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SAS[®] Customer Link Analytics 5.6 Data Reference Guide

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SAS® Customer Link Analytics 5.6: Data Reference Guide

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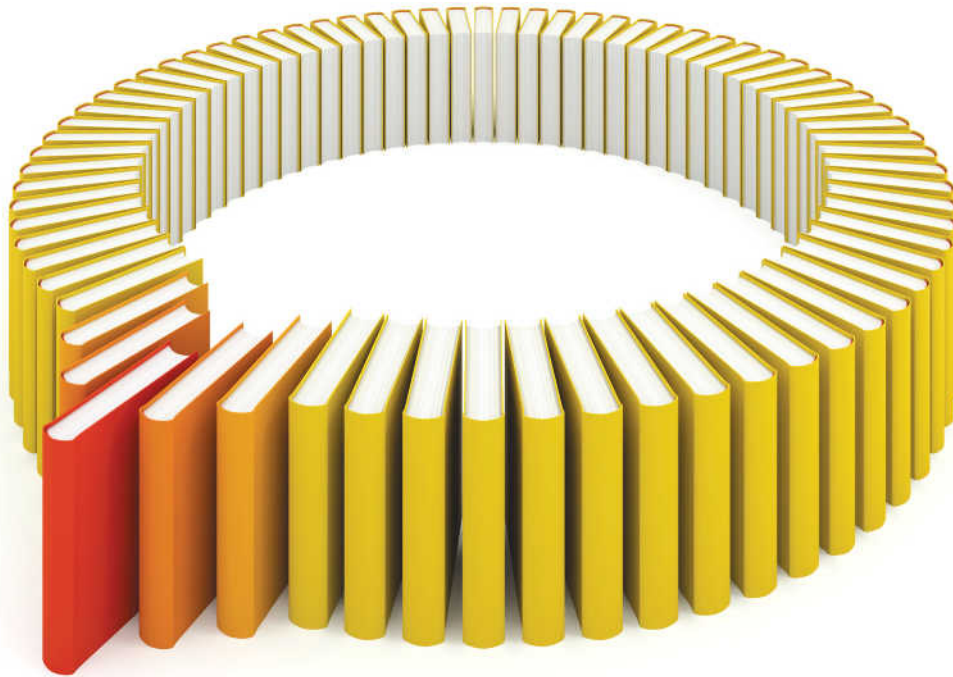
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Recommended Reading

- *SAS Customer Link Analytics: Administrators's Guide*
- *SAS Customer Link Analytics: Upgrade and Migration Guide*
- *SAS Customer Link Analytics: User's Guide*

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Part 1

Introduction

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Chapter 1

Introduction to the Data Reference Guide

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About the Data Reference Guide

This document contains the following parts:

Physical Data Model Diagrams

This section gives the physical data model diagrams for SAS Customer Link Analytics.

Data Dictionary

This section lists the application data tables and their columns. It also gives a list of business data tables, enrichment variables, and analytical variables.

Classification of Tables

The SAS Customer Link Analytics tables are classified as mentioned below:

Application data

stores project-specific data and configuration details of the source data. Also, stores the summary of results that the SAS Customer Link Analytics solution produces when each workflow step is run. These results include information about communities, roles, and centrality measures.

Application data also contains the configuration details that are required for running the data enrichment process.

Business data

stores the final output that SAS Customer Link Analytics produces when all the workflow steps of a project are run. This output contains node-level information such as the role ID, community ID, and centrality values. In addition, business data contains data that SAS Customer Link Analytics produces when you run the data enrichment process.

Business data also contains the intermediate tables that SAS Customer Link Analytics creates when the workflow steps are run.

Part 2

Data Model Diagrams

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Chapter 2

Physical Data Model Diagram for Project-Specific Tables

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Project-Specific Application Data Tables

The physical data model diagram for the project-specific application data tables is shown on the next page.

Chapter 3

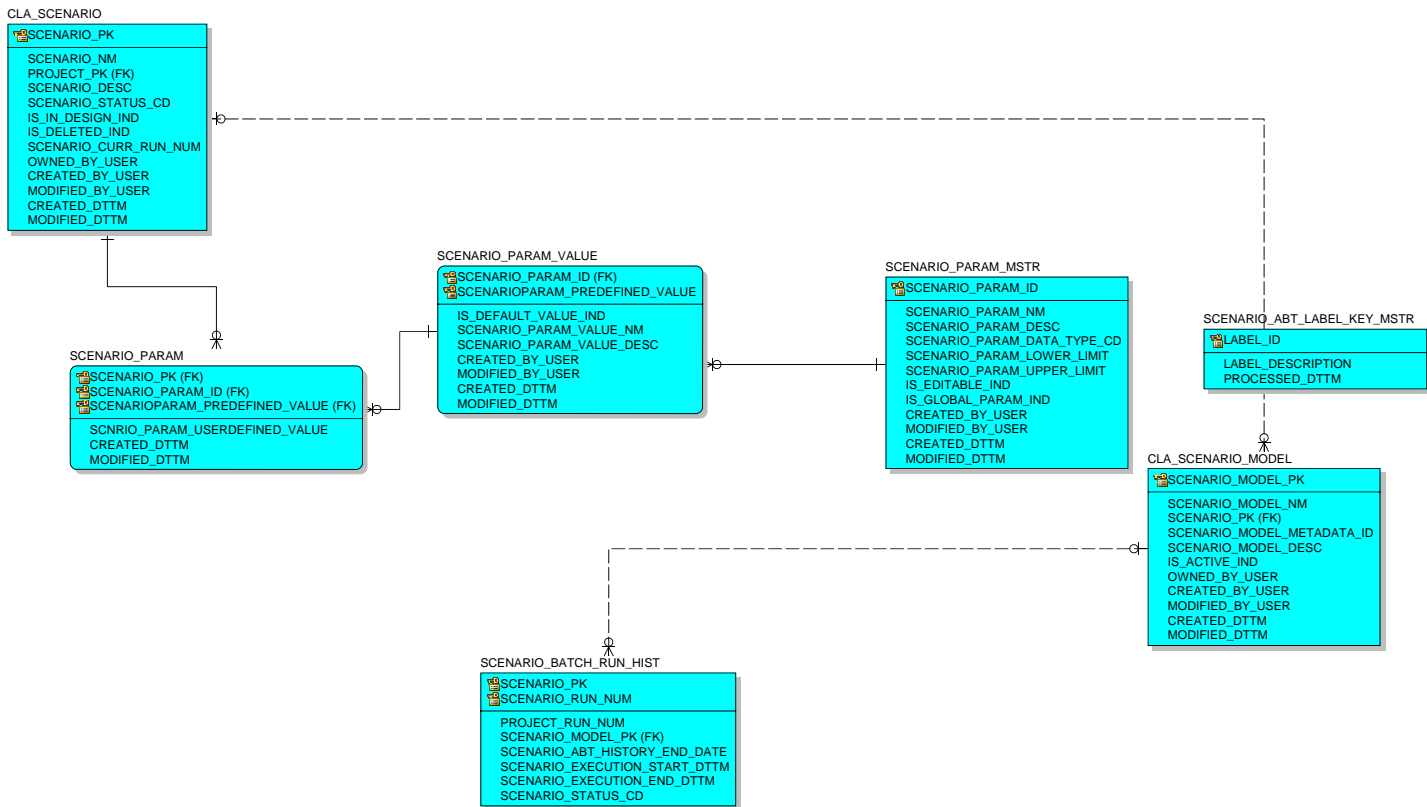
Physical Data Model Diagram for Scenario-Specific Tables

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Scenario-Specific Application Data Tables

The physical data model diagram for the scenario-specific application data tables is shown on the next page.

SAS® Customer Link Analytics 5.6: Application Data Tables
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Part 3

Data Dictionary

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Application Data Tables

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Descriptions of Application Data Tables

Table 4.1 *Project-Specific Tables*

Table Name	Table Description
OUT_PUT_TABLE_TYPE	Stores the type of table that is created as a result of executing a workflow step or any other process such as enriching data and loading data into the SAS Customer Link Analytics LASR Analytic Server. For example, the table types can be a step output table or a LASR table.
PARAM_DATA_TYPE	Reference table for the parameter data type such as Date and Number.
PARAM_MSTR	Master table that stores all the parameters that SAS Customer Link Analytics uses for executing various processes. This table contains system-specific and user-specified parameters.
PARAM_VALUE	Stores the possible values that a parameter can have. This table also indicates the default value of a parameter.
PROJECT	Master table for storing project details. When a project is created, a record is added in this table.
PROJECT_BATCH_RUN_HIST	Captures historical information about the batch run of a particular project.
PROJECT_BEFORE_FILTER_SMMRY	Contains summary of source (transaction) data before the rule that is specified in the Link and Node filtering workflow step is applied to the data. This table is an input for the Link and Node Filtering page.
PROJECT_CENTRALITY_FUNC_VAL	Captures the function that is used on a centrality measure to assign a role to a node.

Table Name	Table Description
PROJECT_CENTRALITY_STATISTICS	Stores the results that are produced by the Centrality Measures Computation workflow step. This data is used to display the graph in the Centrality Measure Computation workflow step page. The graph indicates how many nodes have a particular centrality measure value.
PROJECT_COMMUNITY_STATISTICS	Stores the results that are produced by the Community Building workflow step. This data is used to generate the graph and the diameter summary results that are displayed on the Results tab of the Community Building workflow step.
PROJECT_PARAM	Parameter value that a user selects in a particular project is captured in this table.
PROJECT_PROCESS	Stores the master list of the processes that can be executed in SAS Customer Link Analytics.
PROJECT_PROCESS_PARAM	Stores the value of parameters that are used in a SAS Customer Link Analytics process.
PROJECT_PROCESS_STATUS	Captures the different states of various processes such as enriching data and loading data into the SAS Customer Link Analytics LASR Analytic Server that are run in SAS Customer Link Analytics. For example, the states can be enable, disable, or any other execution status.
PROJECT_ROLE_DISTRIBUTION	Input for the report that is displayed on the Results tab of the Role Assignment workflow step. The data in this table indicates how many nodes have a particular role.
PROJECT_ROLE_DTL	Stores the expressions that are used to define roles in the Role Assignment workflow step.
PROJECT_STATUS	Stores the reference data for the project status.
PROJECT_STEP_OUTPUT	Stores the name of the table that is created for a project when a workflow step is executed.
PROJECT_STEP_OUTPUT_COLUMN	Stores the name and details of the columns of the table that is created for a project when a workflow step is executed.
PROJECT_WRKFLW_STEP	Stores the execution status of each workflow step.
PROJECT_WRKFLW_STEP_DATA	Stores the value of report variables that are displayed in each workflow step.
PROJECT_X_VARIABLE_CATEGORY	Stores the enrichment categories that a user has selected for the data enrichment process.
REPORT_VARIABLE_MSTR	Stores the master list of reporting variables that are available for application reporting.

Table Name	Table Description
RESOLUTION_BASED_COMMUNITY_TMP	Stores the summary data when multiple values are used in a resolution list in the Community Building workflow step.
SOURCE_PROFILE	Collection of all tables that are used in a project.
SOURCE_PROFILE_X_TABLE	Association table of the source data profiles and source tables.
TABLE_AGGREGATION_TYPE	Reference data for the type of the aggregation that is supported in source data. For example, aggregation type can be monthly or fully.
TABLE_COLUMN_MSTR	List of columns present in the table. In this case, a record for the table should be available in the Table master.
TABLE_COLUMN_TYPE	Reference table for the different type of columns. For example, column types can be dimension, from ID, To ID, date, and measure.
TABLE_MSTR	Master table to capture the metadata of table such as a source call detail record (CDR) table that is used in a SAS Customer Link Analytics process.
TABLE_STATISTICS	Stores the statistics of source table. For example, date range for the data available in source table is stored in this table.
TABLE_TYPE	Reference table for the type of table. For example, the table type can be Transaction, Node attribute, Link attribute, Node inclusion list, and Link inclusion list.
TABLE_TYPE_X_TABLE_COLUMN_TYPE	Association table that indicates the column types that are supported in a particular table type.
VARIABLE_CATEGORY	Stores the master list of enrichment categories that can be selected for the data enrichment process.
WRKFLW_STEP	Reference table for workflow step that each project has in a SAS Customer Link Analytics workflow.
WRKFLW_STEP_STATUS	Reference table for the different statuses that are applicable for a workflow step.
WRKFLW_STEP_X_PARAM	Reference list for parameters that are defined a workflow step.
WRKFLW_STEP_X_REPORT_VARIABLE	Reference list for reports that are defined in a workflow step.

Table 4.2 Scenario-Specific Tables

Table Name	Table Description
CLA_SCENARIO	Master table for scenario definition. When a user defines a scenario for a particular project, a record is added in this table.
CLA_SCENARIO_MODEL	Master table that stores information about the analytical model that SAS Rapid Predictive Modeler creates for a scenario.
SCENARIO_ABT_LABEL_KEY_MSTR	Master table that stores the value of key and description. This information is used to generate meaningful labels for the columns of the scenario ABT.
SCENARIO_BATCH_RUN_HIST	Stores historical information about the batch run of a particular scenario.
SCENARIO_PARAM	Stores parameter values that a user has selected in a particular scenario.
SCENARIO_PARAM_MSTR	Master table that stores all the parameters that are used for processing scenarios. This table contains system-specific and user-specified parameters.
SCENARIO_PARAM_VALUE	Stores the possible values that a scenario-related parameter can have. This table also indicates the default value of a parameter.

Chapter 5

Column Descriptions of Application Data Tables

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Column Descriptions of Project-Specific Tables

Table 5.1 *OUT_PUT_TABLE_TYPE* Table

Column Name	Column Description	Data Type	Null Option	Is PK
OUT_PUT_TABLE_TYPE_TYPE	The type of output table. For example, the table type can be LASR Data or Core Data.	VARCHAR(10)	NOT NULL	Yes
OUT_PUT_TABLE_TYPE_DESC	The description of the type of output table.	VARCHAR(100)	NULL	No
OUT_PUT_TABLE_TYPE_NAME	The name of the type of output table.	VARCHAR(40)	NULL	No

Table 5.2 *PARAM_DATA_TYPE* Table

Column Name	Column Description	Data Type	Null Option	Is PK
PARAM_DATA_TYPE_CD	Code that is assigned to a parameter data type. For example, the data type can be Date, Number, and so on.	VARCHAR(10)	NOT NULL	Yes

Column Name	Column Description	Data Type	Null Option	Is PK
PARAM_DATA_TY PE_DESC	Description of a parameter data type. For example, the data type can be Date, Number, and so on.	VARCHAR(100)	NULL	No
PARAM_DATA_TY PE_NM	Name of a parameter data type. For example, the data type can be Date, Number, and so on.	VARCHAR(40)	NULL	No

Table 5.3 PARAM_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_US ER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_EDITABLE_IND	Indicates whether the parameter is editable.	CHAR(1)	NULL	No
IS_GLOBAL_PARA M_IND	Indicates whether the parameter is a global parameter.	CHAR(1)	NULL	No
MODIFIED_BY_US ER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
PARAM_DATA_TY PE_CD	Code that is assigned to a parameter data type. For example, the data type can be Date, Number, and so on.	VARCHAR(10)	NULL	No
PARAM_DESC	Description of the parameter.	VARCHAR(100)	NULL	No
PARAM_ID	Unique identifier of the parameter.	VARCHAR(32)	NOT NULL	Yes
PARAM_LOWER_L IMIT	Lower limit of the parameter.	NUMERIC(15,3)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
PARAM_NM	Name of the parameter.	VARCHAR(40)	NULL	No
PARAM_UPPER_LIMIT	Upper limit of the parameter.	NUMERIC(15,3)	NULL	No

Table 5.4 PARAM_VALUE Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_DEFAULT_VALUE_IND	Indicates whether the parameter value is default.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
PARAM_ID	Unique identifier of the parameter.	VARCHAR(32)	NOT NULL	Yes
PARAM_PREDEFINED_VALUE	Predefined value of the parameter.	VARCHAR(100)	NOT NULL	Yes
PARAM_VALUE_DESCRIPTION	Description of the parameter value.	VARCHAR(100)	NULL	No
PARAM_VALUE_NAME	Name for the parameter value.	VARCHAR(40)	NULL	No

Table 5.5 PROJECT Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
IS_DELETED_IND	Indicates whether the project is deleted.	CHAR(1)	NULL	No
IS_IN_DESIGN_IND	Indicates whether the scenario is in design or batch mode.	CHAR(1)	NULL	No
IS_SHARED_IND	Indicates whether the project is shared.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
OWNED_BY_USER	User ID of the owner of the project.	VARCHAR(100)	NULL	No
PROJECT_CURR_RUN_NUM	Current run number of the project.	NUMERIC(10)	NULL	No
PROJECT_DESC	Description of the project that a user has specified.	VARCHAR(200)	NULL	No
PROJECT_NM	Name that a user has specified for a project.	VARCHAR(40)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	SERIAL	NOT NULL	Yes
PROJECT_STATUS_CD	A code that is assigned for the project status.	VARCHAR(10)	NULL	No
SOURCE_PROFILE_PK	A sequence number that is generated for the source profile.	INTEGER	NULL	No

Table 5.6 PROJECT_BATCH_RUN_HIST Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_EXECUTION_START_DTTM	The start date of project execution.	TIMESTAMP	NULL	No
PROJECT_EXECUTION_END_DTTM	The end date of project execution.	TIMESTAMP	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
PROJECT_RUN_NUMBER	Run number of the project.	NUMERIC(10)	NOT NULL	Yes
PROJECT_STATUS_CD	A code that is assigned for the project status.	VARCHAR(10)	NULL	No
SOURCE_DATA_EXTRACTION_FROM_DT	End date for extracting data from the source data.	TIMESTAMP(0)	NULL	No
SOURCE_DATA_EXTRACTION_TO_DT	Start date for extracting data from the source data.	TIMESTAMP(0)	NULL	No
SOURCE_PROFILE_PK	A sequence number that is generated for the source profile.	INTEGER	NULL	No

Table 5.7 PROJECT_BEFORE_FILTER_SMMRY Table

Column Name	Column Description	Data Type	Null Option	Is PK
LOWER_LIMIT	Lower limit for filtering links and nodes.	NUMERIC(15,3)	NULL	No
MAX_VAL	The maximum value of the measure.	NUMERIC(15,3)	NULL	No
MEAN_VAL	The mean value of the measure.	NUMERIC(15,3)	NULL	No
MIN_VAL	The minimum value of the measure.	NUMERIC(15,3)	NULL	No
P1_VAL	One percentile value of the measure.	NUMERIC(15,3)	NULL	No
P10_VAL	10 percentile value of the measure	NUMERIC(15,3)	NULL	No
P25_VAL	25 percentile value of the measure.	NUMERIC(15,3)	NULL	No
P5_VAL	Five percentile value of the measure.	NUMERIC(15,3)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
P50_VAL	50 percentile value of the measure.	NUMERIC(15,3)	NULL	No
P75_VAL	75 percentile value of the measure.	NUMERIC(15,3)	NULL	No
P90_VAL	90 percentile value of the measure.	NUMERIC(15,3)	NULL	No
P95_VAL	95 percentile value of the measure.	NUMERIC(15,3)	NULL	No
P99_VAL	99 percentile value of the measure.	NUMERIC(15,3)	NULL	No
PROJECT_CURR_RUN_NUM	Current run number of the project.	NUMERIC(10)	NOT NULL	Yes
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
TABLE_COLUMN_PK	A sequence number that is generated for a table registered in SAS Customer Link Analytics.	INTEGER	NOT NULL	Yes
UPPER_LIMIT	Upper limit for filtering links and nodes.	NUMERIC(15,3)	NULL	No

Table 5.8 PROJECT_CENTRALITY_FUNC_VAL Table

Column Name	Column Description	Data Type	Null Option	Is PK
CALCULATED_CENTRALITY_VALUE	Calculated value of centrality	NUMERIC(15,3)	NULL	No
CENTRALITY_CD	A unique code that is assigned to the centrality measure.	VARCHAR(10)	NOT NULL	Yes
FUNCTION_NM	Name of the function that is applied on the centrality .	VARCHAR(40)	NOT NULL	Yes
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes

Table 5.9 PROJECT_CENTRALITY_STATISTICS Table

Column Name	Column Description	Data Type	Null Option	Is PK
CENTRALITY_CD	A unique code that is assigned to the centrality measure.	VARCHAR(10)	NOT NULL	Yes
CENTRALITY_VALUE	Value of the centrality measure.	NUMERIC(8,2)	NOT NULL	Yes
CENTRALITY_VALUE_NODE_CNT	Number of nodes for a particular centrality value.	NUMERIC(6)	NULL	No
PROJECT_CURR_RUN_NUM	Current run number of the project.	NUMERIC(10)	NOT NULL	Yes
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes

Table 5.10 PROJECT_COMMUNITY_STATISTICS Table

Column Name	Column Description	Data Type	Null Option	Is PK
COMMUNITY_CNT	Number of communities that have a particular size.	NUMERIC(6)	NULL	No
COMMUNITY_SIZE	Size of the community. It indicates the number of nodes in a community.	NUMERIC(10)	NOT NULL	Yes
PERCENT_OF_TOTAL_COMMUNITY	Percentage of community out of total community	NUMERIC(9,4)	NOT NULL	No
PROJECT_CURR_RUN_NUM	Current run number of the project.	NUMERIC(10)	NOT NULL	Yes

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes

Table 5.11 PROJECT_PARAM Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
PARAM_ID	Unique identifier of the parameter.	VARCHAR(32)	NOT NULL	Yes
PARAM_PREDEFINED_VALUE	Predefined value of the parameter.	VARCHAR(100)	NOT NULL	Yes
PARAM_USERDEFINED_VALUE	User-defined value of the parameter.	VARCHAR(1000)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes

Table 5.12 PROJECT_PROCESS_PARAM Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
PARAM_ID	A unique identifier of the parameter that is used in a project process.	VARCHAR(32)	NOT NULL	Yes

Column Name	Column Description	Data Type	Null Option	Is PK
PARAM_PREDEFINED_VALUE	A predefined value that can be assigned to a parameter.	VARCHAR(100)	NOT NULL	Yes
PARAM_USERDEFINED_VALUE	A user-defined value that can be assigned to a parameter.	VARCHAR(100)	NULL	No
PROCESS_CD	The code that is assigned to the process that can be run in SAS Customer Link Analytics. For example, the process can be enriching data or loading data into the SAS Customer Link Analytics LASR Analytic Server.	VARCHAR(10)	NOT NULL	Yes
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes

Table 5.13 PROJECT_PROCESS_STATUS Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROCESS_CD	The code that is assigned to the process that can be run in SAS Customer Link Analytics. For example, the process can be enriching data or loading data into the SAS Customer Link Analytics LASR Analytic Server.	VARCHAR(10)		
PROCESS_END_DT	The end date on which a process is run.	TIMESTAMP(0)		
PROCESS_START_DT	The start date on which a process is run.	TIMESTAMP(0)		

Column Name	Column Description	Data Type	Null Option	Is PK
PROCESS_STATUS_CD	The code that is assigned to the execution status of a project. For example, the execution status can be Successful or Executed with error.	VARCHAR(10)		
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER		
REASON_CD	The code that is assigned to the reason that indicates the failed status of a process or project.	VARCHAR(10)		

Table 5.14 PROJECT_PROCESS Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROCESS_CD	The code that is assigned to the process that can be run in SAS Customer Link Analytics. For example, the process can be enriching data or loading data into the SAS Customer Link Analytics LASR Analytic Server.	VARCHAR(10)	NOT NULL	Yes
PROCESS_DESC	The description of the process that can be run in SAS Customer Link Analytics. For example, the process can be enriching data or loading data into the SAS Customer Link Analytics LASR Analytic Server.	VARCHAR(100)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
PROCESS_NAME	The name of the process that can be run in SAS Customer Link Analytics. For example, the process can be enriching data or loading data into the SAS Customer Link Analytics LASR Analytic Server.	VARCHAR(40)	NULL	No

Table 5.15 PROJECT_ROLE_DISTRIBUTION Table

Column Name	Column Description	Data Type	Null Option	Is PK
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
NUMBER_OF_NODES	The number of nodes that have a particular role.	NUMERIC(10)	NULL	No
PERCENTAGE_OF_NODES	Percentage of nodes that a particular role to the total number of nodes.	NUMERIC(9,4)	NOT NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
ROLE_SK	A sequence number that is generated for the role.	INTEGER	NOT NULL	Yes

Table 5.16 PROJECT_ROLE_DTL Table

Column Name	Column Description	Data Type	Null Option	Is PK
IS_DEFAULT_ROLE_IND	Indicates whether this is a default role.	CHAR(1)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
ORIGINAL_EXPRESSION	The expression that a user has created for role definition.	VARCHAR(1000)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
PARSED_EXPRESSION	Expression that a user creates for a role definition.	VARCHAR(1000)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	No
ROLE_DESC	Description of the role that a user specifies in a role definition.	VARCHAR(100)	NULL	No
ROLE_NM	Name of the role that a user specifies in a role definition.	VARCHAR(40)	NULL	No
ROLE_SEQ_NUM	Sequence number that indicates the priority of a role.	INTEGER	NOT NULL	No
ROLE_SK	A sequence number that is generated for the role.	SERIAL	NOT NULL	Yes

Table 5.17 PROJECT_STATUS Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_STATUS_CD	A code that is assigned for the project status.	VARCHAR(10)	NOT NULL	Yes
PROJECT_STATUS_DESC	Description of the status.	VARCHAR(100)	NULL	No
PROJECT_STATUS_NM	Name of the project status.	VARCHAR(40)	NULL	No

Table 5.18 PROJECT_STEP_OUTPUT Table

Column Name	Column Description	Data Type	Null Value	Is PK
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Value	Is PK
OUT_PUT_TABLE_NM	The name of the output table that is created when a workflow step or a process is run.	VARCHAR(30)	NOT NULL	Yes
OUT_PUT_TABLE_TYPE	The type of output table. For example, the table type can be LASR Data or Core Data.	VARCHAR(10)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NULL	No
WRKFLW_STEP_ID	A unique identifier of the workflow step.	VARCHAR(32)	NULL	No

Table 5.19 PROJECT_STEP_OUTPUT_COLUMN Table

Column Name	Column Description	Data Type	Null Value	Is PK
OUT_PUT_COLUMN_NM	The name of the column in the output table.	VARCHAR(30)	NOT NULL	Yes
OUT_PUT_TABLE_NM	The name of the output table that is created when a workflow step or a process is run.	VARCHAR(30)	NOT NULL	Yes
VARIABLE_CATEGORY_CD	The code that is assigned to the enrichment category that you select for the data enrichment process.	VARCHAR(10)	NULL	No

Table 5.20 PROJECT_WRKFLW_STEP Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
WRKFLW_STEP_EXECUTION_DT	Execution date of the workflow step.	TIMESTAMP(0)	NULL	No
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes
WRKFLW_STEP_STATUS_CD	Code that is assigned for the workflow step status.	VARCHAR(10)	NULL	No
WRKFLW_STEP_STATUS_REASON_CD	Code that indicates the reason why a workflow step failed.	VARCHAR(10)	NULL	No

Table 5.21 PROJECT_WRKFLW_STEP_DATA Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_CURR_RUN_NUM	Current run number of the project.	NUMERIC(10)	NOT NULL	Yes
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
REPORT_VARIABLE_ID	Unique identifier of the report variable.	VARCHAR(32)	NOT NULL	Yes
REPORT_VARIABLE_VAL	Value of the reporting variable.	NUMERIC(15,3)	NULL	No
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes

Table 5.22 PROJECT_X_VARIABLE_CATEGORY Table

Column Name	Column Description	Data Type	Null Value	Is PK
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
VARIABLE_CATEGORY_CD	The code that is assigned to the enrichment category that you select for the data enrichment process.	VARCHAR(10)	NOT NULL	Yes

Table 5.23 REPORT_VARIABLE_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
REPORT_VARIABLE_DESC	Description of the reporting variable.	VARCHAR(100)	NULL	No
REPORT_VARIABLE_ID	Unique identifier of the report variable.	VARCHAR(32)	NOT NULL	Yes
REPORT_VARIABLE_NM	Name of the reporting variable.	VARCHAR(40)	NULL	No

Table 5.24 RESOLUTION_BASED_COMMUNITY_TMP Table

Column Name	Column Description	Data Type	Null Option	Is PK
AVG_NODES_IN_COMMUNITIES	The average number of nodes in a community.	NUMERIC(10)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
MAX_NODES_IN_COMMUNITIES	The maximum number of nodes in a community.	NUMERIC(10)	NULL	No
MIN_NODES_IN_COMMUNITIES	The minimum number of nodes in a community.	NUMERIC(10)	NULL	No
MODULARITY_VAL	Modularity value.	NUMERIC(15,3)	NULL	No
NUMBER_OF_COMMUNITIES	Number of communities.	NUMERIC(10)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	Yes
RESOLUTION_VAL	Value of the resolution list.	NUMERIC(20,8)	NOT NULL	Yes

Table 5.25 SOURCE_PROFILE Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
SOURCE_PROFILE_DESC	Description of source profile that is specified by the user.	VARCHAR(100)	NULL	No
SOURCE_PROFILE_NM	Name of the source profile that is specified by the user.	VARCHAR(40)	NULL	No
SOURCE_PROFILE_PK	A sequence number that is generated for the source profile.	SERIAL	NOT NULL	Yes

Table 5.26 SOURCE_PROFILE_X_TABLE Table

Column Name	Column Description	Data Type	Null Option	Is PK
SOURCE_PROFILE_PK	A sequence number that is generated for the source profile.	INTEGER	NOT NULL	Yes
TABLE_PK	A sequence number that is generated for a table.	INTEGER	NOT NULL	Yes

Table 5.27 TABLE_AGGREGATION_TYPE Table

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_AGGREGATION_TYPE_CD	A code that is assigned for the data aggregation level. For example, data can be monthly, daily, or fully aggregated.	VARCHAR(10)	NOT NULL	Yes
TABLE_AGGREGATION_TYPE_DESC	Description of data aggregation level. For example, data can be monthly, daily, or fully aggregated.	VARCHAR(100)	NULL	No
TABLE_AGGREGATION_TYPE_NM	Name of the data aggregation level . For example, data can be monthly, daily, or fully aggregated.	VARCHAR(40)	NULL	No

Table 5.28 TABLE_COLUMN_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_COLUMN_DATA_TYPE_CD	Code that is assigned to a column data type. For example, column data type can Date, Number, and so on.	VARCHAR(10)	NULL	No
TABLE_COLUMN_DESC	Description of the table column.	VARCHAR(100)	NULL	No
TABLE_COLUMN_DISPLAY_NM	Display name of the column.	VARCHAR(40)	NULL	No
TABLE_COLUMN_NM	Name of the registered column.	VARCHAR(40)	NULL	No
TABLE_COLUMN_PK	A sequence number that is generated for a table registered in SAS Customer Link Analytics.	SERIAL	NOT NULL	Yes
TABLE_COLUMN_TYPE_CD	Code that is assigned for a column type. For example, column types can be dimension, from ID, To ID, date, and measure.	VARCHAR(10)	NULL	No
TABLE_PK	A sequence number that is generated for a table.	INTEGER	NOT NULL	No

Table 5.29 TABLE_COLUMN_TYPE Table

Column Name	Column Description	Data Type	Null Option	Is PK
DISPLAY_IND	Indicates whether the column type is available for selection in the UI.	CHAR(1)	NULL	No
TABLE_COLUMN_TYPE_CD	Code that is assigned for a column type. For example, column types can be dimension, from ID, To ID, date, and measure.	VARCHAR(10)	NOT NULL	Yes
TABLE_COLUMN_TYPE_DESC	Description of the column type	VARCHAR(100)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_COLUMN_TYPE_NM	Name of the column type.	VARCHAR(40)	NULL	No

Table 5.30 TABLE_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
DISPLAY_IND	Indicates whether the table type is available for selection in the UI.	CHAR(1)	NULL	No
IS_CONFIGURED_IND	Indicates whether the table is completely configured.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
TABLE_AGGREGATION_TYPE_CD	A code that is assigned for the data aggregation level. For example, data can be monthly, daily, or fully aggregated.	VARCHAR(10)	NULL	No
TABLE_DESC	Description of the table as specified by the user.	VARCHAR(100)	NULL	No
TABLE_DISPLAY_NM	Display name of the table as specified by the user.	VARCHAR(40)	NULL	No
TABLE_LIBREF	Library reference of the table.	VARCHAR(10)	NULL	No
TABLE_NM	Name of the table that is registered in SAS Customer Link Analytics.	VARCHAR(40)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_PK	A sequence number that is generated for a table.	SERIAL	NOT NULL	Yes
TABLE_TYPE_CD	Code that is assigned for the type of table. For example, table types can be Transactional , Node attribute, Link attribute, Node inclusion list, and Link inclusion list.	VARCHAR(10)	NULL	No

Table 5.31 TABLE_STATISTICS Table

Column Name	Column Description	Data Type	Null Option	Is PK
SOURCE_DATA_LAST_DT	The latest date for which the data available in the source system.	TIMESTAMP(0)	NULL	No
SOURCE_DATA_START_DT	The earliest date for which the data available in the source system.	TIMESTAMP(0)	NULL	No
STATISTICS_CALCULATION_DT	The date on which statistics of the source table are calculated.	TIMESTAMP(0)	NOT NULL	Yes
TABLE_PK	A sequence number that is generated for a table.	INTEGER	NOT NULL	Yes

Table 5.32 TABLE_TYPE Table

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_TYPE_CD	Code that is assigned for the type of table. For example, table types can be Transactional , Node attribute, Link attribute, Node inclusion list, and Link inclusion list.	VARCHAR(10)	NOT NULL	Yes

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_TYPE_DES C	Description of the type of table. For example, table types can be Transactional , Node attribute, Link attribute, Node inclusion list, and Link inclusion list.	VARCHAR(100)	NULL	No
TABLE_TYPE_NM	Name of the type of table. For example, table types can be Transactional , Node attribute, Link attribute, Node inclusion list, and Link inclusion list.	VARCHAR(40)	NULL	No

Table 5.33 TABLE_TYPE_X_TABLE_COLUMN_TYPE Table

Column Name	Column Description	Data Type	Null Option	Is PK
TABLE_COLUMN_ TYPE_CD	Code that is assigned for a column type. For example, column types can be dimension, from ID, To ID, date, and measure.	VARCHAR(10)	NOT NULL	Yes
TABLE_TYPE_CD	Code that is assigned for the type of table. For example, table types can be Transactional , Node attribute, Link attribute, Node inclusion list, and Link inclusion list.	VARCHAR(10)	NOT NULL	Yes

Table 5.34 VARIABLE_CATEGORY Table

Column Name	Column Description	Data Type	Null Option	Is PK
IS_DEFAULT_CAT EGORY_IND	The code that indicates whether the enrichment category is selected by default.	CHAR(1)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
VARIABLE_CATEGORY_CD	The code that is assigned to the enrichment category that you select for the data enrichment process.	VARCHAR(10)	NOT NULL	Yes
VARIABLE_CATEGORY_DESC	The description of the enrichment category that you select for the data enrichment process.	VARCHAR(100)	NULL	No
VARIABLE_CATEGORY_LEVEL_CD	The level of the enrichment category. The possible values can be link level or node level.	VARCHAR(10)	NULL	No
VARIABLE_CATEGORY_NAME	The name of the enrichment category that you select for the data enrichment process.	VARCHAR(40)	NULL	No
VARIABLE_CATEGORY_SEQUENCE_NO	The sequence number that indicates the order in which the data enrichment process is run and the results are produced for the enrichment category.	NUMERIC(10)	NULL	No

Table 5.35 WRKFLW_STEP Table

Column Name	Column Description	Data Type	Null Option	Is PK
IS_OPTIONAL_IND	Indicates whether the workflow step is optional.	CHAR(1)	NULL	No
WRKFLW_STEP_DESC	Description of the workflow step.	VARCHAR(100)	NULL	No
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes
WRKFLW_STEP_NAME	Name of the workflow step.	VARCHAR(40)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
WRKFLW_STEP_SEQ_NUM	The sequence in which the workflow steps are to be executed.	NUMERIC(10)	NULL	No

Table 5.36 WRKFLW_STEP_STATUS Table

Column Name	Column Description	Data Type	Null Option	Is PK
WRKFLW_STEP_STATUS_CD	Code that is assigned for the workflow step status.	VARCHAR(10)	NOT NULL	Yes
WRKFLW_STEP_STATUS_DESC	Description of the status of a workflow step.	VARCHAR(100)	NULL	No
WRKFLW_STEP_STATUS_NM	Name of the status of a workflow step.	VARCHAR(40)	NULL	No

Table 5.37 WRKFLW_STEP_X_PARAM Table

Column Name	Column Description	Data Type	Null Option	Is PK
PARAM_ID	Unique identifier of the parameter.	VARCHAR(32)	NOT NULL	Yes
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes

Table 5.38 WRKFLW_STEP_X_REPORT_VARIABLE Table

Column Name	Column Description	Data Type	Null Option	Is PK
REPORT_VARIABLE_ID	Unique identifier of the report variable.	VARCHAR(32)	NOT NULL	Yes
WRKFLW_STEP_ID	Unique identifier of the workflow step	VARCHAR(32)	NOT NULL	Yes

Column Descriptions of Scenario-Specific Tables

Table 5.39 *CLA_SCENARIO* Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_DELETED_IND	Indicates whether the scenario is deleted.	CHAR(1)	NULL	No
IS_IN_DESIGN_IND	Indicates whether the scenario is in design or batch mode.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
OWNED_BY_USER	User ID of the owner of the scenario.	VARCHAR(100)	NULL	No
PROJECT_PK	A unique sequence number that is generated for a project.	INTEGER	NOT NULL	No
SCENARIO_CURR_RUN_NUM	Current run number of the scenario.	NUMERIC(10)	NULL	No
SCENARIO_DESC	Description of the scenario as specified by the user.	VARCHAR(200)	NULL	No
SCENARIO_NM	Name of the scenario as specified by the user	VARCHAR(40)	NULL	No
SCENARIO_PK	A sequence number that is generated for a scenario.	SERIAL	NOT NULL	Yes
SCENARIO_STATU S_CD	Code that is assigned for the scenario status.	VARCHAR(10)	NULL	No

Table 5.40 CLA_SCENARIO_MODEL Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_ACTIVE_IND	Indicates whether the scenario model is active.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
OWNED_BY_USER	User ID of the owner of the scenario model.	VARCHAR(100)	NULL	No
SCENARIO_MODEL_DESC	Description of the scenario model.	VARCHAR(200)	NULL	No
SCENARIO_MODEL_METADATA_ID	Unique identifier for the scenario model. This value is fetched from the SAS metadata.	VARCHAR(32)	NOT NULL	No
SCENARIO_MODEL_NM	Name of the scenario model.	VARCHAR(40)	NOT NULL	No
SCENARIO_MODEL_PK	A unique sequence number that is generated for a model.	SERIAL	NOT NULL	Yes
SCENARIO_PK	A sequence number that is generated for a scenario.	INTEGER	NULL	No

Table 5.41 SCENARIO_ABT_LABEL_KEY_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
LABEL_DESCRIPTION	Description of the label.	VARCHAR(100)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
LABEL_ID	Unique identifier of the label.	VARCHAR(32)	NOT NULL	Yes
PROCESSED_DTTM	The date on which the record is processed.	TIMESTAMP(0)	NULL	No

Table 5.42 SCENARIO_BATCH_RUN_HIST Table

Column Name	Column Description	Data Type	Null Option	Is PK
PROJECT_RUN_NUM	Run number of the project.	NUMERIC(10)	NULL	No
SCENARIO_ABT_HISTORY_END_DATE	End date of the historical data in scenario ABT.	TIMESTAMP(0)	NULL	No
SCENARIO_EXECUTION_END_DTTM	End date of the scenario execution	TIMESTAMP	NULL	No
SCENARIO_EXECUTION_START_DTTM	Start date of the scenario execution.	TIMESTAMP	NULL	No
SCENARIO_MODEL_PK	A unique sequence number that is generated for a model.	INTEGER	NULL	No
SCENARIO_PK	A sequence number that is generated for a scenario.	INTEGER	NOT NULL	Yes
SCENARIO_RUN_NUM	Run number of the scenario.	NUMERIC(10)	NOT NULL	Yes
SCENARIO_STATUSES_CD	Code that is assigned for the scenario status.	VARCHAR(10)	NULL	No

Table 5.43 SCENARIO_PARAM Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
SCENARIO_PARAM_ID	Unique identifier of the scenario parameter.	VARCHAR(32)	NOT NULL	Yes
SCENARIO_PK	A sequence number that is generated for a scenario.	INTEGER	NOT NULL	Yes
SCENARIOPARAM_PREDEFINED_VALUE	Predefined value of the scenario parameter.	VARCHAR(250)	NOT NULL	Yes
SCNRIO_PARAM_USERDEFINED_VALUE	User-defined value of the scenario parameter.	VARCHAR(250)	NULL	No

Table 5.44 SCENARIO_PARAM_MSTR Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_EDITABLE_IND	Indicates whether the parameter is editable.	CHAR(1)	NULL	No
IS_GLOBAL_PARAM_IND	Indicates whether the parameter is a global parameter.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
SCENARIO_PARAM_DATA_TYPE_CD	Code that is assigned for the data type of column. For example, the date type can be Date, Number, and so on.	VARCHAR(10)	NULL	No
SCENARIO_PARAM_DESC	Description of the scenario parameter.	VARCHAR(100)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
SCENARIO_PARAM_ID	Unique identifier of the scenario parameter.	VARCHAR(32)	NOT NULL	Yes
SCENARIO_PARAM_LOWER_LIMIT	The permissible lower limit for a scenario parameter value.	NUMERIC(15,3)	NULL	No
SCENARIO_PARAM_NM	Name of the parameter that is used in a scenario.	VARCHAR(40)	NULL	No
SCENARIO_PARAM_UPPER_LIMIT	The permissible upper limit for a scenario parameter value.	NUMERIC(15,3)	NULL	No

Table 5.45 SCENARIO_PARAM_VALUE Table

Column Name	Column Description	Data Type	Null Option	Is PK
CREATED_BY_USER	User ID of the user who created the record.	VARCHAR(100)	NULL	No
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NULL	No
IS_DEFAULT_VALUE_IND	Indicates whether the parameter value is default.	CHAR(1)	NULL	No
MODIFIED_BY_USER	User ID of the user who modified the record.	VARCHAR(100)	NULL	No
MODIFIED_DTTM	The date on which the record is modified.	TIMESTAMP(0)	NULL	No
SCENARIO_PARAM_ID	Unique identifier of the scenario parameter.	VARCHAR(32)	NOT NULL	Yes
SCENARIO_PARAM_VALUE_DESC	Description of the value of the scenario parameter.	VARCHAR(100)	NULL	No
SCENARIO_PARAM_VALUE_NM	Name of the value of the scenario parameter.	VARCHAR(40)	NULL	No

Column Name	Column Description	Data Type	Null Option	Is PK
SCENARIOPARAM _PREDEFINED_ VALUE	Predefined value of the scenario parameter.	VARCHAR(250)	NOT NULL	Yes

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Business Data Tables

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Business Data Tables

The results that are produced by each workflow step are stored in project-specific business data tables. A separate table is created for each project. Therefore, each table name includes the project ID, a sequence number that uniquely identifies each project.

Similarly, the output data of viral effect analysis is stored in scenario-specific table.

Table 6.1 *Project-Specific Business Data Tables*

Workflow Step or Process	Table Name	Table Description
Data Extraction	cla_de_p1_<project ID>	Contains fully aggregated transactional data.
	cla_de_p2_<project ID>	Contains degree-in and degree-out details for all nodes.
Link and Node Processing	cla_inf_p1_<project ID>	Contains filtered directed graph transactional data with the link weight.
	cla_inf_p2_<project ID>	Contains filtered undirected graph transactional data with the link weight.
	cla_inf_p3_<project ID>	Contains filtered undirected reciprocal graph transactional data with the link weight. This table is created if SAS Customer Link Analytics operates in distributed mode.

Workflow Step or Process	Table Name	Table Description
Community Building	cla_cd_p1_<project ID>	Contains the community ID of each node. This table is created if SAS Customer Link Analytics operates in non-distributed mode.
	cla_cd_p2_<project ID>	Contains links between communities. This table is created for the bottom-up approach if the sia_comm_links_ds_flag global parameter is set to Yes.
	cla_cd_p3_<project ID>	Contains community information at different resolution levels.
	cla_cd_p4_<project ID>	Describes the intensity of each node that belongs to multiple communities. This table is created if the sia_comm_overlap_ds_flag global parameter is set to Yes.
	cla_cd_p5_<project ID>	Contains links within each community. This table is created if SAS Customer Link Analytics operates in distributed mode.
	cla_cd_p6_<project ID>	Contains filtered directed graph transactional data with the link weight and the community ID of each link. This table is created if SAS Customer Link Analytics operates in distributed mode.
Centrality Measures Computation	cla_cm_p1_<project ID>	Contains filtered undirected graph transactional data with the link weight and the community ID of each link. This table is created if SAS Customer Link Analytics operates in non-distributed mode.
	cla_cm_p2_<project ID>	Contains centrality measures of all nodes with their community ID if centralities are computed by community.
Role Assignment	cla_ra_p1_<project ID>	Contains centrality measures of all nodes with their roles and community IDs if centralities are computed by community. This is the final output table of SAS Customer Link Analytics.

Workflow Step or Process	Table Name	Table Description
Data Enrichment	cla_dp_node_lvl_<project ID>	Contains the node-level enriched data of a project.
	cla_dp_link_lvl_<project ID>	Contains the link-level enriched data of a project.
Loading Data to SAS Customer Link Analytics LASR Analytic Server	cla_nd_lvl_lasr_<project ID>	Contains the node-level enriched data that is copied to the SAS Customer Link Analytics LASR Analytic Server.

Table 6.2 Scenario-Specific Business Data Table

Table Name	Description
SCENARIO_SCORE_WRITEBACK	Stores history of scores that are predicted for a particular combination of model and scenario.

Table 6.3 Columns of SCENARIO_SCORE_WRITEBACK Table

Column Name	Column Description	Data Type	Null Option
CREATED_DTTM	The date on which the record is created.	TIMESTAMP(0)	NOT NULL
NODE_ID	A unique ID that is assigned to a node.	VARCHAR(32)	NOT NULL
SCENARIO_MODEL_PK	A unique sequence number that is generated for the model that is built for a scenario. This is the unique identifier of the model for which the scoring is performed.	INTEGER	NOT NULL
SCENARIO_PK	A sequence number that is generated for a scenario.	INTEGER	NOT NULL
SCENARIO_SCORE	Predicted scores of the event under consideration.	NUMERIC(17,3)	NOT NULL

Chapter 7

Enrichment Variables

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Node-Level Enrichment Variables

In the data enrichment process, the node-level enrichment variables are populated in the `CLA_DP_NODE_LVL_<Project PK>` output table depending on the node-level enrichment categories that you choose. For more information, see *SAS Customer Link Analytics: User's Guide*.

Table 7.1 Node-Level Enrichment Variables in the `CLA_DP_NODE_LVL_<Project PK>` Table

Column Name	Column Description	Column Data Type
Variable Category Code: NAGR		
Variable Category Description: Aggregated transactional data		
<code>max_inc_msr<j></code>	The maximum incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes.	Numeric
<code>max_out_msr<j></code>	The maximum outgoing value of a transactional measure with PK value <i>j</i> for a node to its neighboring nodes.	Numeric
<code>min_inc_msr<j></code>	The minimum incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes.	Numeric
<code>min_out_msr<j></code>	The minimum outgoing value of a transactional measure with PK value <i>j</i> for a node to its neighboring nodes.	Numeric
<code>tot_inc_msr<j></code>	The total incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes.	Numeric

Column Name	Column Description	Column Data Type
tot_out_msr<>	The total outgoing value of a transactional measure with PK value j for a node to its neighboring nodes	Numeric
Variable Category Code: NATR		
Variable Category Description: Node attributes		
cust_type_cd	The value of the first node attribute for a node.	Numeric, Varchar, or Date
payment_dt	The value of the second node attribute for a node.	Numeric, Varchar, or Date
subscrp_type_cd	The value of the third node attribute for a node.	Numeric, Varchar, or Date
Variable Category Code: NCLA		
Variable Category Description: Roles and communities		
authority_val	The value of the Authority centrality measure for a node.	Numeric
between_val	The value of the Betweenness centrality measure for a node.	Numeric
close_val	The value of the Closeness centrality measure for a node.	Numeric
closein_val	The value of the Closeness-in centrality measure for a node.	Numeric
closeout_val	The value of the Closeness-out centrality measure for a node.	Numeric
clustcoef_val	The value of the Clustering coefficient centrality measure for a node.	Numeric
community_id	The unique ID of the community to which a node belongs.	Numeric
degree_val	The value of the Degree centrality measure for a node.	Numeric
degreein_val	The value of the Degree-in centrality measure for a node.	Numeric
degreeout_val	The value of the Degree-out centrality measure for a node.	Numeric

Column Name	Column Description	Column Data Type
eigen_val	The value of the Eigenvector centrality measure for a node.	Numeric
entity_role_nm	The name of the role that is assigned to the node.	Numeric
hub_val	The value of the Hub centrality measure for a node.	Numeric
influence1_val	The value of the Influence 1 centrality measure for a node.	Numeric
influence2_val	The value of the Influence 2 centrality measure for a node.	Numeric
node_id	The unique value that identifies a node. This column is the grain of the table that is enriched.	Numeric
Variable Category Code: NCMP		
Variable Category Description: Roles and communities over time		
prev_authority_val	The value of the Authority centrality measure for a node for the previous run of a project.	Numeric
prev_between_val	The value of the Betweenness centrality measure for a node for the previous run of a project.	Numeric
prev_close_val	The value of the Closeness centrality measure for a node for the previous run of a project.	Numeric
prev_closein_val	The value of the Closeness-in centrality measure for a node for the previous run of a project.	Numeric
prev_closeout_val	The value of the Closeness-out centrality measure for a node for the previous run of a project.	Numeric
prev_clustcoef_val	The value of the Clustering coefficient for a node for the previous run of a project.	Numeric
prev_community_id	The unique ID of the community to which a node belonged to in the previous run of a project.	Numeric
prev_degree_val	The value of the Degree centrality measure for a node for the previous run of a project.	Numeric
prev_degreein_val	The value of the Degree-in centrality measure for a node for the previous run of a project.	Numeric
prev_degreeout_val	The value of the Degree-out centrality measure for a node for the previous run of a project.	Numeric
prev_eigen_val	The value of the Eigenvector centrality measure for a node for the previous run of a project.	Numeric

Column Name	Column Description	Column Data Type
prev_entity_role_nm	The role name that is assigned to a node for the previous run of a project.	Numeric
prev_hub_val	The value of the Hub centrality measure for a node for the previous run of a project.	Numeric
prev_influence1_val	The value of the Influence 1 centrality measure for a node for the previous run of a project.	Numeric
prev_influence2_val	The value of the Influence 2 centrality measure for a node for the previous run of a project.	Numeric
Variable Category Code: NCMV		
Variable Category Description: Community-level statistics		
agcinc_msr<j>_rl<k>	The average incoming value of a transactional measure with PK value j for nodes of a community that have a role k . This variable is computed as the ratio of two values. The numerator is the sum of total incoming value of a transactional measure with PK value j for all the nodes of the community under consideration that have a role k . The denominator is the total number of nodes of the community under consideration that have a role k .	Numeric
agcmlvl_inc_msr<j>	The average incoming value of a transactional measure with PK value j for a community. This variable is computed as the ratio of two values. The numerator is the sum of total incoming value of a transaction measure with PK value j for all the nodes that belong to community under consideration. The denominator is the total number of nodes that belong to the community under consideration.	Numeric
agcmlvl_out_msr<j>	The average outgoing value of a transactional measure with PK value j for a community. This variable is computed as the ratio of two variables. The numerator is the sum of total outgoing value of a transaction measure j for all nodes that belong to the community under consideration. The denominator is the total number of nodes that belong to the community under consideration.	Numeric
agcout_msr<j>_rl<k>	The average outgoing value of a transactional measure with PK value j for nodes of a community that have a role k . This variable is computed as ratio of two values. The numerator is the sum of total outgoing value of a transaction measure j for all the nodes that have a role k that belong to community under consideration. the denominator is the total number of nodes that have a role k that belong to community under consideration.	Numeric

Column Name	Column Description	Column Data Type
<code>mncmlvl_inc_msr<j></code>	The minimum incoming value of a transactional measure with PK value j for a community. This variable is computed as the minimum of total incoming value of a transactional measure with PK value j for all the nodes that belong to community under consideration.	Numeric
<code>mncmlvl_out_msr<j></code>	The minimum outgoing value of a transactional measure with PK value j for a community. This variable is computed as minimum of total outgoing value of a transactional measure with PK value j for all the nodes that belong to the community under consideration.	Numeric
<code>mxcmvl_inc_msr<j></code>	The maximum incoming value of a transactional measure with PK value j for a community. This variable is computed as the maximum of total incoming value of a transactional measure with PK value j for all the nodes that belong to the community under consideration.	Numeric
<code>mxcmvl_out_msr<j></code>	The maximum outgoing value of a transactional measure with PK value j for a community. This variable is computed as the maximum of total outgoing value of a transactional measure with PK value j for all the nodes that belong to the community under consideration.	Numeric
<code>toctinc_msr<j>_rl<k></code>	The total incoming value of a transactional measure with PK value j for nodes of a community that have a role k . This variable is computed as the sum of the total incoming value of a transactional measure with PK value j for all the nodes of the community under consideration that have a role k .	Numeric
<code>toctmlvl_inc_msr<j></code>	The total incoming value of a transactional measure with PK value j for a community. This variable is computed as sum of total incoming value of a transactional measure with PK value j for all the nodes of the community under consideration.	Numeric
<code>toctmlvl_out_msr<j></code>	The total outgoing value of a transactional measure with PK value j for a community. This variable is computed as the sum of total outgoing value of a transactional measure with PK value j for all the nodes of the community under consideration.	Numeric
<code>toctmout_msr<j>_rl<k></code>	The total outgoing value of a transactional measure with PK value j for nodes of a community that have a role k . This variable is computed as the sum of the total outgoing value of a transactional measure with PK value j for all the nodes of the community under consideration that have role k .	Numeric

Column Name	Column Description	Column Data Type
Variable Category Code: NCQR		
Variable Category Description: Churn and acquisition indicators		
acq_ind	The code that indicates whether the node is acquired for the current execution of a project. For example, this variable is assigned a value 1 if the node is available for the first time in an execution of the project and 0 otherwise.	Numeric
churn_ind	The code that indicates whether the node has churned for the current execution of a project. For example, this variable is assigned a value 1 if the node does not appear in an execution of the project and 0 otherwise.	Numeric
Variable Category Code: NDER		
Variable Category Description: Relation with churned and acquired nodes		
conct_acq_cnt	The number of newly acquired nodes that are connected to a node.	Numeric
conct_acq_rl<k>	The number of newly acquired nodes with a specific role <i>k</i> that are connected to a node.	Numeric
conct_chn_cnt	The number of churned nodes that were connected to a node.	Numeric
conct_chn_rl<k>	The number of churned nodes with a specific role <i>k</i> that were connected to a node.	Numeric
pct_chng_inc_lnk_wt	The percentage change in the link weight of a node for incoming links.	Numeric
pct_chng_inc_msr<j>	The percentage change in the incoming value of a transactional measure with PK value <i>j</i> .	Numeric
pct_chng_out_lnk_wt	The percentage change in the link weight of a node for outgoing links.	Numeric
pct_chng_out_msr<j>	The percentage change in the outgoing value of a transactional measure with PK value <i>j</i> .	Numeric
role_change_ind	The code that identifies whether the role of a node has changed as compared to the previous run of the project.	Numeric
tot_inc_lnk_wt	The total link weight of a node for incoming links.	Numeric
tot_out_lnk_wt	The total link weight of a node for outgoing links.	Numeric

Column Name	Column Description	Column Data Type
Variable Category Code: NRLV		
Variable Category Description: Associations with neighboring roles		
<code>mmin_msr<j>_fmrl<k></code>	The minimum incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>mnog_msr<j>_torl<k></code>	The minimum outgoing value of a transactional measure with PK value <i>j</i> for a node to its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>mxin_msr<j>_fmrl<k></code>	The maximum incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>mxog_msr<j>_torl<k></code>	The maximum outgoing value of a transactional measure with PK value <i>j</i> for a node to its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>toic_msr<j>_fmrl<k></code>	The total incoming value of a transactional measure with PK value <i>j</i> for a node from its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>toog_msr<j>_torl<k></code>	The total outgoing value of a transactional measure with PK value <i>j</i> for a node to its neighboring nodes that have a specific role <i>k</i> .	Numeric
<code>tot_no_of_conct_rl<k></code>	The total number of nodes that have a specific role <i>k</i> that are connected to the node under consideration.	Numeric

Link-Level Enrichment Variables

In the data enrichment process, the link-level enrichment variables are populated in the `CLA_DP_LINK_LVL_<Project PK>` output table depending on the node-level enrichment categories that you choose. For more information, see *SAS Customer Link Analytics: User's Guide*.

Table 7.2 Link-Level Enrichment Variables in `CLA_DP_LINK_LVL_<Project PK>` Table

Column Name	Column Description	Column Data Type
Variable Category Code: LATR		
Variable Category Description: Node attributes		
<code>from_cust_type_cd</code>	The value of the first node attribute for a node that is a From Node of the link under consideration.	Numeric, Varchar, or Date

Column Name	Column Description	Column Data Type
from_payment_dt	The value of the second node attribute for a node that is a From Node of the link under consideration.	Numeric, Varchar, or Date
from_subscrp_type_cd	The value of the third node attribute for a node that is a From Node of the link under consideration.	Numeric, Varchar, or Date
to_cust_type_cd	The value of the first node attribute for a node that is a To Node of the link under consideration.	Numeric, Varchar, or Date
to_payment_dt	The value the second node attribute for a node that is a To Node of the link under consideration.	Numeric, Varchar, or Date
to_subscrp_type_cd	The value of the third node attribute for a node that is a To Node of the link under consideration.	Numeric, Overcharge, or Date
Variable Category Code: LCLA		
Variable Category Description: Roles and communities		
authority_val	The value of the Authority centrality measure for a node that is a To Node of the link under consideration.	Numeric
clustcoef_val	The value of the Clustering coefficient centrality measure for a node that is a To Node of the link under consideration.	Numeric
from_authority_val	The value of the Authority centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_between_val	The value of the Betweenness centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_close_val	The value of the Closeness centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_closein_val	The value of the Closeness-in centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_closeout_val	The value of the Closeness-out centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_clustcoef_val	The value of the Clustering coefficient centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_community_id	The unique ID of the community to which a node belongs. This node is a From Node of the link under consideration.	Numeric
from_degree_val	The value of the Degree centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_degreein_val	The value of the Degree-in centrality measure for a node that is a From Node of the link under consideration.	Numeric

Column Name	Column Description	Column Data Type
from_degreeout_val	The value of the Degree-out centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_eigen_val	The value of the Eigenvector centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_entity_role_nm	The name of the role that is assigned to the node that is a From Node of the link under consideration.	Numeric
from_hub_val	The value of the Hub centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_influence1_val	The value of the Influence 1 centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_influence2_val	The value of the Influence 2 centrality measure for a node that is a From Node of the link under consideration.	Numeric
from_node	The unique value that identifies a From Node in a link.	Numeric
hub_val	The value of the Hub centrality measure for a node that is a To Node of the link under consideration.	Numeric
link_weight_val	The value of the link weight of the link under consideration.	Numeric
to_between_val	The value of the Betweenness centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_close_val	The value of the Closeness centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_closein_val	The value of the Closeness-in centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_closeout_val	The value of the Closeness-out centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_community_id	The unique ID of the community to which a node belongs. This node is a To Node of the link under consideration.	Numeric
to_degree_val	The value of the Degree centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_degreein_val	The value of the Degree-in centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_degreeout_val	The value of the Degree-out centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_eigen_val	The value of the Eigenvector centrality measure for a node that is a To Node of the link under consideration.	Numeric

Column Name	Column Description	Column Data Type
to_entity_role_nm	The name of the role that is assigned to the node that is a To Node of the link under consideration.	Numeric
to_influence1_val	The value of the Influence 1 centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_influence2_val	The value of the Influence 2 centrality measure for a node that is a To Node of the link under consideration.	Numeric
to_node	The unique value that identifies a To Node of a link.	Numeric
Variable Category Code: LDER		
Variable Category Description: Churn and acquisition indicators		
from_acq_ind	The code that identifies whether the From Node of the link under consideration is an acquired node.	Numeric
from_churn_ind	The code that identifies whether the From Node of the link under consideration has churned out.	Numeric
link_acq_ind	The code that identifies whether the link under consideration is newly acquired.	Numeric
link_churn_ind	The code that identifies whether the link under consideration has churned out.	Numeric
to_acq_ind	The code that identifies whether the To Node of the link under consideration is an acquired node.	Numeric
to_churn_ind	The code that identifies whether the To Node of the link under consideration has churned out.	Numeric

Chapter 8

Analytical Variables

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Analytical Variables

The analytical base table (ABT) that is built for viral effect analysis contains variables that are important for scenario analysis. These variables are called *analytical variables*. For more information about building an ABT and defining a scenario, see *SAS Customer Link Analytics: User's Guide*.

The analytical variables are generated depending on the business problem that you analyze through your scenario definition. Also, these variables are generated depending on how you have configured the workflow steps of the project that is associated with the scenario.

For example, the following table lists the analytical variables that are generated for analyzing the churn problem in the communications industry.

Table 8.1 Analytical Variables

Column Name	Column Description	Data Type	Column Type
NODE_ID	A unique value that identifies a node. This column is the grain of the model that is built.	Numeric	ID
ROLE_SK	A unique value that identifies a role. Roles are defined when the Role Assignment workflow step is run.	Numeric	Input
AUTHORITY_VAL	The value of Authority centrality measure for a node.	Numeric	Input
BETWEEN_VAL	The value of Betweenness centrality measure for a node.	Numeric	Input
CLOSE_VAL	The value of Closeness centrality measure for a node.	Numeric	Input
CLOSEIN_VAL	The value of Closeness-in centrality measure for a node.	Numeric	Input

Column Name	Column Description	Data Type	Column Type
CLOSEOUT_VAL	The value of Closeness-out centrality measure for a node.	Numeric	Input
CLUSTCOEF_VAL	The value of Clustering coefficient for a node.	Numeric	Input
COMMUNITY_ID	The unique ID of the community to which a node belongs.	Numeric	Input
DEGREE_VAL	The value of Degree centrality measure for a node.	Numeric	Input
DEGREEIN_VAL	The value of Degree-in centrality measure for a node.	Numeric	Input
DEGREEOUT_VAL	The value of Degree-out centrality measure for a node.	Numeric	Input
EIGEN_VAL	The value of Eigenvector centrality measure for a node.	Numeric	Input
HUB_VAL	The value of Hub centrality measure for a node.	Numeric	Input
INFLUENCE1_VAL	The value of Influence 1 centrality measure for a node.	Numeric	Input
INFLUENCE2_VAL	The value of Influence 2 centrality measure for a node.	Numeric	Input
AGCMLVL_AUTHORITY_VAL	Average Authority centrality measure at community level. This variable is computed as the total of the Authority centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by the total number of nodes in that community.	Numeric	Input
AGCMLVL_BETWEEN_VAL	Average Betweenness centrality measure at community level. This variable is computed as the total of Betweenness centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.	Numeric	Input
AGCMLVL_CLOSE_VAL	Average Closeness centrality measure at community level. This variable is computed as total of Closeness centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.	Numeric	Input

Column Name	Column Description	Data Type	Column Type
AGCMLVL_CLOSEIN_VAL	<p>Average In-closeness centrality measure at community level.</p> <p>This variable is computed as total of Closeness-in centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_CLOSEOUT_VAL	<p>Average Out-closeness centrality measure at community level.</p> <p>This variable is computed as total of Out-closeness centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_CLUSTCOEF_VAL	<p>Average Clustering coefficient centrality measure at community level.</p> <p>This variable is computed as total of Clustering coefficients of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_DEGREE_VAL	<p>Average Degree centrality measure at community level.</p> <p>This variable is computed as total of Degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_DEGREEIN_VAL	<p>Average In-degree centrality measure at community level.</p> <p>This variable is computed as total of In-degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_DEGREEOUT_VAL	<p>Average Out-degree centrality measure at community level.</p> <p>This variable is computed as total of Out-degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
AGCMLVL_EIGEN_VAL	<p>Average Eigenvector centrality measure at community level.</p> <p>This variable is computed as total of Eigenvector centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_HUB_VAL	<p>Average Hub centrality measure at community level.</p> <p>This variable is computed as total of Hub centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_INFLUENCE_1_VAL	<p>Average Influence 1 centrality measure at community level.</p> <p>This variable is computed as total of Influence 1 centrality measure of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_INFLUENCE_2_VAL	<p>Average Influence 2 centrality measure at community level.</p> <p>This variable is computed as total of centrality measure Influence 2 of all the nodes that belong to the community to which the node under consideration belongs divided by total number of nodes in that community.</p>	Numeric	Input
AGCMLVL_INC_MSR<j>	<p>Average of incoming value for a transactional measure j received by nodes that belong to the community to which the node under consideration belongs. This variable is computed at community level. If the node under consideration belongs to community i, then this variable is computed as the total of incoming value for transactional measure j received by all nodes that belong to community i divided by total number of nodes that belong to community i.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
AGCMLVL_OUT_MSR< <i>j</i> > >	Average of outgoing value for transactional measure <i>j</i> made by nodes that belong to the community to which the node under consideration belongs. This variable is computed at community level. If the node under consideration belongs to community <i>i</i> , then this variable is computed as total of outgoing value for transactional measure <i>j</i> made by all nodes that belong to community <i>i</i> divided by total number of nodes that belong to community <i>i</i> .	Numeric	Input
AVGINC_MSR< <i>j</i> >_RL< <i>k</i> >	Average of incoming value for transactional measure <i>j</i> received by nodes having role <i>k</i> that belong to the community to which the node under consideration belongs. This variable is computed at community level. If the node under consideration has a role <i>k</i> and belongs to community <i>i</i> , then this variable is computed as total of incoming value for transactional measure <i>j</i> received by all nodes having role <i>k</i> that belong to community <i>i</i> divided by total number of nodes having role <i>k</i> that belong to community <i>i</i> .	Numeric	Input
AVGOUT_MSR< <i>j</i> >_RL< <i>k</i> > >	Average of outgoing value for transactional measure <i>j</i> made by nodes having role <i>k</i> that belong to the community to which the node under consideration belongs. This variable is computed at community level. If the node under consideration has a role <i>k</i> and belongs to community <i>i</i> , then this variable is computed as total of outgoing value for transactional measure <i>j</i> made by all nodes having role <i>k</i> that belong to community <i>i</i> divided by total number of nodes having role <i>k</i> that belong to community <i>i</i> .	Numeric	Input
DF_ND_COM_IN_MSR< <i>j</i> > >	Absolute difference between the incoming value for transactional measure <i>j</i> received by the node under consideration and the average incoming value for transactional measure <i>j</i> at community level to which the node under consideration belongs. Average incoming value for transactional measure <i>j</i> is computed as: if the node under consideration belongs to community <i>i</i> , then the total incoming value for transactional measure <i>j</i> received by all the nodes belonging to community <i>i</i> divided by total number of nodes that belong to community <i>i</i> .	Numeric	Input

Column Name	Column Description	Data Type	Column Type
DF_ND_COM_OG_MSR< <i>j</i> >	Absolute difference between the outgoing value for transactional measure <i>j</i> made by node under consideration and the average outgoing value for transactional measure <i>j</i> at community level to which the node under consideration belongs. Average outgoing value for transactional measure <i>j</i> is computed as, if the node under consideration belongs to community <i>i</i> , then the total outgoing value for transactional measure <i>j</i> made by all the nodes belonging to community <i>i</i> divided by total number of nodes that belong to community <i>i</i> .	Numeric	Input
MNDFICMR< <i>j</i> >_NDRL< <i>k</i> >	<p>Minimum of absolute difference between the incoming value for transactional measure <i>j</i> received by node under consideration and the incoming value for transactional measure <i>j</i> received by nodes having role <i>k</i> that are connected to the node under consideration. To compute this variable:</p> <p>Compute the total incoming value for transactional measure <i>j</i> received by node under consideration.</p> <p>Compute the total incoming value for transactional measure <i>j</i> received by each of the nodes having role <i>k</i> that are connected to the node under consideration.</p> <p>Take absolute difference between incoming value for transactional measure <i>j</i> for node under consideration and incoming value for transactional measure <i>j</i> for each node having role <i>k</i> that is connected to the node under consideration.</p> <p>Take the minimum of this absolute difference.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
MNDFOGMR<j>_NDRL<k>	<p>Minimum of absolute difference between the outgoing value for transactional measure j made by node under consideration and the outgoing value for transactional measure j made by nodes having role k that are connected to the node under consideration. To compute this variable:</p> <p>Compute the total outgoing value for transactional measure j made by node under consideration.</p> <p>Compute the total outgoing value for transactional measure j made by each of the nodes having role k that are connected to the node under consideration.</p> <p>Take absolute difference between outgoing value for transactional measure j for node under consideration and outgoing value for transactional measure j for each node having role k that is connected to the node under consideration.</p> <p>Take the minimum of this absolute difference.</p>	Numeric	Input
MNICMR<j>_FNCHRL<k>	<p>The minimum incoming value received by a node for transactional measure j from all the connected non-churned nodes having role k. For example, this variable is computed as the minimum number of incoming SMS received by the node under consideration from all the non-churned nodes having role k that are connected to the node under consideration.</p>	Numeric	Input
MNICMR<j>_FRCHRL<k>	<p>The minimum incoming value received by a node for transactional measure j from all the connected churned nodes having role k. For example, this variable computes the minimum number of incoming SMS received by the node under consideration from all the churned nodes having role k that are connected to the node under consideration.</p>	Numeric	Input
MNIN_MSR<j>_FMRL<k>	<p>The minimum incoming value received by a node for transactional measure j from all the connected nodes having role k. For example, this variable computes the minimum number of incoming SMS received by the node under consideration from all the nodes having role k that are connected to the node under consideration.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
MNOG_MSR<j>_TORL<k>	The minimum outgoing value made by a node for transactional measure j to all the connected nodes having role k . For example, this variable computes the minimum number of outgoing SMS made by the node under consideration to all the nodes having role k that are connected to the node under consideration.	Numeric	Input
MNOGMR<j>_TNCHRL<k>	The minimum outgoing value made by a node for transactional measure j to all the connected non-churned nodes having role k . For example, this variable computes the minimum number of outgoing SMS made by the node under consideration to all the non-churned nodes having role k that are connected to the node under consideration.	Numeric	Input
MNOGMR<j>_TOCHRL<k>	The minimum outgoing value made by a node for transactional measure j to all the connected churned nodes having role k . For example, this variable computes the minimum number of outgoing SMS made by the node under consideration to all the churned nodes having role k that are connected to the node under consideration.	Numeric	Input
MXDFICMR<j>_NDRL<k>	<p>The maximum absolute difference between the incoming value for transactional measure j received by node under consideration and the incoming value for transactional measure j received by nodes having role k that are connected to the node under consideration. To compute this variable:</p> <p>Compute the total incoming value for transactional measure j received by the node under consideration.</p> <p>Compute the total incoming value for transactional measure j received by each of the nodes having role k that are connected to the node under consideration.</p> <p>Take the absolute difference between the incoming value for transactional measure j for the node under consideration and incoming value for transactional measure j for each node having role k that is connected to the node under consideration.</p> <p>Take the maximum of this absolute difference.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
MXDOGCMR<j>_NDRL<k>	<p>The maximum absolute difference between the outgoing value for transactional measure <i>j</i> made by node under consideration and the outgoing value for transactional measure <i>j</i> made by nodes having role <i>k</i> that are connected to the node under consideration. To compute this variable:</p> <p>Compute the total outgoing value for transactional measure <i>j</i> made by the node under consideration.</p> <p>Compute the total outgoing value for transactional measure <i>j</i> made by each of the nodes having role <i>k</i> that are connected to the node under consideration.</p> <p>Take the absolute difference between the outgoing value for transactional measure <i>j</i> for the node under consideration and outgoing value for transactional measure <i>j</i> for each node having role <i>k</i> that is connected to the node under consideration.</p> <p>Take the maximum of this absolute difference.</p>	Numeric	Input
MXICMR<j>_FNCHRL<k>	<p>The maximum incoming value received by a node for transactional measure <i>j</i> from all the connected non-churned nodes having role <i>k</i>. For example, this variable computes the maximum number of incoming SMS received by the node under consideration from all the non-churned nodes having role <i>k</i> that are connected to it.</p>	Numeric	Input
MXICMR<j>_FRCHRL<k>	<p>Maximum of incoming value received by a node for transactional measure <i>j</i> from all the connected churned nodes having role <i>k</i>. For example, this variable computes the maximum number of incoming SMS received by the node under consideration from all the churned nodes having role <i>k</i> that are connected to it.</p>	Numeric	Input
MXIN_MSR<j>_FMRL<k>	<p>Maximum incoming value received by a node for a measure <i>j</i> from all the connected nodes having role <i>k</i>. For example, this variable computes the maximum number of incoming SMS received by the node under consideration from all the nodes having role <i>k</i> that are connected to it.</p>	Numeric	Input
MXOG_MSR<j>_TORL<k>	<p>Maximum outgoing value made by a node for transactional measure <i>j</i> to all the connected nodes having role <i>k</i>. For example, this variable computes the maximum number of outgoing SMS sent by the node under consideration to all the nodes having role <i>k</i> that are connected to it.</p>	Numeric	Input

Column Name	Column Description	Data Type	Column Type
MXOGMR<j>_TNCHRL<k>	Maximum of outgoing value made by a node for transactional measure j to all the connected non-churned nodes. For example, this variable computes the maximum number of outgoing SMS sent by the node under consideration to all the non-churned nodes that are connected to it.	Numeric	Input
MXOGMR<j>_TOCHRL<k>	Maximum of outgoing value made by a node for transactional measure j to all the connected churned nodes. For example, this variable computes the maximum number of outgoing SMS made by the node under consideration to all the churned nodes that are connected to it.	Numeric	Input
TO_OG_MR<j>_TO_CH_ND	Total outgoing value made by a node for transactional measure j to all the connected churned nodes. For example, this variable computes the total number of outgoing SMS made by the node under consideration to all the churned nodes that are connected to the node under consideration.	Numeric	Input
TO_OG_MR<j>_TONCH_ND	Total outgoing value made by a node for transactional measure j to all the connected non-churned nodes. For example, this variable computes the total number of outgoing SMS made by the node under consideration to all the non-churned nodes that are connected to the node under consideration.	Numeric	Input
TOCMLVL_AUTHORITY_VAL	Total Authority centrality measure at community level. This variable is computed as total of Authority centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_BETWEEN_VAL	Total Betweenness centrality measure at community level. This variable is computed as total of Betweenness centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_CLOSE_VAL	Total Closeness centrality measure at community level. This variable is computed as total of Closeness centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_CLOSEIN_VAL	Total In-closeness centrality measure at community level. This variable is computed as total of In-closeness centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input

Column Name	Column Description	Data Type	Column Type
TOCMLVL_CLOSEOUT_VAL	Total Out-closeness centrality measure at community level. This variable is computed as total of Out-closeness centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_CLUSTCOEF_VAL	Total Clustering coefficient centrality measure at community level. This variable is computed as total of Clustering coefficient centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_DEGREE_VAL	Total Degree centrality measure at community level. This variable is computed as total of Degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_DEGREEIN_VAL	Total In-degree centrality measure at community level. This variable is computed as total of in-degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_DEGREEOUT_VAL	Total Out-degree centrality measure at community level. This variable is computed as total of out-degree centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_EIGEN_VAL	Total Eigenvector centrality measure at community level. This variable is computed as total of Eigenvector centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_HUB_VAL	Total Hub centrality measure at community level. This variable is computed as total of Hub centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_INC_MSRj	Total incoming value for transactional measure j at community level. This variable is computed as total of incoming value for transactional measure j of all the nodes that belong to the community to which the node under consideration belongs. For example, if the node under consideration belongs to community i , then this variable is computed as total of incoming SMS received by all the nodes that belong to community i .	Numeric	Input

Column Name	Column Description	Data Type	Column Type
TOCMLVL_INFLUENCE 1_VAL	Total Influence 1 centrality measure at community level. This variable is computed as total of centrality measure Influence 1 of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_INFLUENCE 2_VAL	Total Influence 2 centrality measure at community level. This variable is computed as the total of Influence 2 centrality measure of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOCMLVL_OUT_MSR< <i>j</i> > >	Total outgoing value for transactional measure <i>j</i> at community level. This variable is computed as total of outgoing value for transactional measure <i>j</i> of all the nodes that belong to the community to which the node under consideration belongs.	Numeric	Input
TOIC_MR< <i>j</i> >_FM_NCH_ ND	Total incoming value for transactional measure <i>j</i> from all the connected non-churned nodes to the node under consideration. For example, this variable computes the total number of incoming SMS received by the node under consideration from all the non-churned nodes that are connected to the node under consideration.	Numeric	Input
TOIC_MR< <i>j</i> >_FMCHN_N D	Total incoming value for transactional measure <i>j</i> from all the connected churned nodes to the node under consideration. For example, this variable computes the total number of incoming SMS received by the node under consideration from all the churned nodes that are connected to the node under consideration.	Numeric	Input
TOIC_MSR< <i>j</i> >_FMRL< <i>k</i> >	Total incoming value for transactional measure <i>j</i> from all the connected nodes having role <i>k</i> to the node under consideration. For example, this variable computes the total number of incoming SMS received by the node under consideration from all the nodes with role Leader that are connected to the node under consideration.	Numeric	Input
TOICMR< <i>j</i> >_FNCHRL< <i>k</i> >	Total incoming value for transactional measure <i>j</i> from all the connected non-churned nodes having role <i>k</i> to the node under consideration. For example, this variable computes the total number of incoming SMS received by the node under consideration from all the non-churned nodes with a leader role that are connected to the node under consideration.	Numeric	Input

Column Name	Column Description	Data Type	Column Type
TOICMR<j>_FRCHRL<k>	Total incoming value for transactional measure j from all the connected churned nodes having role k to the node under consideration. For example, this variable computes the total number of incoming SMS received by the node under consideration from all the churned nodes with a leader role and that are connected to the node under consideration.	Numeric	Input
TOOG_MSR<j>_TORL<k>	Total outgoing value made by a node for a measure j to all the connected nodes that have a role k . For example, this variable computes the total number of outgoing SMS made by the node under consideration to all the nodes with a leader role that are connected to the node under consideration.	Numeric	Input
TOOGMR<j>_TNCHRL<k>	Total outgoing value made by a node for transactional measure j to all the connected non-churned nodes having role k . For example, this variable computes the total number of outgoing SMS sent by the node under consideration to all the non-churned nodes with leader role that are connected to the node under consideration.	Numeric	Input
TOOGMR<j>_TOCHRL<k>	Total outgoing value of a node for transactional measure j sent to all the connected churned nodes having role k . For example, this variable computes the total number of outgoing SMS sent by the node under consideration to all the churned nodes with a leader role that are connected to the node under consideration.	Numeric	Input
TOT_IC_ND_LVL_MSR<j>	Total incoming value of a node for transactional measure j . For example, this variable computes the total number of incoming SMS received by the node under consideration.	Numeric	Input
TOT_NO_OF_CONCT_RL<k>	Total number of nodes having role k that link to the node under consideration.	Numeric	Input
TOT_OG_ND_LVL_MSR<j>	Total outgoing value of a node for transactional measure j . For example, this variable computes the total number of outgoing SMS sent by the node under consideration.	Numeric	Input
TOTNO_CONCT_CHNRRL<k>	Total number of churned nodes having role k that link to the node under consideration.	Numeric	Input
TOTNO_CONCT_NOCHRL<k>	Total number of non-churned nodes having role k that link to the node under consideration.	Numeric	Input

Column Name	Column Description	Data Type	Column Type
CHURN_DT_FLG	Event Indicator for performance window. This variable indicates whether the event occurred in the timeframe of the performance window. For example, this variable is assigned a value 1 if the node churns in the period of the performance window and 0 otherwise. This variable is created for a modeling ABT.	Numeric	Target
CHURN_DT_FLG_1	Event Indicator for observation window. This variable indicates whether the event occurred in the timeframe of the observation window. For example, this variable is assigned a value 1 if the node churns in the period of the observation window and 0 otherwise. This variable is created for modeling and scoring ABTs.	Numeric	Input