

Understanding the Spain D&B Delinquency Score

THIS DOCUMENT IS INTENDED TO ADDRESS THE FOLLOWING QUESTIONS:

- What is the D&B Delinquency Score?
- What does the D&B Delinquency Score predict?
- What is the availability of the D&B Delinquency Score?
- How is the D&B Delinquency Score calculated?
- How does the D&B Delinquency Score perform?
- What is the Relationship between the D&B Delinquency Score and the observed Delinquency Rates?



INTRODUCTION

The Spain D&B Delinquency Score is a statistically based tool that provides an overall assessment on the future prospects of an active firm in Spain facing a situation of being delinquent in its payments to some or all of its trade creditors. This tool complies with the definitions and quality requirements of DBI and is applicable to all firms regardless of having or not having financial information available in the Dun & Bradstreet Data Cloud.

In order to assign a risk indicator to each business in Spain, Informa developed separate assessment models for distinct business segments (Companies with Financials; Companies with no Financials), given the clear dissimilarities in terms of the information available for each segment in the Dun & Bradstreet Data Cloud, as well as the quite different observed historical delinquency rates.

The coverage of the new models is approximately 33% of active records (Excluding Branches) in Spain. The distribution of scored and non-scored registers as of December 2018 is as follows:

Table 1: Distribution of Registers - Scored and Non-scored

DISTRIBUTION OF REGISTERS	%
Delinquency Score for companies with Financials	18.6%
Delinquency Score for companies with no Financials	14.4%
Non Delinquency Score - Proprietorships and Joint Property and vacant succession	54.5%
Exclusions by Activity or Legal Form	12.5%

The distribution of the scoreable universe as of December 2018 is also summarized below.

Table 2: Distribution of the Spanish scoreable universe

MODEL TYPE	SEGMENT/LEGAL FORM	% RECORDS
Statistical		
<ul style="list-style-type: none"> Companies with Financials 	Private Limited Liability company (Sociedad de responsabilidad limitada)	57.25%
	Public Limited Liability Company (Sociedad Anónima)	5.16%
	Co-Operative Society (Sociedad cooperativa)	0.21%
	Partnership (Sociedad colectiva)	0.01%
	Limited partnership (Sociedad comanditaria)	0.01%
<ul style="list-style-type: none"> Companies without Financials 	Private Limited Liability company (Sociedad de responsabilidad limitada)	34.56%
	Public Limited Liability Company (Sociedad Anónima)	0.80%
	Co-Operative Society (Sociedad cooperativa)	2.00%
	Partnership (Sociedad colectiva)	0.01%
	Limited partnership (Sociedad comanditaria)	0.01%

The overall performance of the delinquency risk assessment relies on the two underlying models (with financials and with no financials), that together combine to provide a common and coherent output. Based on the assessment Informa applies, it is possible to rank businesses based on each one's probability of delinquency, i.e. becoming "BAD". Such ranking may be retrieved from the outputs provided by each of the following risk classifications: a Score ranging from 101 to 999; a 1 - 100 Score; a 5 - 1 risk class. The difference between classes in each of these classifications is based on the likelihood of a business experiencing a situation of delinquency over the next 12 months.

Besides the assessment of an extensive number of Companies with financial information available in the Dun & Bradstreet Data Cloud, the risk of delinquency of active Spanish firms with no financial information available is accordingly assessed, based on the existing demographic, trade and negative information about each one.

The performance of the Spanish Delinquency Score for this segment of firms confirms that the underlying analytical solution is highly effective in predicting the potential insolvency of your existing and prospective customers. The solution allows you to:

- Automate decisions for increased efficiency
- Allow faster processing of large volumes of transactions
- Free up resources to look at the time-intensive borderline decisions
- Enable more consistent decisions across the entire organization
- Reduce the costs associated with full-scale application and annual risk reviews
- Apply scores across an entire portfolio to quickly identify potential risk and opportunity
- Help satisfy regulatory needs for timely, consistent and objective review of decisions at the account level

This document explains in greater detail how the Spanish Delinquency Score relative to firms (excluding Proprietorships, Joint Property and vacant succession) was developed. It also describes the distributions and performance tables of the scoreable universe of Companies (with financials and without financials, both statistically-based).

SPAIN DELINQUENCY SCORE – FIRMS WITH AND WITHOUT FINANCIALS

WHAT THE DELINQUENCY SCORE PREDICTS

Based on past information about the business assessed, and the respective information at the time of evaluation (point of observation), the performance is forecasted over the next 12 months (the performance window). Specifically, the Delinquency Score ranks businesses based on each one's probability of being delinquent in any of the following 12 months. The higher is the score of an assessed business the lower is its probability of delinquency along the next 12 months, and therefore the lower is the delinquency risk.

Spanish Delinquency Score was developed by the Spanish Analytics Team and has met the strict quality standards set by Dun & Bradstreet. Relative to the previous solution tailored to assess the potential risk of this type of firms, the new model contains several statistically based improvements and updates, providing a better understanding of the key variables that influence the future financial health of a business.

The Score was statistically derived combining information from complementary types of variables that at each moment characterize a business, from where the most predictive set of explanatory variables were identified. These include not only information from the financial statements, but also information on trade experiences, as well as demographic and negative information listed below.

Generally, an assessed entity is considered delinquent whenever a critical level of its payments to trade creditors is overdue beyond a certain quantity of time. More specifically, a firm is considered as BAD when it has at least one of the following characteristics:

- Insolvency proceedings
- Any uncollectible credit on its debts
- Payment delays over 90 days (debt defaults or Trade experiences) whose total value exceeds 1% of the firm's total Liabilities

The expression "BADs" used in this document denotes businesses that have registered one or more of the above legal events. In turn, "GOODs" means businesses that do not have any of the above legal events.

Any business that is classified as "BAD" is always identified with the respective situation of "BAD". However, if a business is still active and reveals one of the previous situations of "BAD" (e.g., Insolvency Proceedings) it will be assigned the highest risk class. All cases that are already out of business, regardless of being or not being "BAD", are classified as NQ (Not Qualified).

AVAILABILITY OF THE DELINQUENCY SCORE

As of December 2018, the entire active business universe in Spain was 3,437,516. This includes Companies, Sole Proprietorships and other business forms including associations, as well as businesses in Public Administration.

Out of this total, 95.8% (3,294,827) belongs to the private sector, of which 34.9% (1,150,556) were 'Companies'. In line with what is portrayed in Table 2, there is 1,129,805 'Companies' in the Private sector, 62.6% (707,585) of which have financial information updated in the Dun & Bradstreet Data Cloud and 422,220 of which have no financial information available.

The following cases are not considered for scoring and are outside of the 'Scoreable Universe':

- Businesses which are Out of Business, Foreign Registered Businesses
- Businesses in the following sectors - Financial, Insurance, Holding activities
- Businesses in Administration, Associations, Foundations

The D&B Delinquency Score is not calculated for branches. Automatic trade-up to the headquarter location score will take place for branch locations.

The minimum level of data requirement is composed by:

- Company name
- Company address
- Foundation Date or Share Capital
- A valid Standard Industry Code (Nace Rev 2)
- Legal form

Cases which do not meet these criteria are not considered as part of the scoreable universe and have a score of blank or null and the Risk Indicator will be null or 'dash'.

MODEL DEVELOPMENT PROCESS

In order to derive a powerful statistical model, Informa Spain retrieved three snapshots of information over the target population: one as of 1.01.2014, another as of 1.01.2015, and the other as of 1.01.2016. Such information included at least the following variables per entity:

- Demographic data
 - Number of employees (EMPLEADOS)
 - Year of creation (FEC_CONSTITUCION)
 - Industry classification (COD_CNAE)
 - Zip code (COD_POSTAL)
 - Business form (COD_FRM_JURIDICA)
- Business activity signs
 - Among others, the following information observed at the time of photo was also obtained:
 - Months since the publication of balance sheet (derived from FECHA_PUBLICACION_ULT_DEP)
 - Months since the fiscal year of balance sheet (derived from ANNO_ULT_DEP)
 - Number of queries to the entity over the last 12 months (NUMINFORMES)
 - Number of entities querying information on the entity over the last 12 months (NUMCLIENTES)
 - Legal publications (Actos del Borme; available at DS_BORME_DISP_AAAAMMDD)
 - . Type of registers: cases in the categories 1 to 8
 - . Date of last publication
 - . Number of publications per type in the last 12 months
 - . Number of publications per type in the last 24 months

- Trade data
 - Existence of trade experiences – Y/N (implies that at least one trade experience occurred in the prior 12 months)
 - Total number of trade experiences (TOT_EXPR_QTY)
 - Total value of trade experiences in the last 12 months (TOT_EXPR_VAL)
 - Number of experiences not expired or up to 30 days (PRMP_QTY)
 - Number of experiences with delays between 30 and 60 days (QTY_31_TO_60_DY)
 - Number of experiences with delays between 60 and 90 days (QTY_61_TO_90_DY)
 - Number of experiences with delays over between 90 days (QTY_90_PLUS_DY)
 - D&B PAYDEX® score (LAST_PAYD_SCR)
- Negative information
 - Unsolved lawsuits, excluding labor disputes in the last 36 months:
 - . Type of lawsuits (demandas_tipo)
 - . Number of lawsuits per type (0 for non-existent disputes)
 - . Total value of lawsuits per type (importes tipo)
 - . Date of most recent lawsuit (fecha ultima tipo)
 - Negative information from the credit bureau (DS_IMPAGADOS_A_AAAAMMDD):
 - . Number (NUMIMPAGADOS; 0 for non-existent)
 - . Total value (IMPORTEIMPAGADOS)
- Financial information (whenever available and applicable)
 - Most relevant items from the balance sheet (from code 10000-“Total Assets” up to code 32500-“Trade creditors”)
 - Most relevant items from the income statement (from code 40100-“Turnover” up to code 49500-“Net Income”)
 - Main financial ratios and other financial items (from code 93601-“Working Capital or Net Permanent Capital” up to code 93623-“EBITDA”)
 - Financial data on contracts and projects (type, value)
- Sectoral information
 - Size of firms (segment)
 - Industry or sector classification (COD_CNAE)
 - Number of firms per segment
 - Distribution per quartile
 - Average value of ratios, as well as balance sheet and income statement items per sector, quartile and segment by size of firms

The inexistence of a firm’s financial information in the Dun & Bradstreet Data Cloud derives from a business decision from Informa Spain not to buy all financial statements available and does not necessary reflect a behavior from the assessed firm. Accordingly, firms had to be segmented in terms of the availability of their respective financial information, and two models had to be developed, one for firms with financials and another one for firms without financials. Notwithstanding the differences in terms of available data, the remaining definitions are common to both segments.

Therefore, the data outlined in the previous subsection was used to build an initial database per segment, with the following characteristics:

- Only active businesses at the point of observation were analysed. Any business classified as being in delinquency prior to or at the point of observation was excluded.
- Sectors and industries discriminated in the point 1. above were also excluded.
- The dataset per segment was composed by 3 snapshots:
 - 1 photo with information (Demographic data; Business activity signs; Trade data; Negative information) concerning 1.01.2014
 - 1 photo with information (same as before) concerning 1.01.2015 and the observed performance along the next 12 months
 - 1 photo with information (same as before) concerning 1.01.2016 and the observed performance along the next 12 months

Though modeling is more cumbersome, the use of distinct snapshots (panel data) potentially brings several benefits. One is to capture the temporal dynamics of variables; another is that this allows the parameters of the model (as well as the results they produce) to remain less sensitive to time variations in the variables.

Based on the observed performance over the 12 months following each photo, firms were classified by Informa Spain as BAD, GOOD, and Unknown.

As mentioned before, BADs are defined as firms with at least one of the following:

- Insolvency proceedings
- Any uncollectible credit on its debts
- Payment delays over 90 days (debt defaults or Trade experiences) whose total value exceeds 1% of the firm's total Liabilities

On the other hand, GOODs are defined as firms which cumulatively observe the following:

- At least 12 months of age
- At least 90% of the weighted value of trade experiences is paid with a maximum delay of 30 days
- No insolvency proceedings are underway
- A maximum of 1% of total open value of commercial lawsuits relative to liabilities

Firms which were neither GOOD nor BAD, are classified as Unknown. Table 3 reflects the yearly distribution of the original data per type of situation (classification).

Table 3: Distribution of cases per situation

	2015	2016
Total # of cases	1,220,363	1,161,020
# of BADs at observation point ¹	70,395	53,467
# of BADs over the performance window	119,973	96,598
# of BADs over the performance window (which were not BADs at the observation point)	50,806	43,809
# of GOODs over the performance window	955,085	924,701
# of Unknowns over the performance window	145,305	139,721

Percent change and similar procedures were applied to some key variables to get their annual evolution, whereas ratios and other financial variables were divided by the correspondent average information relative to the sector and size of each firm. Additional transformation procedures were also applied either to obtain alternative information or to reduce some potential econometric problems, such as heteroscedasticity.

Next, cases classified as unknown were excluded from model development, and the same procedure applies to BADs at the point of observation. After generating a single data file with firm-years, the population was randomly stratified in 50% for model development and the other 50% for model validation.

SCORING SYSTEM AND MODEL SELECTION

In order to identify the best combination of predictors, a forward and backward stepwise selection of variables was used. The final model was the one that best results revealed in terms of:

- Discriminatory power
- Lack of multicollinearity problems
- Comprehensiveness of information about each assessed entity
- Economic meaning of the relation between variables
- Robustness to out of sample and out of time tests

¹This segment was excluded in the Development and Validation Processes.

SCORING OUTPUTS – SCORE VALUES

Based on the combined use of both models, namely for companies with and without financials, Informa is able to retrieve several common outputs and, as such, generate the estimated performance per score range. Accordingly, indicators and tables shown in this document pertain to both models during 2016².

The Delinquency Score for all scoreable companies (excluding Sole Proprietorships) assigns the following measurements of risk:

- A **“Raw Score” of 101 - 999**, where 101 is applicable to businesses that have the highest probability of delinquency, and 999 represents businesses with the lowest probability of delinquency. This Score provides a direct relationship between the score and the level of risk. The marginal odds of being GOOD doubles for each 40 point increase. For example, a score of 140 \Leftrightarrow odds of being GOOD = 5, 379 \Leftrightarrow odds of being GOOD = 7, 456 \Leftrightarrow odds of being GOOD = 16 etc. This score enables a customer to utilize more granular cutoffs to drive the automated decision-making process.
- A **“Score” of 1 - 100**, where 1 represents businesses that have the highest probability of delinquency, and 100 represents businesses with the lowest probability of delinquency. This Score 1 - 100 shows how the potential risk of a business compares to other businesses in the Dun & Bradstreet Data Cloud and is most effectively used by customers to rank order their portfolios, from highest to lowest risk of business delinquency. In order to maintain full coherence between the outputs of both models (firms with financials and without financials), the “Score 1 - 100” does not necessarily represent the exact percent of businesses with a score below the upper raw score corresponding to the percentile, but is an approximation of that percentage.

Table 4 shows the distribution of firms according to the respective Delinquency Risk Class in the Spanish database, as well as the respective Delinquency Score (“Score 1 - 100”) ranking and the Raw Score.

Table 4: Distribution of Delinquency Score of firms in the Dun & Bradstreet Data Cloud³

DELINQUENCY RISK CLASS	DELINQUENCY SCORE 1 - 100	RAW SCORE	% OF BUSINESSES WITHIN EACH CLASS
1	87 - 100	585 - 999	13.30%
2	54 - 86	547 - 584	31.20%
3	20 - 53	473 - 546	33.30%
4	4 - 19	192 - 472	15.50%
5	1 - 3	101 - 191	6.70%

MODEL PERFORMANCE⁴

Informa took into consideration different indicators to evaluate the model performance in terms of its discriminatory power

- Ranking accuracy by model, decile or quintile
- Close match between predicted and actual BAD rates
- The Kolmogorov-Smirnoff statistic distance between cumulated distribution of GOOD and BAD cases as rank ordered by the model
- Predictive Index or Cumulative Accuracy Profile assessment of model gains compared to a random classifier
- The lift Gain chart with emphasis on showing the improvement in capturing BADS at the 10th and 20th scores

One way to measure model performance is by examining a trade-off curve. A trade-off curve or a Receiver Operating Characteristic curve is a plot of ascending accumulation of “GOOD” businesses vs. “BAD” businesses. It is useful for illustrating model performance both at a particular score and across the spectrum of score distribution

² Observation point 12/31/2015 and performance windows 01/01/2016 – 12/31/2016

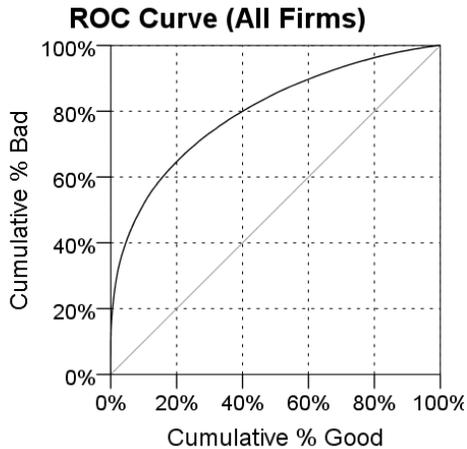
³ Non-Statistically based assessments excluded

⁴ Non-Statistically based assessments excluded

The trade-off curve in Graph 1 illustrates the effectiveness of the Delinquency Score by identifying the Delinquency captured within population groups. At approximately 20% of the population, the Delinquency Score scores identified approximately 62% of the “BADs”. This means that if a business focused on the worst scoring 20% of their portfolio using the Delinquency Score, they would capture 62% of the “BADs” in that group.

The trade-off curve in Graph 1 illustrates the effectiveness of the delinquency Score.

Graph 1: Delinquency Score performance



Scorecards are developed assuming that the relationships observed between past business characteristics and subsequent performance will hold true on future businesses. Because of this assumption, development statistics should be viewed as estimates, and not precise forecasts, of future performance at a given score.

SCORE PERFORMANCE MONITORING

Informa is committed to provide the highest quality risk assessment of businesses in Spain. In that sense, regular performance monitoring of the scorecards and back-testing exercises are used to help ensure the maintenance of high-performance standards of the scores in discriminating the delinquency risk of businesses in Spain. Whenever required, adjustments and recalibration are applied to keep up the performance of scores.

RELATIONSHIP BETWEEN THE DELINQUENCY SCORE AND THE PROJECTED DELINQUENCY RATES

A Risk Class is designed as a high-level segmentation tool defined into 5 classes. A Risk Class is statistically determined by the similarity of risk within the classes in contrast to other classes. Cases with the lowest Delinquency Risk fall in Class 1, whereas cases with the highest risk are in Class 5. Risk Class 3 is close to the national average.

Table 5 contains the national average delinquency rate of firms (with and without financials) by Delinquency Risk Class.

Table 5: National average delinquency rate of firms by Risk Class

DELINQUENCY RISK CLASS	% OF INFORMA FILE REPRESENTED	PROJECTED BAD RATE WITHIN RISK CLASS	PROJECTED CUMULATIVE % OF DELINQUENCY ELIMINATED
1	13.30%	0.86%	96.53%
2	31.20%	1.82%	94.71%
3	33.30%	4.46%	90.25%
4	15.50%	9.75%	80.50%
5	6.70%	80.50%	0.00%

APPENDIX A

SELECTED ELEMENTS USED IN THE MODEL

Below is a list of some of the predictors used in the Delinquency Score Model:

Demographic Information and Activity Signs

FACTOR	IMPACT ON MODEL
Sector of activity	Some sectors of activity have a higher exposure to economic crises than others, and so their business risk and risk of delinquency is also greater.
Legal form	Some business forms are related to higher risk than others, especially when this information is combined with the type of shareholders.
Region	Different regions have different levels of risk which are reflected in the delinquency model
Age of company	Recently launched businesses are related to a very low risk of delinquency, as the underlying problems that normally lead to the delinquency of the business may not have emerged yet. Also, in general, more established businesses have greater stability, and hence their risk is reduced.
Age of balance sheet (whenever available)	The more outdated is the financial information of a firm, the fewer are the signs that it is actively trading; thus, the greater are the signs of the risk of an incoming situation of delinquency.
Number of employees	Businesses with heavy structures of human resources, i.e., higher weight of fixed costs, tend to have a higher risk of delinquency when compared to lighter structures.

Payment Information

FACTOR	IMPACT ON MODEL
Recent Paydex®	GOOD payments on the most recent month indicates a lower level of risk
Negative Data	The lack of historical negative data against a business is a strong indicator of low likelihood of closure within 12 months with unpaid debts.
Age, type and value of negative data	The higher the value of legal demands related to payment disputes and the more recent they are, the higher is the risk of delinquency. The risk also varies depending on the type of legal demands (e.g., Tax debts).

Financial Information

FACTOR	IMPACT ON MODEL
Balance Sheet	Most relevant items from the balance sheet (from code 10000 -"Total Assets" up to code 32500 -"Trade creditors")
Income Statement	Most relevant items from the income statement (from code 40100 -"Turnover" up to code 49500 -"Net Income")
Financial Ratios	Main financial ratios and other financial items (from code 93601-"Working Capital or Net Permanent Capital" up to code 93623 -"EBITDA").

Sectorial Information

FACTOR	IMPACT ON MODEL
Size of firms (segment)	Most relevant items from the balance sheet (from code 10000 -"Total Assets" up to code 32500 -"Trade creditors")
Industry or sector classification (COD_CNAE)	Most relevant items from the income statement (from code 40100 -"Turnover" up to code 49500 -"Net Income")
Number of firms per segment	Main financial ratios and other financial items (from code 93601 -"Working Capital or Net Permanent Capital" up to code 93623 -"EBITDA").
Distribution per quartile	Average value of ratios, as well as balance sheet and income statement items per sector, quartile and segment by size of firms

APPENDIX B

PROJECTED PERFORMANCE TABLES

The following Summary and Detailed Projected Performance Tables are based on a representative sample; the actual performance may differ from individual customer portfolios.

Summary projected performance tables

CUMULATIVE DELINQUENCY SCORE PERFORMANCE						
RISK CLASS	SCORE RANGE	SCORE 1-100 RANGE (APPROX.)	% OF BUSINESSES (APPROX.)	DELINQUENCY RATE	% OF DELINQUENCIES ELIMINATED	GOOD-BAD RATIO
1	585 - 999	87 - 100	16.37%	0.10%	98.45%	115.81
2	547 - 999	54 - 100	50.28%	0.54%	91.27%	53.85
3	473 - 999	20 - 100	81.85%	1.52%	75.42%	21.41
4	192 - 999	4 - 100	95.79%	2.72%	55.98%	9.25
5	101 - 999	1 - 100	100.00%	6.18%	0.00%	0.24

DELINQUENCY SCORE PERFORMANCE WITHIN RANGE				
SCORE RANGE	SCORE 1-100 RANGE (APPROX.)	% WITHIN RANGE (APPROX.)	DELINQUENCY RATE	% OF DELINQUENCIES IDENTIFIED
585 - Max	87 - 100	16.37%	0.58%	1.55%
547 - 584	54 - 86	33.92%	1.31%	7.19%
473 - 546	20 - 53	31.57%	3.10%	15.85%
192 - 472	4 - 19	13.94%	8.61%	19.44%
Low - 191	1 - 3	4.21%	82.19%	55.98%

EXPLANATIONS

CUMULATIVE DELINQUENCY SCORE PERFORMANCE

- **% of Businesses:** To set an approval rate, select the appropriate “Score 1 - 100” range that yields the desired approval rate. For example, to develop a credit policy that approves a projected 95.79% of all customers requires accepting businesses scoring at or above 192 (or 4 - 100 in the “Score 1 - 100”). Businesses scoring below the cutoff score 192 are reviewed, declined, etc.
- **Delinquency Rate:** The delinquency rate represents those businesses that score between the lowest value in the score range (or Score 1 - 100) and 999 (or 100 in the Score 1-100). For example, the delinquency rate for a credit policy which approves all businesses with a score at or above 192 (or 4 - 100 in the “Score 1 - 100”) is expected to be 2.72%.
- **% of Delinquencies Eliminated:** The percentage of total delinquent businesses that score between 101 and the cutoff point for the approval rate. For example, approving businesses with a score at or above 192 (or 4 - 100 in the “Score 1 - 100”) is expected to eliminate 55.98% of the “BAD” businesses.
- **GOOD-BAD Ratio (Odds):** The ratio of “GOOD” businesses to “BAD” businesses among those businesses that score between the lowest value in the score range and 999 (or 100 in the Score 1 - 100). For example, a credit policy that approves all businesses scoring at or above 192 (or 3 - 100 in the “Score 1 - 100”) should result in a portfolio with 9.25 “GOOD” businesses for every “BAD” business in the portfolio.

DELINQUENCY SCORE PERFORMANCE WITHIN RANGE

- **Delinquency Rate within Range:** The delinquency rate for those businesses that score within the score range. For example, the delinquency rate for businesses scoring between 101 - 191 (or 1 - 3 in the “Score 1 - 100”) is expected to be 82.19%.
- **% of Delinquencies Identified:** The percentage of total delinquent businesses within the score range. For example, 55.98% of delinquent businesses are expected to score between 101 - 191 (or 1-3 in the “Score 1 - 100”).

DETAILED PROJECTED PERFORMANCE TABLES

CUMULATIVE DELINQUENCY SCORE PERFORMANCE					
SCORE RANGE	PERCENTILE RANGE	% OF BUSINESSES (APPROX.)	DELINQUENCY RATE	% OF DELINQUENCIES ELIMINATED	GOOD-BAD RATIO
606 - 999	96 - 100	5%	0.36%	99.72%	278.71
595 - 999	91 - 100	10%	0.49%	99.20%	201.74
587 - 999	86 - 100	15%	0.57%	98.60%	173.22
581 - 999	81 - 100	20%	0.64%	97.95%	155.83
575 - 999	76 - 100	25%	0.71%	97.15%	139.66
570 - 999	71 - 100	30%	0.77%	96.30%	128.26
564 - 999	66 - 100	35%	0.85%	95.23%	117.12
559 - 999	61 - 100	40%	0.91%	94.18%	109.36
553 - 999	56 - 100	45%	1.00%	92.71%	99.45
547 - 999	51 - 100	50%	1.07%	91.27%	92.21
541 - 999	46 - 100	55%	1.16%	89.61%	85.17
534 - 999	41 - 100	60%	1.26%	87.76%	78.61
527 - 999	36-100	65%	1.35%	85.85%	73.20
517 - 999	31 - 100	70%	1.47%	83.35%	66.86
503 - 999	26 - 100	75%	1.62%	80.37%	60.89
483 - 999	21 - 100	80%	1.78%	76.89%	55.07
452 - 999	16 - 100	85%	2.00%	72.50%	49.04
410 - 999	11 - 100	90%	2.24%	67.41%	43.70
244 - 999	6 - 100	95%	2.74%	57.80%	35.43
101 - 999	1 - 100	100%	6.18%	0.00%	15.19

DELINQUENCY SCORE PERFORMANCE WITHIN RANGE

SCORE RANGE	PERCENTILE RANGE	DELINQUENCY RATE	% OF DELINQUENCIES IDENTIFIED
606 - 999	96 - 100	0.36%	0.28%
595 - 605	91 - 95	0.62%	0.52%
587 - 594	86 - 90	0.74%	0.60%
581 - 586	81 - 85	0.84%	0.65%
575 - 580	76 - 80	1.01%	0.80%
570 - 574	71 - 75	1.10%	0.85%
564 - 569	66 - 70	1.25%	1.08%
559 - 563	61 - 65	1.33%	1.05%
553 - 558	56 - 60	1.64%	1.47%
547 - 552	51 - 55	1.77%	1.44%
541 - 546	46 - 50	2.04%	1.65%
534 - 540	41 - 45	2.33%	1.86%
527 - 533	36 - 40	2.54%	1.91%
517 - 526	31 - 35	3.12%	2.50%
503 - 516	26 - 30	3.50%	2.98%
483 - 502	21 - 25	4.31%	3.48%
452 - 482	16 - 20	5.46%	4.39%
410 - 451	11 - 15	6.33%	5.09%
244 - 409	6 - 10	11.88%	9.61%
101 - 243	1 - 5	71.34%	57.80%

EXPLANATIONS

CUMULATIVE DELINQUENCY SCORE PERFORMANCE

- **Approval Rate:** To use, select the appropriate projected score or Score 1 - 100 cutoff that yields the desired approval rate. Approved businesses are companies scoring between the lowest value in the score range (or Score 1 - 100) and 999 (or 100 in the Score 1 - 100). For example, a credit policy that approves 70% of all businesses requires accepting businesses between 517 - 999 (or 31 - 100 in the “Score 1 - 100”). Businesses scoring below the cutoff (101 - 516) are reviewed, declined, etc.
- **Delinquency Rate:** Represents those businesses that score between the lowest value in the score range and 999. For example, the delinquency rate for a credit policy which approves all businesses with a score at or above 517 (or 31 - 100 in the “Score 1 - 100”) is expected to be 1.47%.
- **% of Delinquency Eliminated:** The percentage of total delinquent businesses that score between 101 and the cutoff point for the approval rate. For example, approving businesses with a score at or above 517 (31 - 100 in the “Score 1 - 100”) is expected to eliminate 83.35% of the “BAD” businesses.
- **GOOD-BAD Ratio (Odds):** The ratio of “GOOD” businesses to “BAD” businesses among those businesses that score between the lowest value in the score range and 999 (or 100 Score 1 - 100). For example, a credit policy which approves all businesses scoring at or above 517 (or 31 - 100 in the “Score 1 - 100”) should result in a portfolio with 67 “GOOD” businesses for every “BAD” business in the portfolio.

DELINQUENCY SCORE PERFORMANCE WITHIN RANGE

- **Delinquency Rate:** The incidence of delinquency for those businesses that score within the score range. For example, the delinquency rate for companies scoring between 503 - 516 (or 26 - 30 in the “Score 1 - 100”) is expected to be 3.5%.
- **% of Delinquency Identified:** The percentage of total delinquent businesses within the score range. For example, 2.98% of all delinquent companies are expected to score between 503 and 516 (or 26 - 30 in the “Score 1 - 100”).

APPENDIX C

SCORING TERMS GLOSSARY

Following is a list of some Scoring Terms used in this document.

TERM	EXPLANATION
Raw Score	Score with a direct relationship to Probability of Default. The Delinquency form of the raw score is a 3 digit score
Score 1 - 100	Lesser granularity of the Delinquency Score: Value between 1 and 100 where 1 is the highest probability of default
Scoreable Universe	Includes all records in the Data Cloud which meet criteria for score assignment. Examples of records excluded from the Scoreable Universe include Out of Business records, Foreign Companies etc.
Scored Universe	Includes all cases which have a score assigned
Observation Point	Date at which the data sample of active businesses is extracted and where data elements observed at that point in time are evaluated as potential predictors
Performance Window	Period where the data sample is monitored to classify businesses as GOOD and BAD
Delinquency BAD definition	List of Legal Events that define the targeted risk behavior
BAD	A business which meets the BAD definition, i.e., a business which has been subject to one or more of the legal events defined as delinquency.
GOOD	A business which does not have any information listed within the BAD definition, i.e. a business which has not been subject to any of the legal events defined as delinquency.
Out of Business	Business is no longer trading



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