Team 8

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Derived and Base Measure for Vincularity

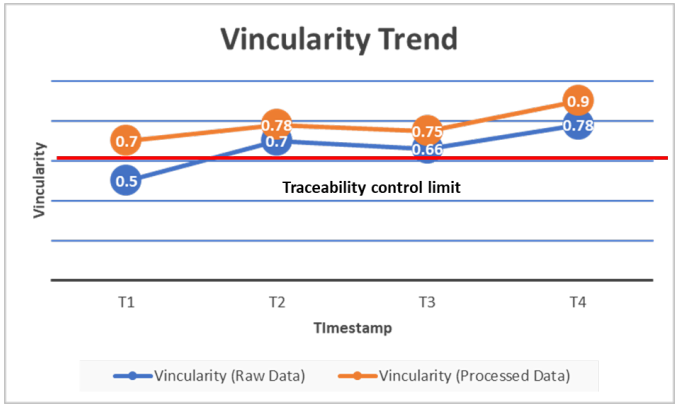
Derived measure or indicator: M(vin)				
#1	**Derived measure or indicator** M(vin): It represents the change in a quantity with respect to another quantity. Line graph of vincularity over time will provide the trend of vincularity.	**Formula** $$Mvin\ (MDS) = \frac{\sum_{\forall\ DS \in MDS} Traceability\ (DS)}{Nds\ (MDS)}$$		
Link with the measurement goal (which goal) Vincularity		**Responsible (who analyzes)** Developer Data Analyst Data Engineer Data Scientist	**Stakeholder (who uses)** Project Manager Data Scientist Senior Management	**Frequency (when)** Vincularity can be calculated on monthly, quarterly or yearly basis.
Data source (where the measurement data will be extracted from) Credit Card classification - https://www.kaggle.com/datasets/samuelcortinhas/credit-card-classification-clean-data		**Storage of the result (where data will be stored after the extraction)** The data will be stored in excel file or database. In our scenario, it will be storing the result in jupyter notebook for reporting purposes.	**Data interpretation rules** Vincularity can be calculated for different time periods. Its value can be in the range [0, 1] Vincularity(DS)Ti >= 0.6 can be inferred that 60% percent of the data should be traceable for the machine learning algorithm to give relevant results.	

		Vincularity = 1.0 - data is completely traceable. Higher the Mvin, higher the connectivity and linkage of data and vice-versa

Analysis procedure

1. Calculate the base measure LDST
2. Calculate the base measure NDS
3. Calculate the base measure rec_trace
4. Calculate the derived measure traceability
5. Calculate the average of traceability of all the datasets
6. Analyze and interpret the results and make decisions

Presentation of the results (sketch illustrating what it looks like):



Potential decision-making depending on the results

Trend analysis will show us whether the vincularity is increasing or decreasing for both processed and raw extract. Increasing vincularity is a good sign and decreasing vincularity means data elements are not traceable to source and could degrade the performance of machine learning model.

Base measure: NDS				
#1	**Measure (what: entity, attribute)** Measures the total number of datasets in Big Data Entity: Dataset Attribute: Number of total unique identifiers UID_{DST} of datasets in multiple datasets		**Scale type** Absolute	**Applicability** It helps in assessing the variety of datasets in terms of multiple datasets (MDS)
Who measures? Data Analyst Data Engineer Data Scientist	**Source of measurement** Credit Card classification - https://www.kaggle.com/datasets/samuelcortinhas/credit-card-classification-clean-data	**Where to store the result** CSV File Database	**Tool** Excel Jupyter Notebook Python libraries for data analysis like pandas , numpy etc.	**Time (when to measure)** This metric could be measured on a monthly, quarterly or yearly basis to calculate the accuracy trend of the database.
Collection procedure (how to collect the data) This number should be given by the responsible person managing databases or excel files.		**Notes or comments:** The number of multiple datasets will be counted for the entire data at a given time period.		

	E.g if we have dataset D1,D2 for time T1,T2 then number of data sets will be NDS(MDS) = 2 for T1 and T2

Derived measure or indicator: Traceability				
#2	**Derived measure or indicator** Traceability: It provides the degree to which data has attributes that provide an audit trail of access to the data and of any changes made to the data in a specific context of use. It is useful in calculating derived measure Mvin.	**Formula** $$Traceability\ (DS) = \frac{Rec_{Trace}(DS)}{Ldst\ (DS)}$$		
Link with the measurement goal (which goal) Vincularity		**Responsible (who analyzes)** Developer Data Analyst Data Engineer Data Scientist	**Stakeholder (who uses)** Project Manager Data Scientist Senior Management	**Frequency (when)** Traceability can be calculated on monthly, quarterly or yearly basis.
Data source (where the measurement data will be extracted from)		**Storage of the result (where data will be stored after the extraction)**	**Data interpretation rules**	

Credit Card classification - https://www.kaggle.com/datasets/samuelcortinhas/credit-card-classification-clean-data	The data will be stored in excel file or database. In our scenario, it will be storing the result in jupyter notebook for reporting purposes.	Traceability can be calculated for different datasets at a given time period. Its value can be in the range [0, 1] The average of trace abilities among all the datasets provides vincularity for the big data. Higher the Traceability means higher the degree to which data has attributes that provide an audit trail of access to the data and of any changes made to the data in a specific context of use and vice-versa

Analysis procedure 1. Calculate the base measure Rec_trace for a dataset 2. Calculate the base measure LDSTfor the dataset 3. Traceability can be calculated by dividing Rec_trace of a DS by its LDST 4. The value will be interpreted according to the decision making rules and appropriate decision will be taken	**Presentation of the results (sketch illustrating what it looks like):** Traceability of the dataset will be presented as a single numerical value which will be used to calculate Mvin.

Potential decision making depending on the results	
Traceability will provide the degree to which data has attributes that provide an audit trail of access to the data and of any changes made to the data in a specific context of use. This will allow us to easily follow our data all the way back to its original source. It will help us maintain clear and accurate insights, ability to track every transformation, dead-end, or link between the data points.	

Base measure: Rec_{Trace}			
#1	**Measure (what: entity, attribute)** Measures the total number of records that are traceable in MDS Entity: Dataset Attribute: Number of total records that can be traced in multiple datasets	**Scale Type** Absolute	**Applicability** Helps us to understand how many records are tracebale in multiple datasets.It helps in finding traceability of a dataset.

Who measures?	**Source of measurement**	**Where to store the result**	**Tool**	**Time (when to measure)**
Data Analyst Data Engineer Data Scientist	Credit Card classification - https://www.kaggle.com/datasets/samuelcortinhas/credit-card-classification-clean-data	CSV File Database	Excel Jupyter Notebook Python libraries	This metric could be measured on a monthly, quarterly or yearly basis to

			for data analysis like pandas , numpy etc.	calculate the accuracy trend of the database.
Collection procedure (how to collect the data) 1. Dataset is loaded using the analyses tool,excel file or jupyter notebook. 2. Rec_{Trace} is counted using COUNT function to get number of credible records in a dataset using metadata. 3. The value will be interpreted according to the decision-making rules and appropriate decision will be taken.		**Notes or comments:**		

Base measure: Ldst				
#2	**Measure (what: entity, attribute)** Measures total number of occurrences of data elements in dataset (DS) Entity: Dataset Attribute: Number of occurrences of data elements in a DS	**Scale Type** Absolute	**Applicability** Helps in finding traceability of a dataset.	
Who measures?	**Source of measurement**	**Where to store the result**	**Tool**	**Time (when to measure)**

Data Analyst Data Engineer Data Scientist	Credit Card classification - https://www.kaggle.com/datasets/samuelcortinhas/credit-card-classification-clean-data	CSV File Database	Excel Jupyter Notebook Python libraries for data analysis like pandas , numpy etc.	This metric could be measured on a monthly, quarterly or yearly basis to calculate the accuracy trend of the database.
Collection procedure (how to collect the data) 1. Dataset is loaded using the analyses tool, excel file or jupyter notebook. 2. Ldst is counted using COUNT function to get number of credible records in a dataset. 3. The value will be interpreted according to the decision-making rules and appropriate decision will be taken.		**Notes or comments:**		