

Vulnerability Cost of Breach Calculator

Technical Manual

By

Name: Sarah De Vries

Student ID: C00231717

Project Supervisor: Paul Barry

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Introduction

This is the document for the Technical Manual where the design elements that were put in place for the Vulnerability Cost of Breach Calculator will be discussed.

The application will run on Excel instead of using C# to make an application as originally planned. To keep the process structured the questions are categorised into sections such as general questions and breach specific questions.

Instead of the user only having access to certain questions depending on the breach chose, in the spreadsheet the user will choose the parameters to fill in and the breach will be calculated as the details are filled in.

A later decision was made to provide the user with more than one result. Instead there will be a range that will include the lowest, highest and average cost that a data breach will cause.

Tools

- Microsoft Excel

Data Breach Categories

The data breach types that the Vulnerability Cost of Breach Calculator will calculate for is:

- Files been stolen
- A ransomware attack
- A Denial of Service (DoS) attack

Calculations

	A	B	C	D	E	F	G	H	I	J										
1																				
2																				
3																				
4	General																			
5																				
6	Annual Revenue					% Through Online Sales														
7																				
8								€		-										

(Figure 1.1)

Cell A4 (Figure 1.1) contains the first category of questions are held. D6 will hold the figure for the organisation's annual revenue. Cell I6 holds the amount of the annual revenue that comes through online sales. This cell is specific to calculating the cost of a DoS and ransomware attack. The format of this cell is as a percentage. Once it is entered, I8 will the percentage figure in I6 will be multiplied by the annual revenue in D6.

10	Amount of Data Stolen											
11												
12	PHI				PCI				PII		Total	0
13												

(Figure 1.2)

Cell A10 (Figure 1.2) contains the next categories where the user will provide the amount of record types that were compromised. The three types are Protected Health Information (A12), Payment Card Industry data (F12) and Personally Identifiable Information (K12). The total (P12) is set in place to calculate the total number of stolen files and stored in R12.

Monitoring							
Credit Monitoring No. Of Months		% of Clients Monitored		Identity Protection No. Of Months		% of Clients Monitored	
			0				0

(Figure 1.3)

Cell A16 has the parameters categorised by monitoring (Figure 1.3) the clients. The user will enter the amount of months that they will provide credit monitoring (D18) or identity protection (N18). I20 and S20 will take the total records from R12 and multiply it by the percentage of clients that will opt to be monitored.

Investigation				
Forensics Team Active Hours		€ -	€ -	€ -
		Low	High	Average

(Figure 1.4)

Cell D24 for Investigating requires the user to enter the total hours that a forensics team (Figure 1.4) will be hired in the event of a data breach. Upon research of the different cost factors, hiring a forensic team can range from \$200 to \$2000. I converted the figures to Euros and rounded to the nearest whole number. The low value (F24) will take the number of hours from D24 and multiply it by €166, the hours and multiply it by 1662 for the high value and for the average cost multiply D24 by €914.

Legal			
GDPR Fines	€ -	€ -	€ -
	Low	High	Average

(Figure 1.5)

Cell A28 carries the section for GDPR fines (Figure 1.5) in the event of a data breach. Since the GDPR fine will range from 2-4% of the organizations revenue the low section (F24) will multiply the annual revenue by 2%, the high section (H24) will multiply the annual revenue by 4% and the average section (J24) will multiply the annual revenue by 3%.

External Communication				
Hotline Support Active Hours		Mailing to Customers	€	1.75

(Figure 1.6)

The user will enter in the total hours that the hotline support (D36) will be operational (Figure 1.6). Since the clients must be informed of any data breaches, the average cost of printing letters, mailing them etc has been set at €1.75. This figure will be multiples by the total number of files compromised (R12).

Ransomware					
Amount Demanded		Was it Paid (y/n)		No. Of Encrypted Files	

(Figure 1.7)

A40 hold parameters that are specific to a ransomware attack (Figure 1.7). The user will insert the amount of money that was demanded into cell A40 and whether it was paid. Cell N42 will hold the number of files that had been encrypted in the attack.

Loss of Employee Time					
No. Of Employees		Hourly Rate of Pay		Hours Away From Normal Work	

(Figure 1.8)

To calculate the total work cost for an organisation due to a data breach factors from Figure 1.8 will be calculated. The spreadsheet will multiply N48 by I48 and then multiply that answer by D48. This will give the total loss cost of a number of employees taking time away from their job to resolve the breach issue. This can be used for a ransomware attacks and a DoS attack.

Denial of Service				
Hours Inactive		Yearly online Revenue per hour (average)	€	-

(Figure 1.9)

Cell A52 holds a parameter specific to a DoS attack (Figure 1.9). The user will enter the total hours inactive. Cell I54 (yearly online revenue per hour) will take the result from I8 and divide it by 8760 (total hours in a year).

Calculate Data Breach Total

Stolen/Breached Files

Breached Files			
Total Cost of Files	€	-	
Postage	€	-	
GDPR Fines	€	-	€ -
Credit Monitoring	€	-	€ -
Identity Monitoring	€	-	€ -
Forensics Team	€	-	€ -
Hotline Support	€	-	
Total	€	-	€ -
		Low	High
			Average

(Figure 2.1)

To calculate the total costs in Figure 2.1:

- Total Cost of Files: take the total files from cell R12 and multiply it by €181 which is the average value of a client record.
- Postage: cost of postage (cell I36) multiplied by the total records (cell R12)
- GDPR Fines: the annual revenue (D6) multiplied by 2% (low), 4% (high) or 3% (average).
- **Note**: credit and identity monitoring have a range of 7-10 Euros (per month per clients monitored) been multiplied by S20/I20 then by the number of months
- Credit Monitoring: AA16: multiply D18 by 7 (low) then by I20
AC16: multiply D18 by 10 (high) then by I20
AE16: multiply D18 by 8 (average) then by I20
- Identity Monitoring: AA19: multiply N18 by 7 (low) then by S20
AC19: multiply N18 by 10 (high) then by S20
AE19: multiply N18 by 8 (average) then by S20
- Forensics Team: Use cell F24: D24 multiplied by 166 (low)
Use cell H24: D24 multiplied by 1662 (high)
Use cell J24: D24 multiplied by 914 (average)

- **Hotline Support:** Cell D36 (hotline support hours) multiplied by 50
- **TOTAL:** Low: =SUM(AA22+AA19+AA16+AA13+AA10+AA7)
High: =SUM(AA7+AA10+AC13+AC16+AC19+AC22+AA25)
Average: =SUM(AA7+AA10+AE13+AE16+AE19+AE22+AA25)

Ransomware

Ransomware			
Ransom Paid	€ -		
Postage	€ -		
Hotline Support	€ -		
Forensics Team	€ -	€ -	€ -
Work Cost	€ -		
GDPR Fines	€ -	€ -	€ -
Total	€ -	€ -	€ -
	Low	High	Average

(Figure 2.2)

To calculate the total costs in Figure 2.2:

- **Ransom Paid:** uses the value from D42
- **Postage:** multiply I36 by N42 which was the number of encrypted files
- **Hotline Support:** Cell D36 (hotline support hours) multiplied by 50
- **Forensics Team:** Use cell F24: D24 multiplied by 166 (low)
Use cell H24: D24 multiplied by 1662 (high)
Use cell J24: D24 multiplied by 914 (average)
- **Work Cost:** Hours away from work (N48) multiplied by the hourly rate of pay (I48) then multiply the answer by the number of employees (D48)
- **GDPR Fines:** the annual revenue (D6) multiplied by 2% (low), 4% (high) or 3% (average).
- **TOTAL:** Low: =SUM(AK7+AK10+AK13+AK16+AK19+AK22)
High: =SUM(AK7+AK10+AK13+AM16+AK19+AM22)
Average: =SUM(AK7+AK10+AK13+AO16+AK19+AO22)

Denial of Service

Denial of Service			
Lost Revenue	€ -		
Hotline Support	€ -		
Forensics Team	€ -	€ -	€ -
Work Cost	€ -		
GDPR Fines	€ -	€ -	€ -
Total	€ -	€ -	€ -
	Low	High	Average

(Figure 2.3)

To calculate the total costs in Figure 2.3:

- **Lost Revenue:** multiply yearly online revenue per hour (I54) by the hours inactive (D54)
- **Hotline Support:** Cell D36 (hotline support hours) multiplied by 50
- **Forensics Team:** Use cell F24: D24 multiplied by 166 (low)
Use cell H24: D24 multiplied by 1662 (high)
Use cell J24: D24 multiplied by 914 (average)
- **Work Cost:** Hours away from work (N48) multiplied by the hourly rate of pay (I48) then multiply the answer by the number of employees (D48)
- **GDPR Fines:** the annual revenue (D6) multiplied by 2% (low), 4% (high) or 3% (average).
- **TOTAL:** Low: =SUM(AU7+AU10+AU13+AU16+AU19)
High: =SUM(AU7+AU10+AW13+AU16+AW19)
Average: =SUM(AU7+AU10+AY13+AU16+AY19)

Reference

sprinklr. (2016). *How to Calculate the Cost of a Data Breach*. New York.