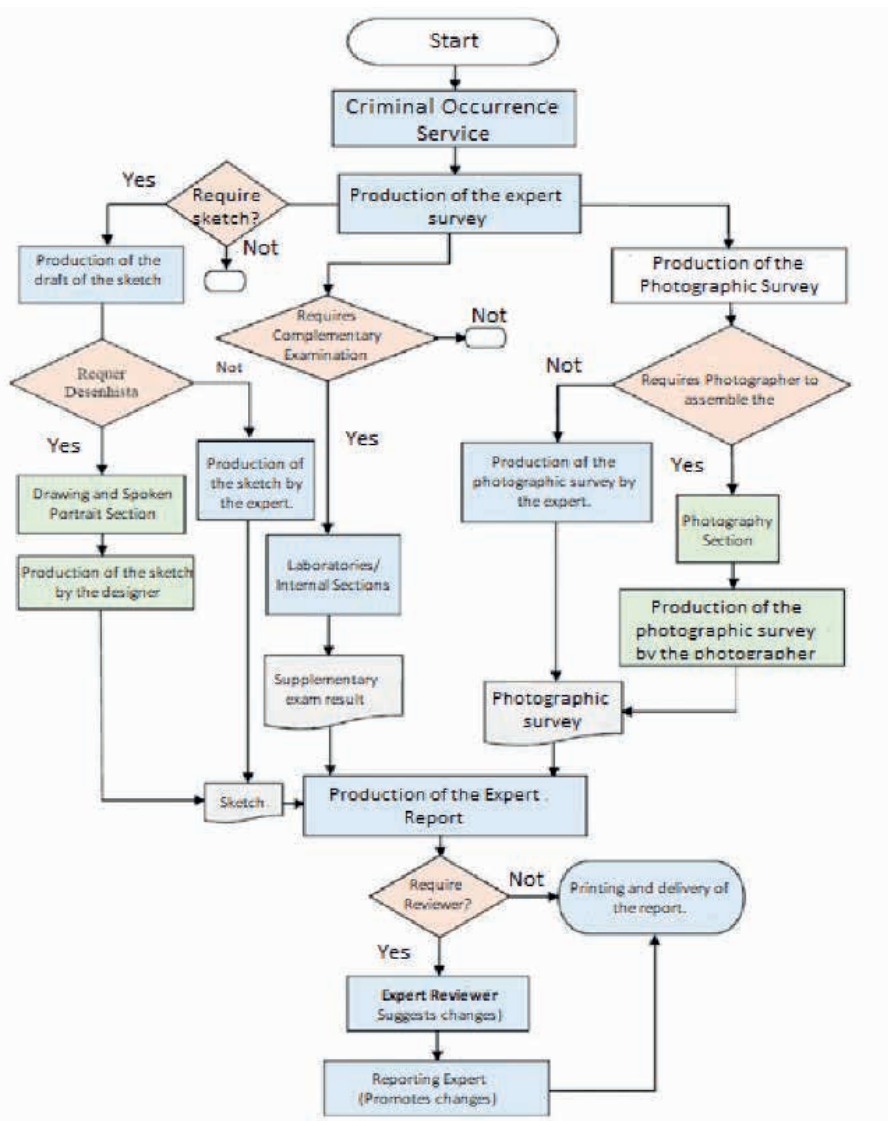
Figure 02 – flowchart in activities of the criminal experts at DPE.

Source: freitas (2015).

ACTIVITIES ATYPICAL OF CRIMINAL EXPERTISE

There are other actions related to the preparation of reports, in addition to typing, that interfere with the count of your production time: *download* of images from Section in photography, replacement of *toner* in printer, confection in sketch, gathering of letters, analysis and research of expert surveys. The time stops execution of these activities must be computed for two reasons: the first is that, when stipulating goals for delivering a report, one must take into account, on the part of the manager, these values. The second is that the identification of these activities helps the manager in measures for the execution of measures to eliminate them or, at least any less, reduce them, making production more efficient.

The workload of the criminal experts assigned to the DPE is limited and defined. Currently the criminal expert works fulfilling 9 shifts, with 5 shifts of 24 hours and 4, of 12 hours each, according to Ordinance Number

1370/2013/SSPGO. Of these 7 shifts, which make up the maximum legal workload of 162 hours, 4 (48 hours) are intended for preparing a report and 5 (120 hours) for attending to occurrences, according to illustration a follow Next:
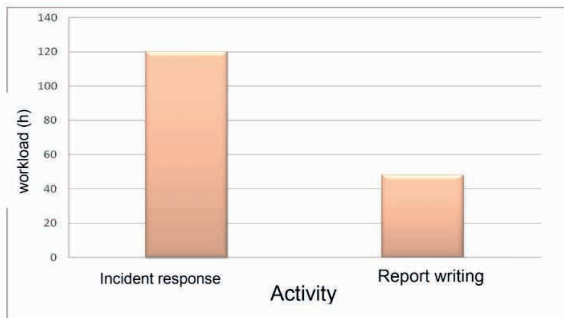
Graph 01 - Hours made available to attend occurrences and writing reports.

Source: Elaborate for the author (2017)

A proportion represented at the graphic indicates what time available for the preparation of corresponding reports to 28.5% of the total workload.

A relationship current in between number in reports It is charge hourly at DPE, currently it prevails in the DPE a correspondence between expert report and cargo hourly. There is no detailed decomposition of the natures of occurrences, but Yes three large groups (SPTC, 2017):

Nature	Charge hourly (h)
Death violent	12
crimes against patrimony	4
reproduction simulated	16

Table 01 - Relationship between the nature of the occurrence and the respective time of confection.

Source: elaborate for the author (2017)

Those values no represent the reality from the Division in Skills External, since there was an exacerbated grouping of the natures of occurrences answered in just three groups.

READJUSTMENT OF THE LOAD HOURLY TO PREPARATION OF EXPERT REPORTS

AND necessary what there is The readjustment of time defendant for The confection in report expert at the scope from the DPE, sector connected to the Institute in Criminalistics Leonardo Rodrigues, from the Technical-Scientific Police of Goiás, according to figure 1, since the values currently practiced were not obtained scientifically, nor Nor are they regulated.

The objective of this work is to determine the average period for the confection of expert reports and also the time spent in activities that are linked indirectly the realization of that work It is what no they are computed in that process, masking the hours of effective production.

In order to estimate the deadline for preparing reports due to the nature of exam from the DPE It is the time spent with activities what no they are directly related to the preparation of reports, a questionnaire was presented, with fields us which you experts criminal crowded at DPE pointed out the time approximate dispensed for each nature in exam (murder with one victim, hit and run, fire, etc.).

Like this, through of researches, it was obtained the time spent in activities what no they are directly related the confection in reports, as, for example, *downloading* images in the photo section, queuing to use printer, making sketches, among others that must be computed when the time for preparing reports is measured. Furthermore, the disclosure of these values can be used by the manager to eliminate or minimize them.

It is the analysis of time spent at confection in reports It is of time spent in activities no directly related to clothing will create a tool to support the manager in the evaluation productivity of criminal experts regarding the

production of reports, directing the manager at determination in possible orders in service, in mode The avoid work overload. It will also help to create a working environment more efficient, since it indicates the tasks that demand certain time intervals. time, making possible its elimination.

METHODOLOGY

The present work he was accomplished using search bibliographical descriptive and quantitative for analysis of results.

Data were collected through the questionnaire technique applied to 25 criminal experts assigned to the External Expertise Division (DPE), in the period from 1st The May 30, 2017.

They were tabulated, through of software Microsoft Excel, according to appendix B, C, D, F It is G.

To find the value that represents the sample, a measure was used. of central tendency, more precisely arithmetic mean. It was also used as dispersion measure, standard deviation.

About average arithmetic, teaches freund (2006, p. 12):

> The most popular measure of central tendency is what the layman calls the "average" It is O Statistical name in **average arithmetic** or, also, simply average*. An average is set as follows:
>
> An average in n numbers and yours divided sum by n.

[...]

$$\bar{x} = \frac{x_1 + x_2 + \ldots + x_n}{n}$$

[...]

$$\bar{x} = \frac{\sum_1^n x_n}{n}$$

[...]

Already in relationship to the standard deviation, montgomery It is Runger (2003, p.120), analyze:

> Although the sample mean is useful, it does not convey all the information. about a sample of data. The variability or dispersion in the data he can to be described for the variance from the sample or for the standard deviation from the sample.

> *variance Sample*

> if $x_1, x1, \ldots, x_n$ for one sample in n comments, then The **variance Sample** it will be

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}$$

[..]

The standard deviation from the sample, *s,* it is the source square positive variance from the sample.

After the determination from the average arithmetic, of Detour standard It is considering you data raised as variables random continuous, they were drawn to the respective curves in Gauss. it is about in one distribution in probabilities continuous, whose equation is represented to follow:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} \epsilon^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$$

Where μ is the average arithmetic and s It is the standard deviation.

The normal or Gauss curve represents, in an illustrative way, the mean and the dispersion of data collected in relation to it. As for this

dispersion, define Freund (2006, p. 58)

> [...] the dispersion of a data set is small if the values are well concentrated around the mean, and it is large if the values are very scattered in lathe from the average. Correspondingly, we can to say now that if the standard deviation of a set of data is small, the values are well concentrated around the mean, and if the standard deviation is big, the values are very scattered in around the average [...]
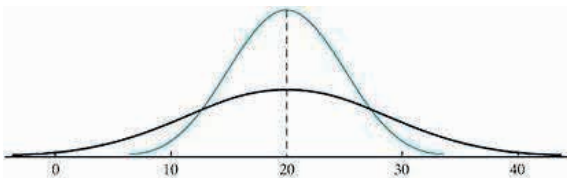
As an example, graph 2 shows two normal curves that present standard deviations equals and different averages.
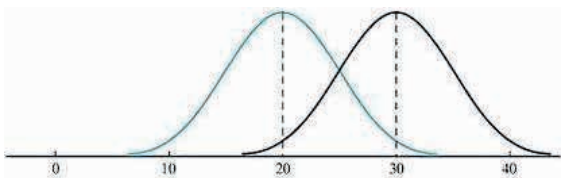
Graphic 2 – Examples of Normal Curve (from Gauss)

Source: freund, 2006

Other example It is shown at the graphic 3, with two curves normal what present different standard deviations and equal means.
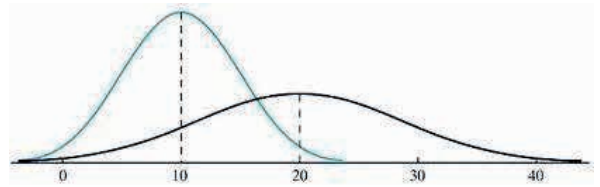

Graphic 3 – Examples of Normal Curve (from Gauss)

Source: Freund (2006)

In the curves above, the points central they are similar, at the case, 20. Still, to the "widths" they are many different.

As last example, the graphic 4 show two curves normal what present standard deviations and different means.

Graphic 4 – Examples of Normal Curve (from Gauss)

Source: freund, 2006.

In the curves above, the points central they are many different, at the case, 10 It is 20.

In addition, to the "widths" also they are many different.

RESULTS AND DISCUSSIONS

They were defined to the tasks with to the which there is one expenditure in time during the production of reports so that the time indicated in the research was net, that is, exclusively for the preparation of reports. Furthermore, this expenditure known It is determined, can be deleted or, at any less, diminished.

Activity
Print-related activities (queue, faults, toner) Activities related to photographs (download, assembly, absence of server, etc)
Activities related to the search for surveys, search and analysis of cadaveric report.
Gathering of documents and letters Confection of sketch
Correction post review

Table 02 – Correspondence in between The activity carried out It is time spent respective.

Source: Prepared by author. (2017)

A division in tasks many different allowed appointments more accurate during application of questionnaire, facilitating so to interviewee's choice.

In three groups quoted at table 1, they were determined occurrence subtypes.

A follow, at table 3, they are listed to the natures what make up O group in death violate:

Death violent	mechanical asphyxia
	Suicide (PAF)
	Murder (one victim)
	Murder (two victims)
	Murder (three victims)
	Murder with White gun
	Intervention police officer
	Accident of work
	Precipitation
	reproduction simulated
	inspection in vehicle

Table 03 – Unfolding of the group Death Violent.

Source: elaborate for the author (2017)

Each of the above natures has its particularities, consequently, reporting period many different.

The traffic occurrence group was subdivided into 6 subtypes, according to table 4, below:

Occurrence in Traffic	Exit track
	Collision against obstacle fixed
	run over
	Collision in between vehicles
	reproduction simulated
	Survey of vehicles

Table 04 – Unfolding of group Occurrence in Traffic

Source: elaborate by the author (2017).

The table above could show a greater number of subtypes. However, further disentangling could cause inaccuracy when noting per part of the interviewee.

A table 5 The follow list the subtypes of group crimes against the patrimony:

crimes against patrimony	break-in/climbing
	Damage
	Fire

Table 05 – Breakdown of group crimes against patrimony

Source: elaborate by the author (2017).

In the same way as the traffic incident group, there could have been the creation of more subtypes, what not was made for the reasons cited above.

From of this dismemberment, applied one composite questionnaire by two objective questions. The questions were grouped for each nature cited in the tables 1, two, 3 It is 4 contained at the appendix A. That quiz he was distributed to 25 criminal experts assigned to the Division of External Expertise of the Institute in Criminalistics, out of a total of 34, that is, 73.5% were consulted.

Regarding the Traffic Occurrence group, the values indicated in the research were tabulated according to table 1 of appendix B. The arithmetic means and the standard deviation obtained are illustrated in table 6, below:

	Departure fromtrack	Collision against obstacle fixed	Collision in between vehicles	reproduction simulated	Survey in vehicle	run over
Average arithmetic (H)	8.90	9.82	12.22	17.82	3.90	9.10
Detour standard (H)	3.39	3.72	3.77	6.27	1.69	3.08

Table 06 - Parameters in occurrence of Traffic

Source: elaborate by the author (2017).

It is noticed that the report of simulated reproduction is what demanded more production time, 17.82h, that is, 17h49min, while the inspection report in vehicle, the smallest, 1.69h, that is, 1h41min.

It is also noted that the simulated reproduction report presented the highest standard deviation, 6.27h, that is, 6h16min. This indicates that there was greater variability in the answers.

In relationship to the group in occurrence in death violent, you values pointed at search they were tabulated according to tables two It is 3 of the appendices W It is D, respectively. An arithmetic average It is the standard deviation obtained they are illustrated at table 6 below:

	suffocation mechanics	homicide w/ one victim	homicide with two victims	homicide with three victims	precipitation	suicide PAF
Average arithmetic (H)	7.08	9.68	13.16	16.12	8.30	7.90
Detour standard (H)	3.21	3,30	3,91	5,66	4,12	1,61
	Intervention Police officer	accident of work	reproduction simulated	inspection in vehicle	Murder weapon white	
Average arithmetic (H)	16,34	14,84	17,55	4,25	8,19	
Detour standard (H)	8,24	5,62	6,22	1,86	2,60	

Table 07 - Parameters in occurrences of death violent

Source: elaborate by the author (2017).

The simulated reproduction, in the same way as in the occurrence group of Traffic, presented the greatest value, 17.55h, that is, 5:33 pm. The standard deviation reached the highest value in police intervention, 8.24h, that is, 8h14min. The smallest average he was pointed in relation survey in vehicle, 4.25h, 4h15min.

Regarding the group of Crimes against property, the values indicated in the survey were tabulated according to Table 1 of Appendix J. The arithmetic mean and the standard deviation obtained are illustrated in the table 8, below:

	break-in	Damage to the patrimony	Fire
Average arithmetic (H)	3.88	3.40	9.20
Detour standard (H)	1.12	1.22	2.28

Table 08 - Parameters in occurrence crimes against patrimony

Source: elaborate by the author (2017).

The fire report was pointed out as the one that demands the most time of confection, 9.20 am, or it is, 9:12. The report of damage had a lower mean, 1.22h, i.e. 1h32min.

The notes referring to activities indirectly related to the preparation of expert reports, tables 5 and 6 of appendices F and G were tabulated, respectively. The arithmetic mean and standard deviation obtained are illustrated in the table 9, below:

	Photographs	Surveys	Sketches	trades and memorandos
Arithmetic average (min)	**39,40**	**53,88**	**107,80**	**46,80**
Standard deviation (min)	**37,36**	**47,25**	**84,46**	**62,63**
	Printers	corrections	Mounting	
Arithmetic average (h)	**65,40**	**116,80**	**72,60**	
Standard deviation (h)	**61,15**	**101,80**	**124,97**	**X**

Table 09 - Time spent on indirectly related activities The preparation of expert reports
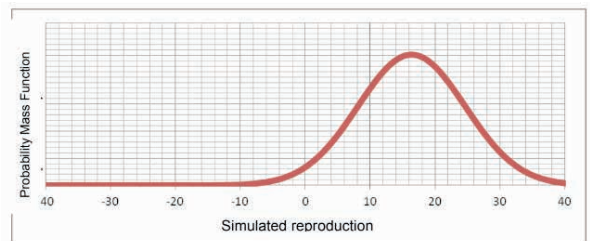
Source: Elaborate by the author (2017).

Among to the activities listed, the correction after revision It is what demands more time, 107.80min, that is, 1h47min. The largest standard deviation, and consequently, bigger variability of answers, occurred in relationship in the assembly of report, 2h04min, about, bigger including what The own average, 1h12min.

The results obtained are also represented in the form of curves, according to constant graphs of the Appendices M, N, O, P and Q.

It is known what, how much more complex the nature of exam expert, more elements they are analyzed. Consequently, the respective report will demand one period bigger for to be made. That it was left evident in relationship to the data collected and analyzed: the more complex, the longer the average production.

The greater the variability of the notes, which was perceptible by the traced curves (Appendix M, N and O). The narrower the curve, the smaller the variability in relation to the mean. For example, an expert report of survey in vehicles it presents one standard deviation small, or it is, you values indicated are close to the average. An expert report of simulated reproduction of death violent, it presents one standard deviation high, or it is, you values pointed they are dispersed in relation to the mean.

Graphic 05 – normal curve - Reproduction mock of death violent

Source: Elaborate by the author (2017).

The normal curve above, which averages approximately 16h, shows standard deviation smaller than shown in the graph 5, below:
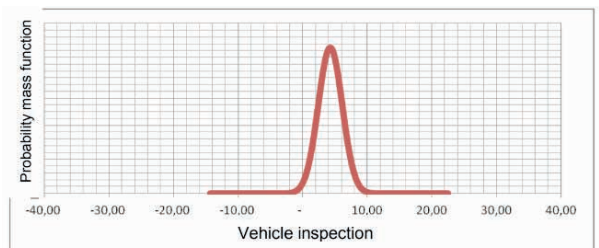
Graphic 6 – Curve normal – Survey in vehicle of death violent

Source: Elaborate by the author (2017).

The normal curve above shows a mean of 4h and a standard deviation of less than what was shown in graph 5.

The results indicated considerable time intervals in activities what are not directly related to the making of the forensic report.

Differently of the periods pointed at confection in reports, to the activities no presented variability considerable, or it is, the

data if approached the average. One of the explanations for this is that the values indicated were not high when compared to those demanded in the making of reports experts.

Average total time of all activities indirectly related to the preparation of expert reports was found by making the arithmetic mean of the values medium in all to the activities. The value found he was 71.81 minutes, or it is, 1h11min, about.

The research demonstrated that subdivision of occurrence groups allowed to the research participant to point more precisely your options.

The statistical tools used (arithmetic mean and standard deviation) showed values closer to reality, both for the time spent for preparing the expert report by each expert, as well as for the time spent with activities not directly related to confection of this report.

The values found for the confection in reports expert demonstrated what the relationship practiced at the moment at DPE in between nature from the occurrence It is charge hourly respective no it is proper, already what to the averages presented different time intervals from those practiced (3h, 12h and 4 p.m.) greater manufacturing) showed significant dispersion, that is, there was a heterogeneity of the periods of preparation of reports by the criminal experts of the DPE.

One of the factors that explain the divergence mentioned above is the absence of standardization of expert reports.

The periods medium presented will allow to the manager search the adequacy servers exceeding the quoted numbers.

The average periods spent on activities not directly linked to the preparation of expert reports suggest that they must be considered when analysis of the workload of the criminal expert working at the DPE. That is, they must be added when providing a workload for the preparation of reports experts.

Furthermore, these numbers demonstrate the need to optimize tasks what produce those values. Among to the actions what would help in this mitigation they are:

- Digitization of the expert report, which would reduce dependence on relationship the printing of reports;

- Hiring employees for: making sketches, assembling attachments photographic.

The data presented will help the Division coordinator's attitudes of External Expertise to assign tasks to the servers in a way compatible with the charge hourly nice, improving the planning and the efficiency of that sector.

FINAL CONSIDERATIONS

The need to readjust the relationship between the number of reports and the load hourly it was left evident with you results obtained. In addition, it was left Of course what exist considerable time spent on activities that are not directly related the preparation of expert reports.

The break-ups of natures of occurrences It is to the averages found ratified the differentiation that exists when preparing reports expert and the periods dedicated to this work.

The standard deviations found showed that there is, in several types of reports, considerable divergences between the criminal experts, a fact that may be related to the lack of standardization of expert reports.

The present study demonstrated that the dismemberment technique of occurrences and activities not related to the preparation of reports, combined with the use of adequate statistical tools presented satisfactory and adequate results to the reality of the Division of External Expertise, including serving as an instrument for use by the coordination of the aforementioned division to readjust the hourly load made available for the preparation of reports and also to mitigate the activities different, but time consuming.

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APPENDIX A

Quiz evaluative – related time to the confection in reports

1) Time in spent for the preparation of expert reports by nature:

Nature	Time spent(H)
suffocation mechanics	
Murder (one victim)	
Murder (two victims)	
Murder (three or more victims)	
Intervention Police officer	
Precipitation	
Suicide PAF	
Murder weapon white	
Accident in work	
reproduction simulated	
Survey in vehicle	

Table 01 – type in death violent

Source: elaborate by the author (2017).

Nature	Time spent (H)
Exit in track	
run over	
Collision against obstacle fixed	
Collision in between vehicles	
reproduction simulated	
surveys in vehicle	

Table 2 – type occurrence in Traffic

Source: elaborate by the author

Nature	Time spent (h)
break-in	
damage	
Fire	

Table 02 – occurrence type of traffic

Source: elaborate by the author(2017).

2) *Time spent in activities not directly related to the confection of reports:*

Nature	Weather spent (min)
download in photographs	
Analysis and collection of surveys (expert and medico-legal) Impressions (defects, print queue, *toner replacement*) Confection of sketches	
Joined in documents	
corrections post review, reprints, reassembly.	
Assembly (body and attachments)	

Table 03 – types of activities indirectly related to the confection in reports

Source: elaborate by the author

APPENDIX B OCCURRENCE IN TRAFFIC

	Departure from Track	Collision against obstacle fixed	Collision in between vehicles
1	6	6	12
2	6	6	12
3	6	8	12
4	10	10	12
5	12	12	12
6	8	8	12
7	8	12	16
8	4	4	8
9	12	10	12

10	6	6	10
11	12	12	12
12	12	12	12
13	8	8	8
14	12	12	18
15	6	12	12
16	1.5	1.5	2.5
17	8	8	8
18	15	18	20
19	8	8	12
20	12	12	12
21	10	12	16
22	6	12	12
23	12	12	15
24	10	12	16
25	12	12	12

Table 01 – time confectionery of reports expert in occurrences of traffic (hours)

Source: Prepared by author (2017)

	reproduction simulated	**Survey by vehicle**	**run over**
1	16	4	8
2	18	3	8
3	16	4	8
4	16	4	8
5	24	6	8
6	18	4	8
7	20	4	8
8	12	6	8
9	24	4	8
10	18	3	12
11	14	6	12
12	24	6	12
13	12	8	12
14	24	3	12
15	24	3	12
16	2.5	0.5	14
17	12	2	6
18	30	4	4
19	16	4	2
20	12	3	12
21	16	4	X
22	30	3	X
23	15	3	X
24	20	3	X

	25	12	3	X

Table 02 – time confectionery in expert reports of occurrences in traffic (hours)

Source: Elaborate by the author (2017).

APPENDIX C DEATH VIOLENT

	suffocation mechanics*	homicide onevictim	Murder two victims	homicide three ormore victims	Precipitation
1	6	10	12	12	8
2	6	8	12	16	8
3	8	12	16	24	8
4	12	10	15	20	8
5	5	12	18	24	8
6	6	8	12	16	8
7	4	12	18	24	8
8	10	6	10	12	8
9	8	12	16	24	12
10	12	8	11	15	12
11	6	6	12	8	12
12	6	12	10	18	12
13	6	8	15	10	16
14	8	12	20	18	16
15	12	12	15	18	2
16	4	14	16	20	2
17	5	6	10	15	4
18	6	10	14	18	2
19	6	14	16	21	6
20	6	12	14	18	6
21	1	2	3	4	X
22	5	6	8	8	X
23	16	16	18	20	X
24	8	8	10	12	X
25	5	6	8	8	X

Table 01 – Time to confection of expert reports of occurrence of death violent (hours)

Source: Elaborate by the author (2017).

	gun homicide white	SuicidePAF	Intervention police officer	Accidentin work	reproduction simulated	Surveyin vehicle
1	8	8	14	12	16	4
2	8	8	18	16	18	4
3	8	8	48	16	18	4
4	8	8	12	12	16	6
5	8	8	24	18	24	4
6	8	8	12	24	24	6
7	8	8	18	18	24	4
8	8	8	10	8	15	4
9	8	8	24	24	24	3
10	8	8	18	15	18	4
11	12	8	8	12	12	3
12	12	8	18	18	24	6
13	12	8	10	8	12	8
14	12	8	20	24	24	8
15	2	6	18	24	24	4
16	4	6	15	15	15	3
17	6	6	22	14	26	3
18	6	6	12	8	20	3
19	6	6	12	20	20	3
20	10	12	21	16	16	3
21	10	12	12	10	12	8
22	X	X	3	6	2.5	3
23	X	X	12	8	8	0.5
24	X	X	20	20	24	4
25	X	X	12	12	12	6

Table 02 – Time to confection of expert reports of occurrence of death violent (hours)

Source: Elaborate by the author (2017).

APPENDIX D

Data obtained in relation to the time taken to prepare reports of crimes against property

	Break-in	Property damage	Fire
1	5	4	8
2	4	3	8
3	4	3	8
4	3	3	8
5	3	3	8
6	3	3	8
7	4	4	8
8	4	2	8
9	4	3	8
10	4	4	12
11	6	6	12

12	4	4	12
13	4	4	12
14	4	4	12
15	5	5	6
16	2	2	6
17	6	6	6
18	3	3	12
19	5	5	12
20	3	3	10
21	5	3	x
22	1	1	x
23	3	2	x
24	4	3	x
25	4	2	x

Table 01: Time of confection of expert reports in crimes against equity (hours)

Source: Elaborate by the author (2017).

APPENDIX E

Data obtained regarding the activities indirectly linked to the confection of reports expert

	download in photographs	Analysis in withdrawals	printers
1	60	60	120
2	60	60	60
3	10	10	30
4	30	120	150
5	10	30	20
6	30	30	45
7	25	45	90
8	30	60	60
9	45	45	60
10	15	30	15
11	60	60	60
12	30	30	40
13	30	120	40
14	30	30	30
15	15	30	15
16	5	2	40
17	120	180	240
18	20	30	40
19	30	30	20
20	40	25	60
21	30	30	40
22	30	40	60
23	180	180	240

24	20	60	30
25	30	10	30

table _ 01 - Time spent on activities indirectly related to the confection in expert reports (minutes)

Source: Elaborate by the author (2017).

	sketches	joined by documents	corrections	Assembly
1	120	30	240	30
2	120	60	120	60
3	30	30	60	10
4	150	30	150	600
5	120	30	150	10
6	45	15	30	15
7	90	25	180	45
8	90	30	60	10
9	0	0	60	45
10	0	10	0	20
11	300	60	240	300
12	120	60	120	120
13	120	30	120	60
14	120	30	60	30
15	0	15	30	30
16	40	20	40	45
17	300	300	480	120
18	90	30	60	60
19	240	60	40	20
20	100	20	50	30
21	40	30	120	30
22	60	30	90	30
23	240	180	240	60
24	60	30	120	20
25	100	15	60	15

table _ 02 – Time in activities indirectly related to the confection in expert reports (minutes)

Source: Elaborate by the author (2017).

APPENDIX F

Occurrence in Traffic
Average arithmetic It is standard deviation of the data raised

	Departure from track	collision against obstacle fixed	collision between vehicles	reproduction simulated	Run over	inspection in vehicle
Average arithmetic (H)	8.90	9.82	12.22	17.82	3.90	9.10
Detour standard (H)	3.39	3.72	3.77	6.27	1.69	3.08

Table _ 01 - Parameters in occurrence in Traffic

Source: elaborate by the author (2017).

	suffocation mechanics	Homicide with a victim	homicide with twovictims	Murderwith three victims	Precipitation	SuicidePAF
Average arithmetic (H)	7.08	9.68	13.16	16.12	8.30	7.90
Detour pattern (h)	3.21	3.30	3.91	5.66	4.12	1.61

	Intervention Police officer	accident ofwork	reproduction simulated	Survey in vehicle	Murder weapon white
Average arithmetic (H)	16.34	14.84	17.55	4.25	8.19
Detour pattern (h)	8.24	5.62	6.22	1.86	2.60

Table 02 - Parameters in occurrences in death violent

Source: elaborate by the author.

APPENDIX G

Crimes against the heritage
Average arithmetic It is standard deviation of the data raised

	break-in	Damage to the patrimony	Fire
Average arithmetic (H)	3.88	3.4	9.2
Detour pattern (h)	1.129	1.22	2.28

Table 01 - Parameters in occurrence crimes against O patrimony

Source: elaborate by the author (2017).

	photographs	Withdrawals	sketches	trades and memos
Average arithmetic (H)	**39.4**	**53.88**	**107.8**	**46.8**
Detour pattern (h)	**37.36**	**47.25**	**84.46**	**62.63**
	Printers	corrections	Assembly	
Average arithmetic (H)	**65.40**	**116.80**	**72.60**	
Detour pattern (h)	**61.15**	**101.80**	**124.97**	

Table 02 - Time spent on activities indirectly related to the confection in reports expert

Source: elaborate by the author (2017).

APPENDIX H

Activities indirectly related to the preparation of expert reports Average arithmetic and standard deviations of data raised

	photographs	Withdrawals	sketches	trades and memos
Average arithmetic (H)	**39.40**	**53.88**	**107.80**	**46.80**
Detour pattern (h)	**37.36**	**47.25**	**84.46**	**62.63**
	Printers	corrections	Assembly	
Average arithmetic (H)	**65.40**	**116.80**	**72.60**	
Detour pattern (h)	**61.15**	**101.80**	**124.97**	

Table 10 - Time spent on activities indirectly related to confection in expert reports

Source: elaborate by the author (2017).

APPENDIX I

Occurrences in Traffic – curves normal data raised
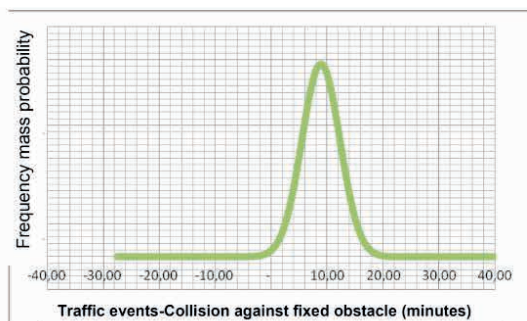
Graph 01 – Fixed Obstacle

Source: elaborate by the author (2017).
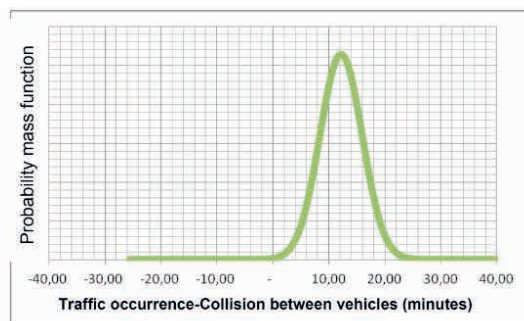
Chart 02 – collision between vehicles

Source: elaborate by the author (2017).
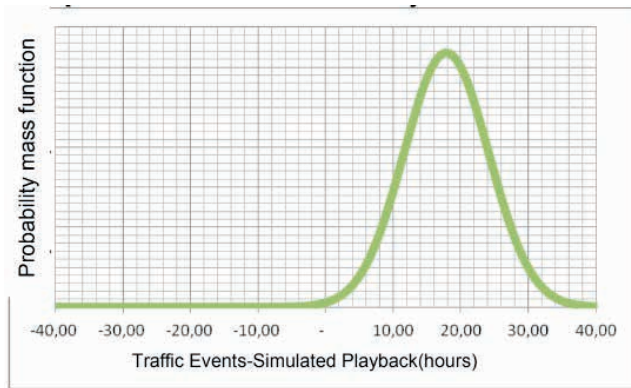
Graphic 03 – Simulated Playback

Source: elaborate by the author (2017).
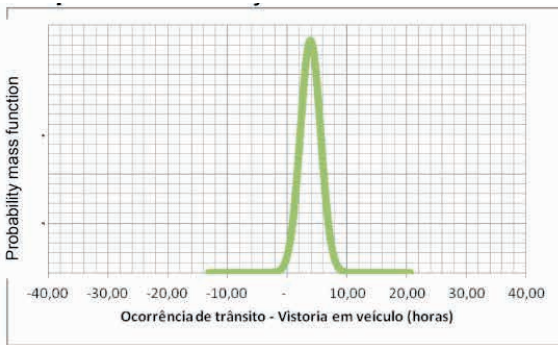
Graphic 04 - Survey in vehicle

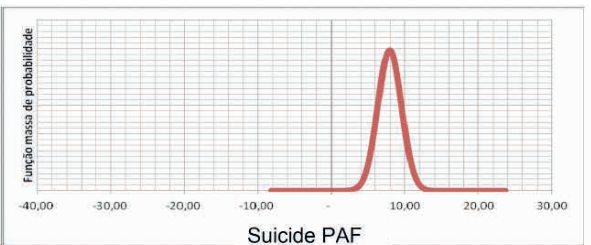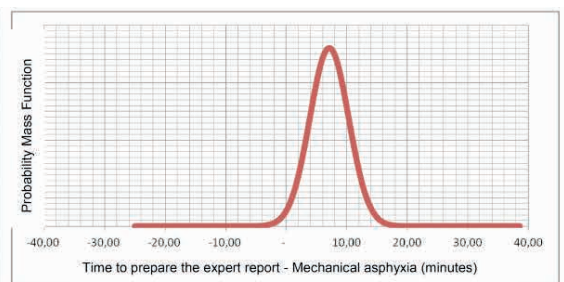Source: elaborate by the author (2017).
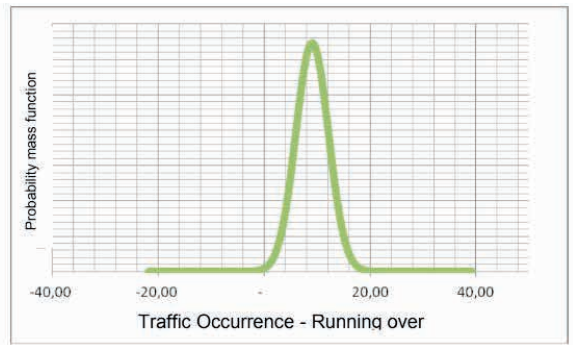
Chart 05 – run over

Source: Elaborated by the author (2017).

APPENDIX J

Death Violent – Normal curves of data raised
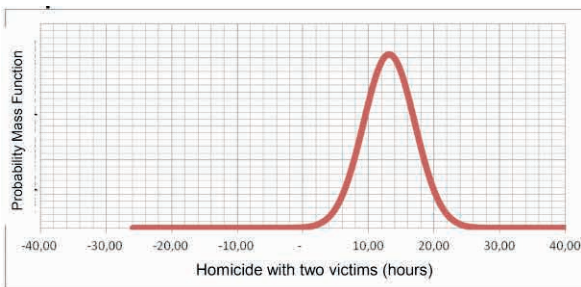
Graph 01 – Homicide with two victims

Source: elaborate by the author (2017).
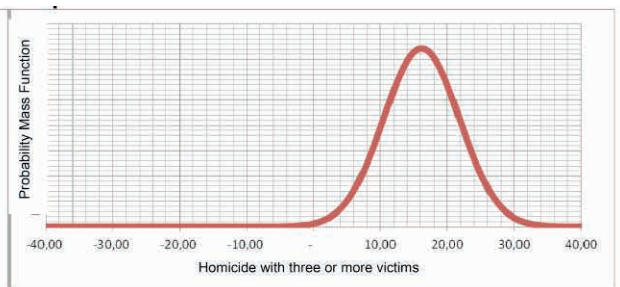
Graph 02 – homicide with three or more victims

Source: Prepared by author (2017).
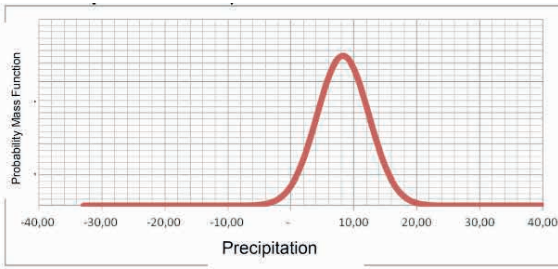
Graph 03 – Precipitation

Source: elaborate by the author (2017).
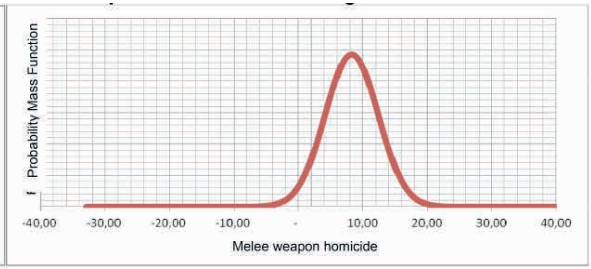
Graph 04 – Homicide with gun white

Source: elaborate by the author (2017).
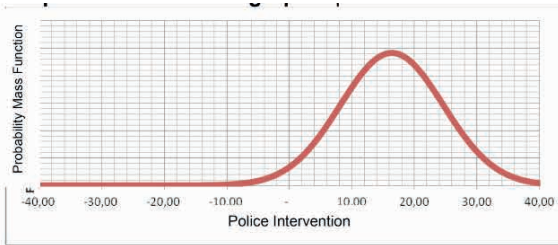
Graph 05 – Intervention graphic police

Source: elaborate by the author (2017).
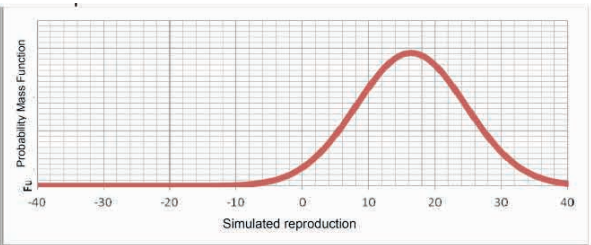
06 – reproduction simulated

Source: elaborate by the author (2017).
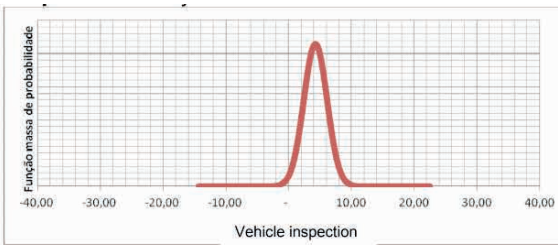
Graph 05 - Survey in vehicle

Source: elaborate by the author (2017).

Chart 06 – Suicide PAF

Source: elaborate for the author (2017).

Graph 07 – Accident of graphic work

Source: elaborate by the author (2017).

08 – suffocation mechanics

Source: elaborate by the author (2017).
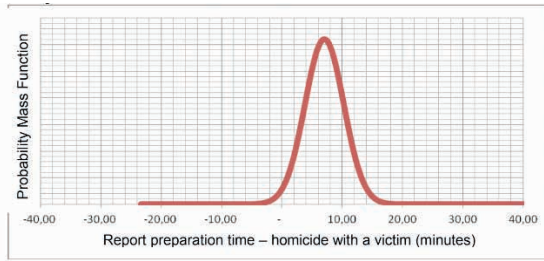
Graph 09 – Homicide with one victim

Source: elaborate for the author ()2017.

APPENDIX K

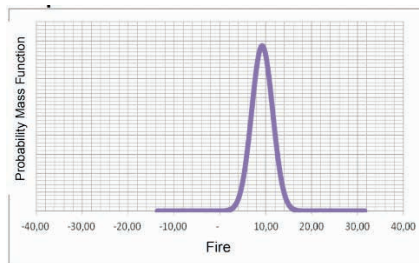### Crimes against property - Normal curves of the data collected
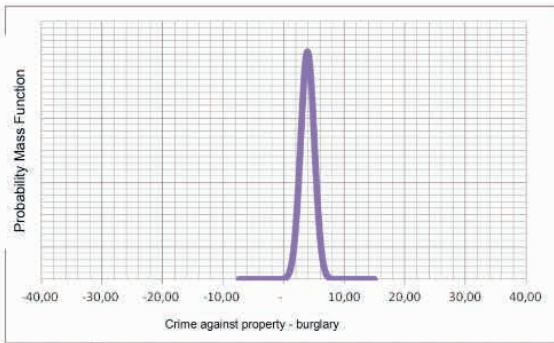
Graph 01 – Break-in

Source: elaborate by the author (2017).
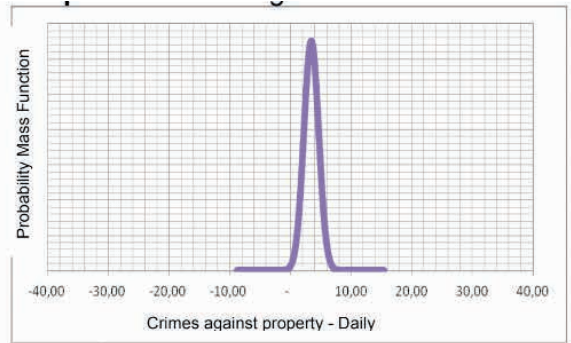
Graphic 02 – Damage
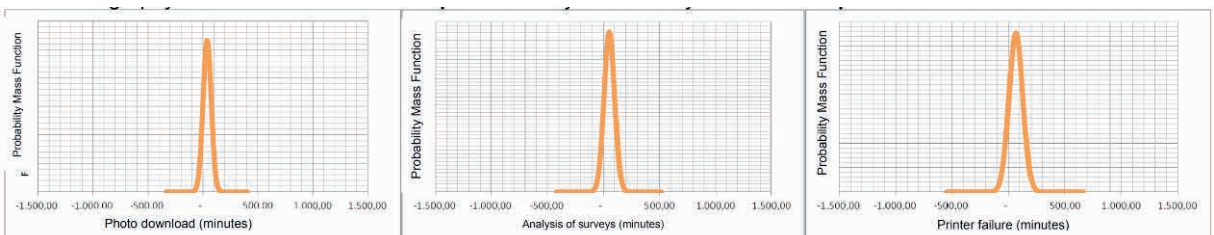
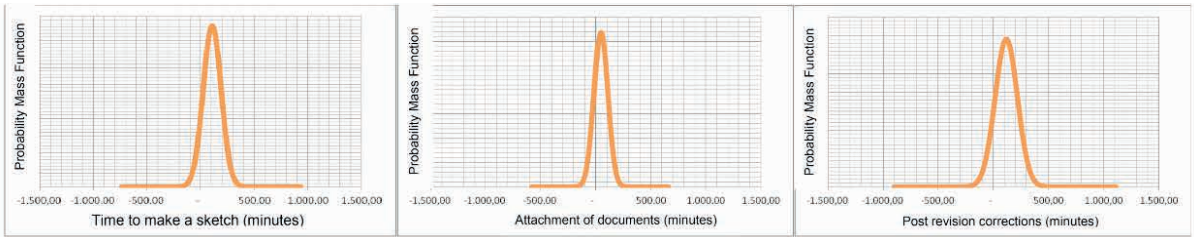Source: Elaborated by the author (2017).

Graph 03 – fire

Source: elaborate by the author (2017).

APPENDIX L

Activities indirectly related to the preparation of expert reports - Normal curves

Graphic 01 – Photography   Graph 02 – Analysis of surveys   Graph 03 - Printer

Source: elaborate by the author (2017). Source: Prepared by author (2017). Source: elaborate for the author (2017).
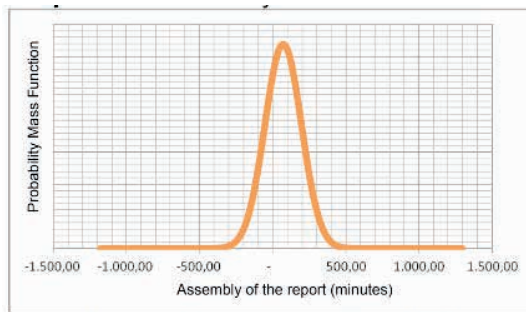

Graphic 04 – Sketch   Graphic Sketch 05 – Documents Graphic Documents 06 – Post-revision correction

Source: elaborate by the author (2017). Source: Elaborated for the author (2017). Source: Elaborated by the author (2017).

Graphic 07 - Assembly

Source: elaborate by the author (2017).