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PURPOSE

Missing data imputation is needed for sparse datasets especially in medical field where data has a lot of missing values that are either MCAR, MAR or MNAR. This report deals with a dataset consisting of medical data about difference between effects of Plasma Exchange Therapy and Vietnam's Ministry of Health's guidelines in 2015 treatments on Acute Pancreatitis. The report deals with the following analysis:

- Cleaning the dataset based on Accuracy and Missing Data Analysis
- Handling outliers
- Multivariate Imputation using MICE, Amelia and MissForest packages in R
- Comparing the imputation results and determining the best imputations
- Determining explanatory and response variable for prediction analysis
- Building regression model to predict the target variable

Data Description (Re-Cap)

The dataset consists of 165 observations corresponding to patients involved in the study. Among them, 83 were treated with PEX (Plasma Exchange Therapy) treatment while others were given treatment according to Vietnam's Ministry of Health's guidelines in 2015. As we analysed the data, we observed that many variables present in the dataset are redundant and fail to provide any additional information.

The dataset consisted of 194 variables providing the complete journey of the patient throughout the hospitalization and/or until death due to the disease. Based on our analysis, we filtered out variables based on following criteria:

- More than 50% of data is missing and/or
- The data is redundant as the same information is being covered by other variables.

We kept 97 variables out of 194 based on the analysis. However, on further analysis and study of acute pancreatitis, it was discovered that few more variables are redundant in data. These variables are:

- dt_pex_ngaybenh: The variable provides the number of days after which the PEX treatment started after being diagnosed. Since dt_pex_sauvv(Pex treatment after how many hours of diagnosis) already provides that information, we removed this variable.
- dt_dich_vao_t24;dt_dich_vao_t48;dt_dich_vao_t72;dt_dich_ra_t24;dt_dich_ra_t48;dt_dich_ra_t72: These variables quantify the amount of fluid intake and output during treatment of patients based on Vietnam Health Guidelines. Since, the information is already captured in dt_dich_bilan_t24, dt_dich_bilan_t48 and dt_dich_bilan_t72(balance fluid) which indicate difference between input and output, we removed these six variables.

- cls_sh_alb_t0: The albumin levels have already been considered in IMRIE scores ls_diem_imrie_t0, thus, we removed them from cleaned dataset.

Data Cleaning

The subset of data selected based on analysis has 89 variables. Each variable of this subset was then analysed for missing, invalid and outlier data. Below is a detailed explanation of handling data discrepancies:

Categorical Variables:

- dt_pex_sauvv : The variable consists of number of hours after being diagnosed did the PEX treatment started. Although the data should be numerical but due to each patients preference of filling the details, some have written explicitly 'After <n> hours' or <n>h etc. A custom function has been designed to handle the data based on values. We have utilized regular expression to filter out numeric data.

```
 [1] "10"              "24"              NA
 [4] "18"              "gio 15"          "9"
 [7] "6"               "23"              "5"
[10] "20"              "19h"             "21.01"
[13] "gio 9, gio 60"   "10, 21"          "11"
[16] "30"              "13"              "09, 20"
[19] "gio 22"          "8"               "19"
[22] "11h"             "7"               "28"
[25] "0h15"            "16h,26h,48h"     "gio 12"
[28] "38h52'"          "14, 36"          "40"
[31] "41"              "gio 5"           "8.23"
[34] "26"              "4.5"             "4"
[37] "14"              "32"              "17"
[40] "08, 20"          "17h, 35h"        "17.5"
[43] "11,18"           "15"              "21"
[46] "gio 23"          "6h 30/10 sau 10h" "16h(20h 13/5)"
```

- ts_giadinh: It specifies whether patient has a Hereditary history regarding presence of AP. Since absence of value here is MNAR since the patient might not has any hereditary history, thus all the NA values are replaced with 'khong' (meaning NO)

- ts_ruou: It specifies whether patient suffers from a drinking problem or not. Here also, absence of value indicates no drinking problem. Thus, NA's are replaced with 'Khong' (meaning NO)

- ts_ruou_nam: It specifies the number of years a patient, with drinking problem, had the problem. Since patients without any drinking problem have filled NA as the value, we have replaced NAs with 0's as it correctly quantifies the parameter for non-alcoholic patients.

- ts_dtd: It specifies presence of diabetes problem in the patient. All the values are either Co(yes) or Khong (No) except one which is '3'. Considering an accidental misinformation being filled by patient, this value is replaced with Khong.

```
$ts_dtd
[1] "Khong" "Co"    "3"
```

- ts_vtc: This variable specifies presence of historical cholecystitis problem and is too a binary variable with yes/no response. It has two invalid values 3 and 5 along with NA's. Since these invalid values are inaccurate based on the query, they have been replaced with 'khong' specifying no history of cholecystitis.

```
$ts_vtc
[1] "Khong" "Co"    "5"     "3"     NA
```

- non: The variable states vomiting as a symptom being suffered by patients. The NA's simply mean the patient doesn't encounter any Vomiting and thus have been replaced with 0 which means NO.

- cls_sa_tuy_t0: This variable states the results of ultrasound of pancreas. It consisted of same values but with different cases being treated as different values. Also, many values meant the same i.e., NO but were specified in a different way. Thus, all the values were first changed to lowercase and then, similar values are merged as 'khong'(no) to eliminate unnecessary factor levels. Also, NA values signify absence thus have been replaced with 'khong'.

```
$cls_sa_tuy_t0
 [1] "vtc"                          "vtc phu"
 [3] "VTC"                          "vtc hoai tu"
 [5] "Kho qs"                       "phu"
 [7] "VT man"                       NA
 [9] "han che tham kham"            "tham nhieu phu"
[11] "kho thay"                     "khong"
[13] "Dich xa"                      "VTC phu"
[15] "tang kt dau tuy"              "vuong hoi"
[17] "tang kich thuoc tham nhieu"   "Phu"
[19] "tham nhiem dau tuy"           "dich quanh tuy"
[21] "kho quan sat"                 "phu dich xa"
[23] "khong quan sat duoc"          "Kho thay"
```

- cls_sa_dichob_t0: It specifies the presence of Abdominal Fluid as discovered in ultrasound examination. The response is binary stating 'Yes'/'No'. Thus, the missing values are replaced with 'Khing' stating 'No'.

- cls_sa_mat_t0: It indicates presence or absence of gallstones based on gallbladder ultrasound. Since, almost 50% of values are missing and as classified earlier as MAR, the NAs are not treated here and will be imputed later. But the variable consists of some invalid values. The value 0 is replaced with 'Khong' while 'bt' & 'polyp tu' are replaced with 'co' as these values mean presence of gallstones.

```
$cls_sa_mat_t0
[1] "bt"       NA         "polyp tu" "0"        "khong"
```

- cls_ct_dichob_lan1: This variable describes the results of computer tomography of Abdominal Fluids. Although the response should be binary stating 'yes'/'no', the values present are invalid and meaningless for few observations. These values based on letters used are categories as khong and co and hence, have been treated with correct value. Since the missing data is MAR, we are not handling it here.

```
$cls_ct_dichob_lan1
 [1] "co"         "khong"      NA           "c√≥"        "Khong"
 [6] "it"         "Co"         "2"          "k"          "dich tu do"
[11] "khong co"   "day 50mm"   "Nhieu"      "ci"         "Kh√¥ng"
```

- Kq: The variable states whether the patient was alive or dead after or during the treatment. While 0 signifies dead, 1 signifies alive. But a value 'Song' is also present that means alive, so have been treated as 1. The NA values are not handled as they are MAR and are imputed later.

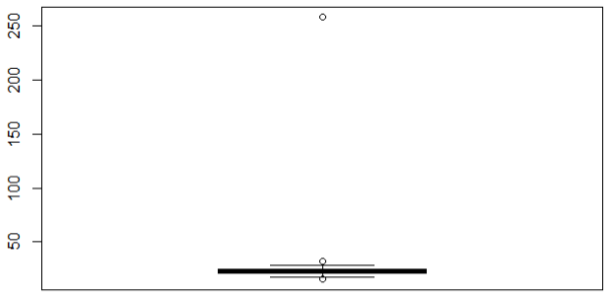
- Bcxa: It represents presence of potential complications. The NA simply mean that there were no potential complications, effectively due to no-trial of PEX treatment on the other group. Thus, have been replaced with 0.

- Pes: It categorizes patients as either being treated with PEX or Vietnam health guidelines. The Blank values do not have any data for any of the pex variable thus indicating 'No Treatment'. Hence are replaced with 0.

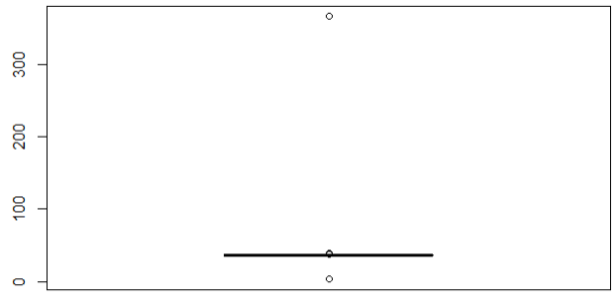
After cleaning the categorical variables, all such variables are converted into factors. This enables regression models to easily run and evaluate the data.

Numerical Variables:

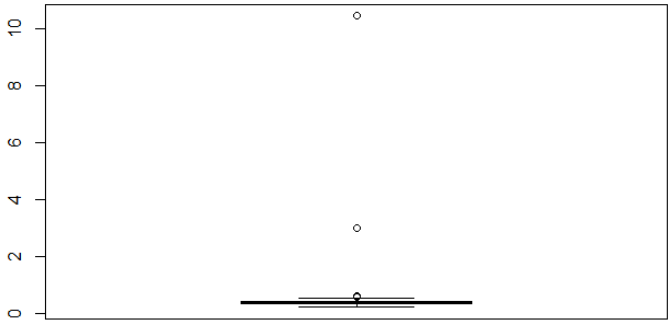
- ls_tt_bmi_t0: This variable states the BMI of patient. Only one value of 258 is an outlier as can be seen from boxplot. As it seems, the responder forgot to add a decimal point, or the data got corrupted. Thus, we divided the value by 10 to make it within valid range.



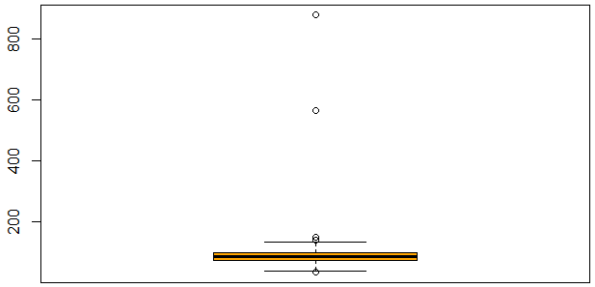
- ls_tt_nhiet_t0: It indicates body temperature in degree Celsius. Most of the values are within range except 366 which is an outlier. As it seems, a decimal point is omitted as a mistake, we rectified it by dividing the value by 10.



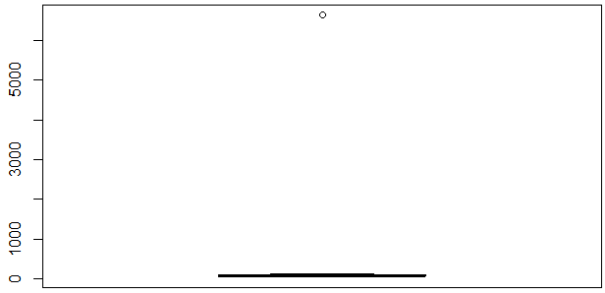
- cls_hh_hct_t0: It indicates the total percentage of blood volume that is composed of red blood cells. Since the values are percentages, they are given as fraction in the variable so must be less 1. But two values 3 and 10 are outliers. Since we do not have info to find correct value, we replaced them with NA to be imputed later.



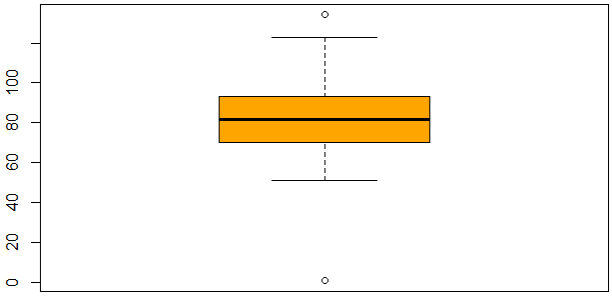
- cls_hh_pt_t0: This variable is a measure of the time it takes for blood to clot. Most of the values fall within 200 however, 2 values are outliers as shown in boxplot. The values at t30 and t72 gives an idea about one of the outlier values 565, and thus, is divided by 10 to get within range value. The other outlier doesn't follow any pattern with results taken at t30 and t72 and hence replaced with NA for imputation later.



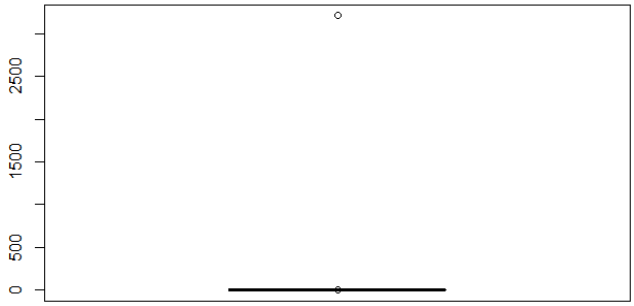
- cls_hh_pt_t30: The same test after 30hrs of hospitalization is being represented here. It has an outlier value of 6638 which is out of range. It has been replaced with NA for imputation later.



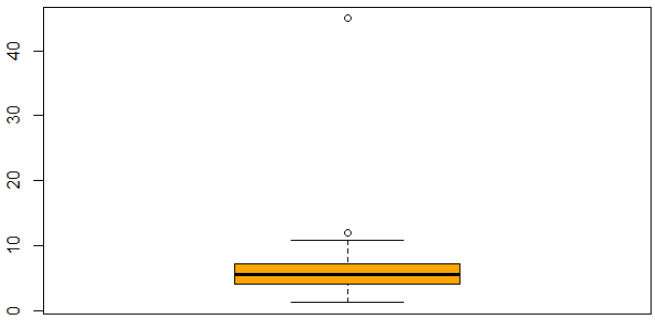
- cls_hh_pt_t72: The same test after 72hrs of hospitalization is being represented here. It has an outlier value of 0.98 which is out of range. As it seems a decimal point issue based on other values of same test, it has been multiplied by 100 to get correct value.



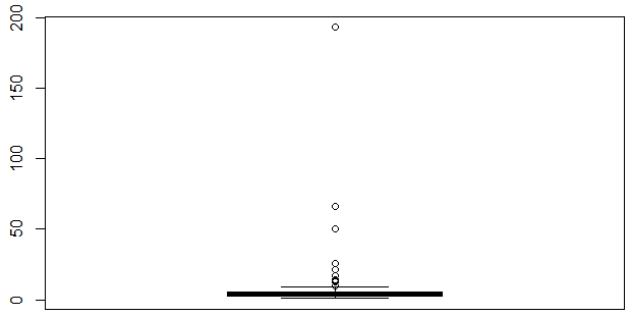
- cls_hh_aptt_t0: This variable represents test like PT test described earlier. In this, some reagents are added in blood before checking its clotting duration. It has an outlier of more than 3k value. Since there is no pattern based on other value of this test at different times, we have replaced it with NA for imputations later on.



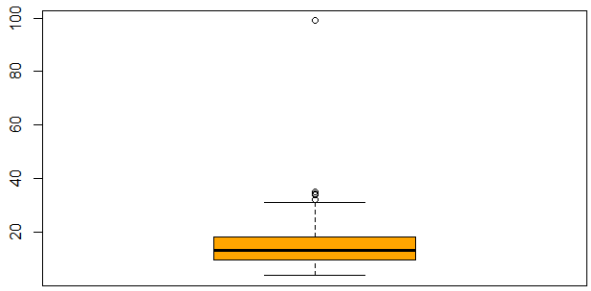
- cls_hh_fib_t0: This variable denotes measure of the amount of Fibrinogen in blood which is responsible for blood clots. It has an outlier value of 45 which is replaced with NA considering it is not in valid range.



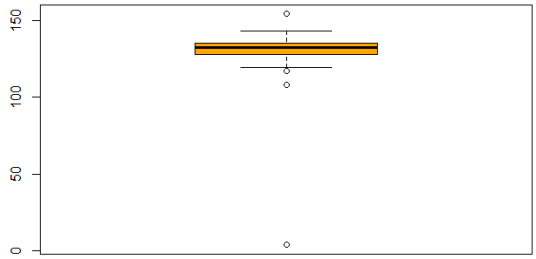
- cls_sh_ure_t0: This variable Blood Urea Nitrogen which has a normal range of 6 to 24. An outlier value of 193 exists in this variable. Discovering from other values taken at t30 and t70, the value seems to be missing a decimal point, hence rectified by dividing by 10.

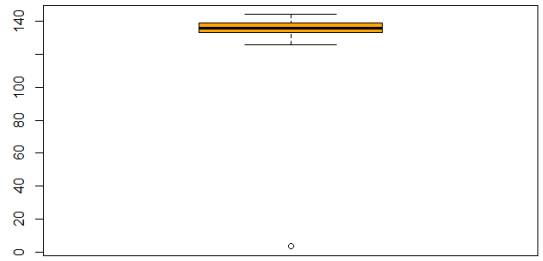


- cls_sh_chol_t0: This variable represents levels of Cholesterol HDL, LDL and Total that tends to be significantly lower in patients with AP. An outlier value of 99 is replace with NA as the value at t30 is also NA so can not determine any human error issues.

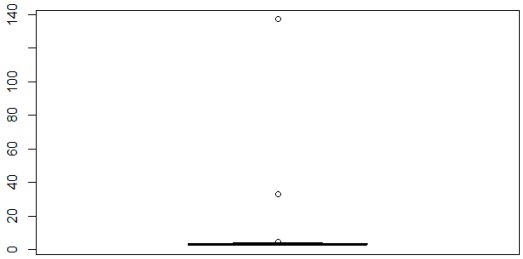


- cls_sh_na_t0 and t30: It indicates Serum Sodium. The data has an outlier value of 4.2 for t0 and 3.7 for t30 which are not a valid one. Thus, they have been replaced with NA for later imputation.

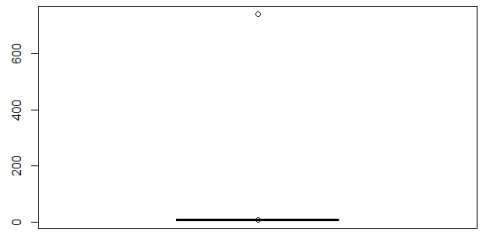




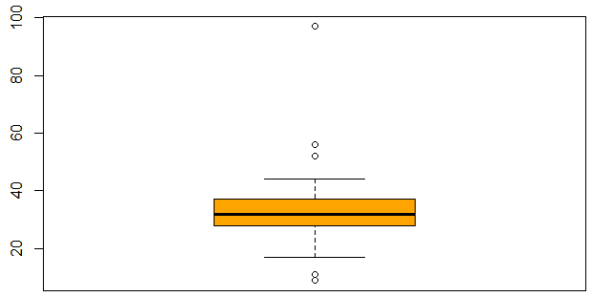
- cls_sh_ka_t30: It indicates Serum Potassium. It has an out-of-range value. We replaced 137 with NA and 33 with 3.3 as it seems it was misspelled based on cls_sh_ka_t0.



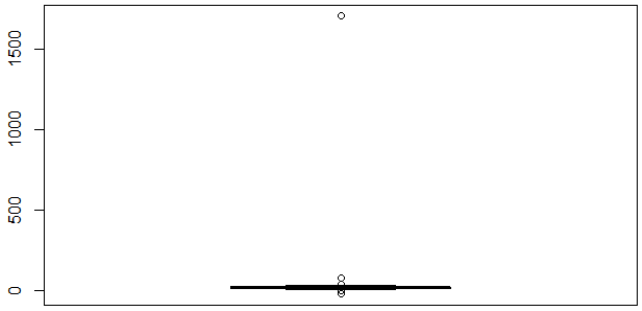
- cls_km_ph_t0: It indicates arterial pH, where lower values indicate higher chances of AP. Here out of range value 741 which is an outlier should be replaced with 7.41 as PH value lies in that range.



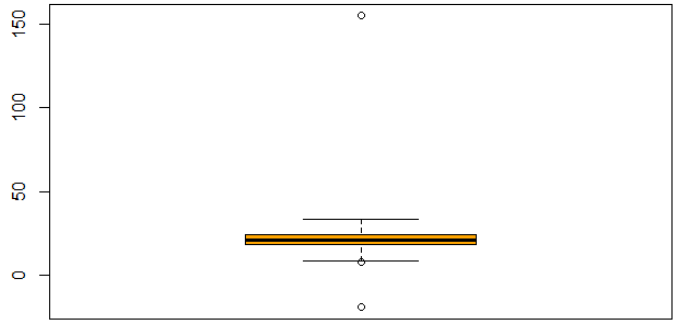
- cls_km_paco2_t0: This variable indicates Partial pressure of arterial carbon dioxide. 97 is out of range value, seems like PaO2 value was filled instead (as it is same in that column). Since, we cannot determine based on available data, we replaced it with NA.



- cls_km_hco3_t0: It represents Bicarbonate in blood. Since the value cannot be negative (-18.6), we changed to positive. The value 77.6 is invalid value, hence replace with NA. Also, it seems 17.08 is misspelled as 1708 based on the value of HCO3 at t30 which is 18.6, so replace 1708 with 17.08.

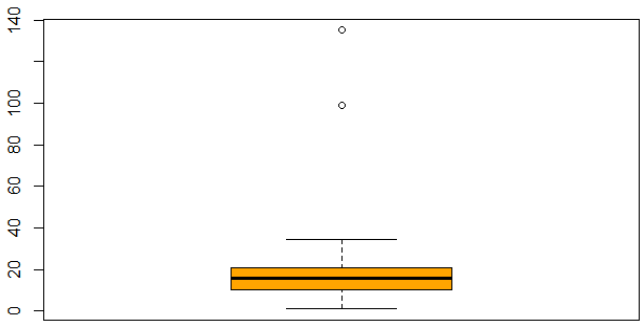


- cls_km_hco3_t30: It represents Bicarbonate in blood. The value cannot be negative (-18.9), so it is changed to positive. Also, it seems 15.5 is misspelled as 155 based on the value of HCO3 at t0 which is 14.2, so replace 155 with 15.5.

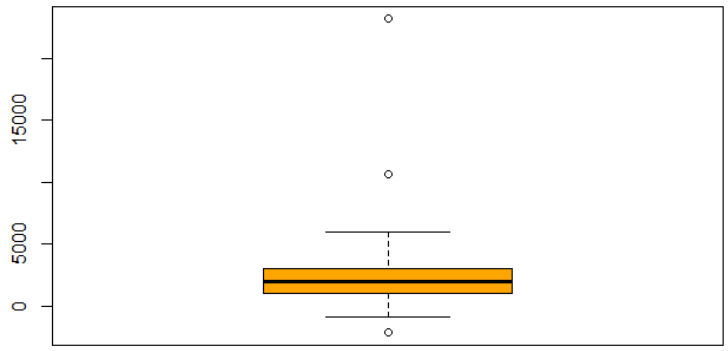


- cls_km_pf_t0: It represents ratio of paO2 and %O2. It has 2 out of range values for observations 18 and 70 having values 3.8 and 33.3. Value 33.3 is in KPA instead of mmHg so will convert it to mmHg by multiplying by 7.5. Also, the value 3.8 is invalid as it is not in valid range, hence replace by NA.

- dt_pex_chol_t_lan1: It indicates cholesterol before first PEX treatment. There are 2 out of range values that we have replaced with NA as we don't have corresponding dt_pex_chol_s_lan1 for them (i.e cholestrol after pex).



- dt_dich_bilan_t24: It indicates fluid balance. There are 2 values greater than 10,000 (10700 and 23200). These values can be calculated by subtracting dt_dich_vao_t24 and dt_dich_ra_t24. It can be noticed there's an extra zero at end. The correct values should be 1070 and 2320.



Data Imputation

The cleaned data has approximately 30% missing values. Thus, to perform regression modelling, we first need to impute the missing values. The missing values are imputed using 3 different approaches:

MICE: Multivariate Imputation via Chained Equations (mice package in R)

Amelia II: Multiple imputation enabled with bootstrap based EMB (Expectation-Maximization with Bootstrapping) algorithm.(Amelia package in R)

missForest: Implementation of random forest, a non-parametric imputation method (missforest package in R)

Since, we have already cleaned the data and handled outliers, we are performing imputations on cleaned data without outliers.

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MICE Imputation

MICE package creates multiple imputations (replacement values) for multivariate missing data. The method is based on Fully Conditional Specification, where each incomplete variable is imputed by a separate model. The MICE algorithm can impute mixes of continuous, binary, unordered categorical and ordered categorical data.

Since it uses regression to impute values, we first need to eliminate those variables from its internal models that have more than 50% missing data. This enables better imputations. Thus, we have removed the following variables from prediction matrix:

'cls_sh_chol_t30'	'cls_km_pf_t30'	'cls_km_lac_t30'	'dt_pex_alob_t_lan1'
'dt_pex_chol_s_lan1'	'dt_pex_alob_s_lan1'	'cls_hh_pt_t72'	'cls_km_be_t30'
'cls_km_paco2_t30'	'cls_km_pao2_t30'	'dt_pex_chol_t_lan1'	'cls_hh_bc_t54'
'cls_km_ph_t30'	'cls_km_hco3_t30'	'cls_sh_tri_t30'	'cls_hh_hct_t72'
'cls_hh_bc_t72'	'cls_sh_ure_t72'	'cls_hh_aptt_t30'	'dt_pex_sauvv'
'dt_pex_sofa_s_lan1'	'cls_hh_pt_t30'	'cls_hh_fib_t30'	'dt_pex_imrie_s_lan1'
'bcxa'	'dt_pex_tri_s_lan1'	'dt_pex_tri_t_lan1'	'dt_pex_apache_t_lan1'
'dt_pex_apache_s_lan1'	'cls_sa_mat_t0'	'dt_pex_imrie_t_lan1'	

cls_sh_chol_t30	cls_km_pf_t30	dt_pex_chol_s_lan1	dt_pex_alob_s_lan1	cls_km_lac_t30	dt_pex_alob_t_lan1
0.79393939	0.75757576	0.72727273	0.72727273	0.66060606	0.66060606
cls_hh_pt_t72	cls_km_be_t30	cls_km_paco2_t30	cls_km_pao2_t30	cls_km_ph_t30	cls_km_hco3_t30
0.63636364	0.63636364	0.62424242	0.62424242	0.61818182	0.61818182
dt_pex_chol_t_lan1	cls_hh_bc_t54	cls_sh_tri_t30	cls_hh_hct_t72	cls_hh_bc_t72	cls_sh_ure_t72
0.57575758	0.56969697	0.56969697	0.55757576	0.54545455	0.54545455
dt_pex_sofa_s_lan1	cls_hh_pt_t30	cls_hh_aptt_t30	dt_pex_sauvv	cls_hh_fib_t30	dt_pex_imrie_s_lan1
0.53939394	0.53333333	0.52727273	0.52727273	0.52121212	0.52121212
dt_pex_tri_s_lan1	dt_pex_apache_s_lan1	cls_sa_mat_t0	dt_pex_tri_t_lan1	dt_pex_apache_t_lan1	dt_pex_imrie_t_lan1
0.51515152	0.51515152	0.50909091	0.50303030	0.50303030	0.50303030
dt_pex_lan	dt_pex_sofa_t_lan1	cls_sh_ure_t30	cls_sh_cre_t30	cls_sh_lip_t0	cls_sh_na_t30
0.49696970	0.49696970	0.49090909	0.49090909	0.47878788	0.46060606
cls_sh_ka_t30	cls_hh_bc_t30	cls_hh_hct_t30	cls_km_pf_t0	cls_sh_amy_t0	cls_ct_dichob_lan1
0.44848485	0.41818182	0.41818182	0.41212121	0.37575758	0.32727273
ls_diem_ct_t0	dt_dich_bilan_t72	cls_sh_pro_t0	kq	cls_sh_glu_t0	cls_sh_chol_t0
0.31515152	0.26060606	0.24242424	0.24242424	0.21212121	0.18181818
dt_dich_bilan_t48	ls_diem_apache_t0	ls_diem_ranson_t0	ls_diem_sofa_t0	ls_diem_imrie_t0	cls_km_lac_t0
0.15757576	0.15151515	0.15151515	0.15151515	0.14545455	0.10909091
dt_dich_bilan_t24	cls_km_be_t0	cls_km_hco3_t0	cls_hh_aptt_t0	cls_hh_fib_t0	cls_km_paco2_t0
0.10909091	0.10303030	0.08484848	0.07272727	0.07272727	0.07272727
cls_hh_pt_t0	cls_sh_ka_t0	cls_km_pao2_t0	cls_km_ph_t0	dt_nhin_ngay	cls_sh_na_t0
0.06666667	0.06666667	0.06666667	0.06060606	0.06060606	0.05454545
ls_tn_nhiet_t0	ls_tn_spo2_t0	cls_hh_hct_t0	cls_sh_cre_t0	ls_tn_mach_t0	cls_hh_bc_t0
0.04242424	0.03636364	0.03636364	0.03636364	0.03030303	0.03030303
cls_sh_tri_t0	cls_sh_ure_t0	ls_tt_bmi_t0			
0.03030303	0.02424242	0.01818182			

Percentage of Missing values in Cleaned Dataset

The package assumes that the variables in the dataset have multivariate normality. But the dataset consists of many variables that do not follow normal distribution. Thus, transformations can be done o the variables to make them normal. The mic package provides an option to specify variables and their corresponding transformations to make them normal.

Numerical Variables: Default method of PMM is being used.

Binary Variables: Logit transformation (Logistic Regression)

Unordered Categorical Variables: Polynomial Regression

Also, the maxit is set to default at 5 i.e., we get 5 new datasets with imputed values to choose the best as per our scenario.

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Amelia Imputation

Amelia multiple imputation is a method for analysing incomplete multivariate data. This function will take an incomplete dataset in either data frame or matrix form and return m imputed datasets with no missing values. The algorithm first creates a bootstrapped version of the original data, estimates the sufficient statistics (with priors if specified) by EM on this bootstrapped sample, and then imputes the missing values of the original data using the estimated sufficient statistics. It repeats this process m times to produce the m complete datasets where the observed values are the same and the unobserved values are drawn from their posterior distributions.

When performing multiple imputation, the first step is to identify the variables to include in the imputation model. It is crucial to include at least as much information as will be used in the analysis model. That is, any variable that will be in the analysis model should also be in the imputation model. This includes any transformations or interactions of variables that will appear in the analysis model.

The function is run on cleaned dataset. The 'idvars' parameter which indicates those variables that serve as identification and not to be included in imputation, is set to 'ID' column. The 'noms' parameter is used to specify the categorical variables (binary or multi-categories) thus, the following variables are taken as noms:

Gender'	ts_vtc'	cls_ct_dichob_lan1'
ts_giadinh'	non'	kq'
ts_ruou'	cls_sa_dichob_t0'	bcxa'
ts_dtd'	cls_sa_mat_t0'	pex'

Lastly, empri is set to 8% of the total number of rows. This is because it is the number indicating level of the empirical (or ridge) prior which shrinks the covariances of the data but keeps the means and variances the same for problems of high missingness, small N's or large correlations among the variables. The result consists of 5 different datasets computed from Amelia algorithm.

MissForest Imputation

missForest is a nonparametric imputation method for all kind of data. It can cope with mixed type of variables, nonlinear relations, complex interactions and high dimensionality. It only requires the observation (i.e., the rows of the data frame supplied to the function) to be pairwise independent. The algorithm is based on random forest and is dependent on its R implementation randomForest. For each variable missForest fits a random forest on the observed part and then predicts the missing part. The algorithm continues to repeat these two steps until a stopping criterion is met or the user specified maximum of iterations is reached.

We applied the missForest function on the cleaned dataset to impute the missing values. It ran 6 iterations and created the dataset with all the missing values imputed. The following are the MSE and falsely classified entries (PFC) of imputed data

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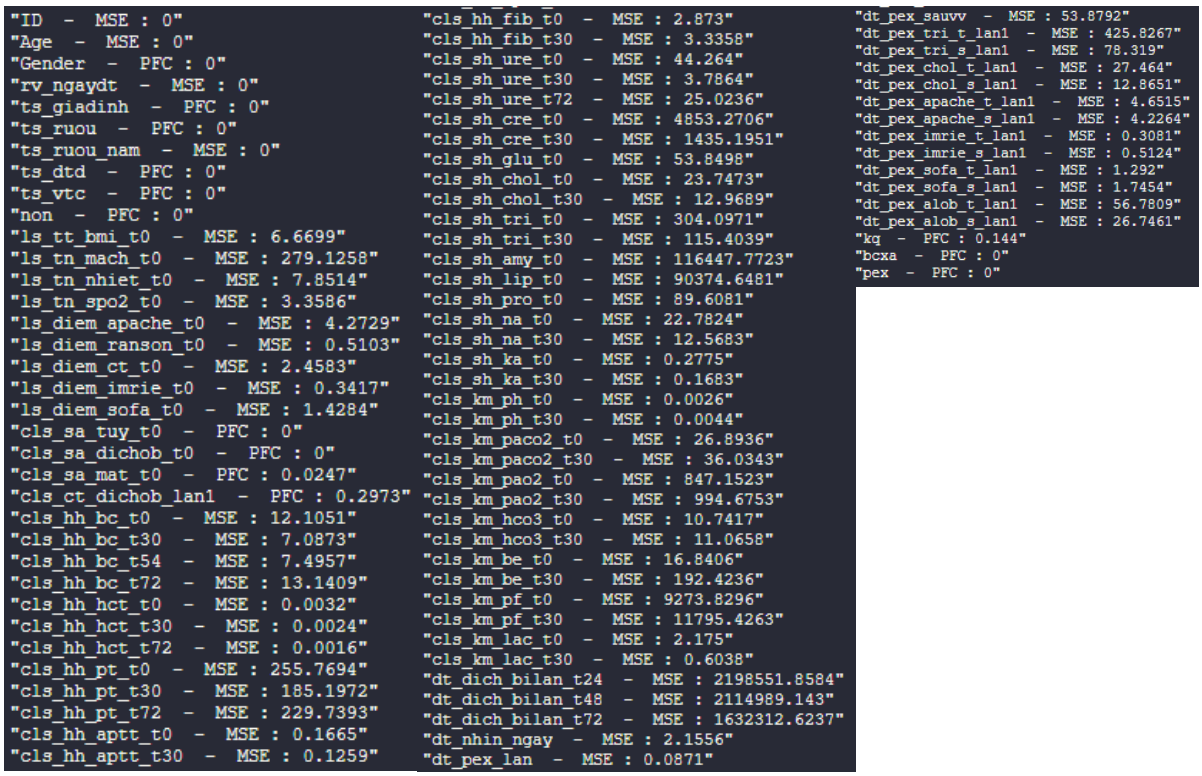

Comparing Imputation Results

The imputations from all the three packages are performed based on 165 observations which are too low compared to number of variables (89). Thus, the error in imputations is expected to be high. But we compared the results to select the best imputations based on three criteria:

- Valid Range of Values
- Minimal change in distribution of data
- Minimal error in computations

Below is the comparison of the three imputations with original dataset:

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```
 ls_tt_bmi_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :15.63   Min.   :15.63      Min.   :15.63      Min.   :15.63      Min.   :15.63      Min.   :15.63      Min.   :15.63      Min.   :15.63
1st Qu.:21.24   1st Qu.:21.13      1st Qu.:21.07      1st Qu.:21.22      1st Qu.:21.13      1st Qu.:21.13      1st Qu.:21.22      1st Qu.:21.07
Median :23.09   Median :23.09      Median :23.09      Median :23.10      Median :23.09      Median :23.09      Median :23.09      Median :23.09
Mean   :22.68   Mean   :22.64      Mean   :22.62      Mean   :22.67      Mean   :22.65      Mean   :22.64      Mean   :22.66      Mean   :22.65      Mean   :22.60
3rd Qu.:24.32   3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32      3rd Qu.:24.32
Max.   :31.72   Max.   :31.72      Max.   :31.72      Max.   :31.72      Max.   :31.72      Max.   :31.72      Max.   :31.72      Max.   :31.72      Max.   :31.72
NA's   :3
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :13.86        Min.   :13.77        Min.   :15.63
1st Qu.:21.22        1st Qu.:21.13        1st Qu.:21.30
Median :23.09        Median :23.09        Median :23.10
Mean   :22.63        Mean   :22.61        Mean   :22.68
3rd Qu.:24.32        3rd Qu.:24.32        3rd Qu.:24.32
Max.   :31.72        Max.   :31.72        Max.   :31.72

ls_tn_mach_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 68.00   Min.   : 68.0      Min.   : 68.0      Min.   : 68.0      Min.   : 68.0      Min.   : 68.0      Min.   : 68.0      Min.   : 68.0
1st Qu.: 90.75   1st Qu.: 90.0      1st Qu.: 91.0      1st Qu.: 91.0      1st Qu.: 90.0      1st Qu.: 90.0      1st Qu.: 90.0      1st Qu.: 90.0
Median :107.50   Median :107.0      Median :107.0      Median :108.0      Median :105.0      Median :107.0      Median :107.0      Median :106.0      Median :105.0
Mean   :107.33   Mean   :107.2      Mean   :107.4      Mean   :107.5      Mean   :106.8      Mean   :107.2      Mean   :106.9      Mean   :106.9      Mean   :106.9
3rd Qu.:120.00   3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0      3rd Qu.:120.0
Max.   :158.00   Max.   :158.0      Max.   :158.0      Max.   :158.0      Max.   :158.0      Max.   :158.0      Max.   :158.0      Max.   :158.0      Max.   :158.0
NA's   :5
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 68.0        Min.   : 68.0        Min.   : 68.0
1st Qu.: 91.0        1st Qu.: 91.0        1st Qu.: 91.0
Median :108.0        Median :107.0        Median :107.0
Mean   :107.1        Mean   :107.2        Mean   :107.3
3rd Qu.:120.0        3rd Qu.:120.0        3rd Qu.:120.0
Max.   :158.0        Max.   :158.0        Max.   :158.0

ls_tn_nhiet_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 3.70    Min.   : 3.70      Min.   : 3.70      Min.   : 3.70      Min.   : 3.70      Min.   : 3.70      Min.   : 3.70      Min.   : 3.70
1st Qu.:36.70    1st Qu.:36.70      1st Qu.:36.70      1st Qu.:36.80      1st Qu.:36.80      1st Qu.:36.70      1st Qu.:36.70      1st Qu.:36.70      1st Qu.:36.70
Median :37.00    Median :37.00      Median :37.00      Median :37.00      Median :37.00      Median :37.00      Median :37.00      Median :37.00      Median :37.00
Mean   :36.93    Mean   :36.95      Mean   :36.94      Mean   :36.97      Mean   :36.95      Mean   :36.93      Mean   :36.92      Mean   :36.97      Mean   :36.92
3rd Qu.:37.00    3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00      3rd Qu.:37.00
Max.   :39.50    Max.   :39.50      Max.   :39.50      Max.   :39.50      Max.   :39.50      Max.   :39.50      Max.   :45.11      Max.   :44.60      Max.   :42.71
NA's   :7
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 3.70        Min.   : 3.70        Min.   : 3.70
1st Qu.:36.70        1st Qu.:36.70        1st Qu.:36.74
Median :37.00        Median :37.00        Median :37.00
Mean   :37.00        Mean   :36.86        Mean   :36.94
3rd Qu.:37.00        3rd Qu.:37.00        3rd Qu.:37.00
Max.   :45.81        Max.   :40.40        Max.   :39.50

ls_tn_spo2_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 90.00   Min.   : 90.00     Min.   : 90.00     Min.   : 90.00     Min.   : 90.00     Min.   : 90.00     Min.   : 90.00     Min.   : 90.00     Min.   : 90.00
1st Qu.: 96.00   1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00     1st Qu.: 96.00
Median : 98.00   Median : 98.00     Median : 98.00     Median : 98.00     Median : 98.00     Median : 98.00     Median : 98.00     Median : 98.00     Median : 98.00
Mean   : 97.09   Mean   : 97.07     Mean   : 97.05     Mean   : 97.01     Mean   : 97.08     Mean   : 96.96     Mean   : 97.07     Mean   : 97.07     Mean   : 97.04
3rd Qu.: 98.00   3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00     3rd Qu.: 98.00
Max.   :100.00   Max.   :100.00     Max.   :100.00     Max.   :100.00     Max.   :100.00     Max.   :100.00     Max.   :100.00     Max.   :100.00     Max.   :100.00
NA's   :6
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 90.00       Min.   : 90.0        Min.   : 90.00
1st Qu.: 96.00       1st Qu.: 96.0        1st Qu.: 96.00
Median : 98.00       Median : 98.0        Median : 98.00
Mean   : 97.02       Mean   : 97.1        Mean   : 97.08
3rd Qu.: 98.00       3rd Qu.: 98.0        3rd Qu.: 98.00
Max.   :100.00       Max.   :100.0        Max.   :100.00
```

```
ls_diem_apache_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.000   Min.   : 0.000     Min.   : 0.00      Min.   : 0.000     Min.   : 0.000     Min.   : 0.000     Min.   :-1.5593      Min.   :-6.605       Min.   : 0.000
1st Qu.: 1.000   1st Qu.: 0.000     1st Qu.: 1.00      1st Qu.: 1.000     1st Qu.: 1.000     1st Qu.: 1.000     1st Qu.: 0.7292      1st Qu.: 1.000       1st Qu.: 1.000
Median : 3.000   Median : 3.000     Median : 3.00      Median : 3.000     Median : 3.000     Median : 3.000     Median : 3.0000      Median : 3.000       Median : 3.000
Mean   : 3.471   Mean   : 3.345     Mean   : 3.37      Mean   : 3.539     Mean   : 3.388     Mean   : 3.424     Mean   : 3.3291      Mean   : 3.318       Mean   : 3.436
3rd Qu.: 6.000   3rd Qu.: 6.000     3rd Qu.: 6.00      3rd Qu.: 6.000     3rd Qu.: 6.000     3rd Qu.: 6.000     3rd Qu.: 5.7576      3rd Qu.: 5.049       3rd Qu.: 5.876
Max.   :16.000   Max.   :16.000     Max.   :16.00      Max.   :16.000     Max.   :16.000     Max.   :16.000     Max.   :16.0000      Max.   :16.000       Max.   :16.000
NA's   :25
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-3.257       Min.   :-2.945       Min.   : 0.000
1st Qu.: 1.000       1st Qu.: 1.000       1st Qu.: 1.000
Median : 3.000       Median : 3.000       Median : 3.000
Mean   : 3.340       Mean   : 3.273       Mean   : 3.374
3rd Qu.: 5.000       3rd Qu.: 5.000       3rd Qu.: 5.000
Max.   :16.000       Max.   :16.000       Max.   :16.000

ls_diem_ranson_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.000    Min.   :0.000     Min.   :0.000      Min.   :0.000      Min.   :0.000      Min.   :0.000      Min.   :-1.549       Min.   :-0.7656      Min.   :-1.066
1st Qu.:1.000    1st Qu.:1.000     1st Qu.:1.000      1st Qu.:1.000      1st Qu.:1.000      1st Qu.:1.000      1st Qu.: 1.000       1st Qu.: 1.0000      1st Qu.: 1.000
Median :2.000    Median :2.000     Median :2.000      Median :2.000      Median :2.000      Median :2.000      Median : 1.585       Median : 1.1489      Median : 1.735
Mean   :1.493    Mean   :1.521     Mean   :1.467      Mean   :1.491      Mean   :1.485      Mean   :1.485      Mean   : 1.438       Mean   : 1.4225      Mean   : 1.466
3rd Qu.:2.000    3rd Qu.:2.000     3rd Qu.:2.000      3rd Qu.:2.000      3rd Qu.:2.000      3rd Qu.:2.000      3rd Qu.: 2.000       3rd Qu.: 2.0000      3rd Qu.: 2.000
Max.   :5.000    Max.   :5.000     Max.   :5.000      Max.   :5.000      Max.   :5.000      Max.   :5.000      Max.   : 5.000       Max.   : 5.0000      Max.   : 5.000
NA's   :25
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.560       Min.   :-0.5247      Min.   :0.000
1st Qu.: 1.000       1st Qu.: 1.0000      1st Qu.:1.000
Median : 1.474       Median : 1.4642      Median :1.210
Mean   : 1.446       Mean   : 1.4689      Mean   :1.467
3rd Qu.: 2.000       3rd Qu.: 2.0000      3rd Qu.:2.000
Max.   : 5.000       Max.   : 5.0000      Max.   :5.000

ls_diem_ct_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.000   Min.   : 0.000     Min.   : 0.000     Min.   : 0.000     Min.   : 0.000     Min.   :-0.5919      Min.   :-0.726       Min.   : 0.000
1st Qu.: 3.000   1st Qu.: 3.000     1st Qu.: 3.000     1st Qu.: 3.000     1st Qu.: 3.000     1st Qu.: 3.0000      1st Qu.: 2.846       1st Qu.: 3.000
Median : 4.000   Median : 4.000     Median : 4.000     Median : 4.000     Median : 4.000     Median : 4.0000      Median : 3.386       Median : 3.865
Mean   : 3.735   Mean   : 3.982     Mean   : 3.612     Mean   : 3.976     Mean   : 3.782     Mean   : 3.939       Mean   : 3.8165      Mean   : 3.601       Mean   : 3.686
3rd Qu.: 4.000   3rd Qu.: 4.000     3rd Qu.: 4.000     3rd Qu.: 4.000     3rd Qu.: 4.000     3rd Qu.: 4.000       3rd Qu.: 4.3891      3rd Qu.: 4.000       3rd Qu.: 4.000
Max.   :10.000   Max.   :10.000     Max.   :10.000     Max.   :10.000     Max.   :10.000     Max.   :10.000       Max.   :10.0000      Max.   :10.000       Max.   :10.000
NA's   :52
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 0.000       Min.   :-0.03075     Min.   : 0.000
1st Qu.: 3.000       1st Qu.: 3.00000     1st Qu.: 3.000
Median : 4.000       Median : 3.88983     Median : 3.810
Mean   : 3.696       Mean   : 3.68311     Mean   : 3.753
3rd Qu.: 4.000       3rd Qu.: 4.00000     3rd Qu.: 4.000
Max.   :10.000       Max.   :10.00000     Max.   :10.000

ls_diem_imrie_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.000    Min.   :0.000     Min.   :0.000      Min.   :0.000      Min.   :0.00       Min.   :-1.362       Min.   :-0.2828      Min.   :-0.9407
1st Qu.:1.000    1st Qu.:1.000     1st Qu.:1.000      1st Qu.:1.000      1st Qu.:1.00       1st Qu.: 1.000       1st Qu.: 0.9833      1st Qu.: 1.0000
Median :1.000    Median :1.000     Median :1.000      Median :1.000      Median :1.00       Median : 1.000       Median : 1.0000      Median : 1.1065
Mean   :1.376    Mean   :1.394     Mean   :1.252      Mean   :1.388      Mean   :1.329      Mean   : 1.37        Mean   : 1.1308      Mean   : 1.1260      Mean   : 1.1947
3rd Qu.:2.000    3rd Qu.:2.000     3rd Qu.:2.000      3rd Qu.:2.000      3rd Qu.:2.000      3rd Qu.:2.00       3rd Qu.: 2.000       3rd Qu.: 2.0000      3rd Qu.: 2.0000
Max.   :4.000    Max.   :4.000     Max.   :4.000      Max.   :4.000      Max.   :4.000      Max.   :4.00       Max.   : 4.000       Max.   : 4.0000      Max.   : 4.0000
NA's   :24
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ls_diem_sofa_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.000   Min.   :0.000   Min.   :0.000   Min.   :0.000   Min.   :0.000   Min.   :-1.565   Min.   :-2.032   Min.   :-1.071
1st Qu.:0.000   1st Qu.:0.000   1st Qu.:0.000   1st Qu.:0.000   1st Qu.:0.000   1st Qu.: 0.000   1st Qu.: 0.000   1st Qu.: 0.000
Median :1.000   Median :1.000   Median :1.000   Median :1.000   Median :1.000   Median : 1.000   Median : 1.000   Median : 1.000
Mean   :1.471   Mean   :1.461   Mean   :1.552   Mean   :1.552   Mean   :1.527   Mean   : 1.420   Mean   : 1.440   Mean   : 1.385
3rd Qu.:3.000   3rd Qu.:2.000   3rd Qu.:3.000   3rd Qu.:3.000   3rd Qu.:3.000   3rd Qu.: 2.398   3rd Qu.: 2.968   3rd Qu.: 2.000
Max.   :7.000   Max.   :7.000   Max.   :7.000   Max.   :7.000   Max.   :7.000   Max.   : 7.000   Max.   : 7.000   Max.   : 7.000
NA's   :25
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-2.936       Min.   :-1.059       Min.   :0.000
1st Qu.: 0.000       1st Qu.: 0.000       1st Qu.:0.000
Median : 1.000       Median : 1.000       Median :1.000
Mean   : 1.371       Mean   : 1.426       Mean   :1.445
3rd Qu.: 2.000       3rd Qu.: 2.214       3rd Qu.:2.000
Max.   : 7.000       Max.   : 7.000       Max.   :7.000

cls_sa_mat_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
co   :79    co   :115    co   :108    co   :117    co   :115    co   :114    co   :105    co   :102    co   :113
khong: 2     khong: 50    khong: 57    khong: 48    khong: 50    khong: 51    khong: 60    khong: 63    khong: 52
NA's :84
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
co   :109            co   :110            co   :163
khong: 56            khong: 55            khong:  2

cls_ct_dichoh_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i
co   :73          co   :99          co   :102         co   :103         co   :101         co   :103         Min.   : 1.67     Min.   : 1.67     Min.   : 1.67
khong:38          khong:66          khong: 63         khong: 62         khong: 64         khong: 62         1st Qu.: 7.61     1st Qu.: 7.61     1st Qu.: 7.70
NA's :54                                                                                                   Median :10.17     Median :10.26     Median :10.28
                                                                                                           Mean   :10.57     Mean   :10.60     Mean   :10.66
                                                                                                           3rd Qu.:13.30     3rd Qu.:13.36     3rd Qu.:13.36
                                                                                                           Max.   :22.59     Max.   :22.59     Max.   :22.59

amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 1.670       Min.   : 1.67        co   :122
1st Qu.: 7.616       1st Qu.: 7.70        khong: 43
Median :10.170       Median :10.26
Mean   :10.595       Mean   :10.62
3rd Qu.:13.360       3rd Qu.:13.40
Max.   :22.590       Max.   :22.59
 cls_hh_bc_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.670   Min.   : 1.67     Min.   : 1.67     Min.   : 1.67     Min.   : 1.67     Min.   : 0.780    Min.   : 0.1367   Min.   : 0.780
1st Qu.: 7.553   1st Qu.: 7.61     1st Qu.: 7.61     1st Qu.: 7.61     1st Qu.: 7.38     1st Qu.: 7.61     1st Qu.: 7.007    1st Qu.: 7.0400   1st Qu.: 7.538
Median :10.215   Median :10.17     Median :10.28     Median :10.17     Median :10.26     Median :10.17     Median : 8.929    Median : 9.1000   Median : 9.100
Mean   :10.584   Mean   :10.56     Mean   :10.69     Mean   :10.55     Mean   :10.65     Mean   :10.53     Mean   : 9.042    Mean   : 8.9155   Mean   : 9.217
3rd Qu.:13.370   3rd Qu.:13.30     3rd Qu.:13.48     3rd Qu.:13.36     3rd Qu.:13.48     3rd Qu.:13.30     3rd Qu.:10.900    3rd Qu.:10.8301   3rd Qu.:10.900
Max.   :22.590   Max.   :22.59     Max.   :22.59     Max.   :22.59     Max.   :22.59     Max.   :22.59     Max.   :19.840    Max.   :19.8400   Max.   :19.840
NA's   :5
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-0.4356      Min.   :-0.7103      Min.   : 1.67
1st Qu.: 7.4500      1st Qu.: 6.9299      1st Qu.: 7.70
Median : 9.0600      Median : 9.1000      Median :10.28
Mean   : 9.0415      Mean   : 9.0362      Mean   :10.60
3rd Qu.:11.0000      3rd Qu.:10.9000      3rd Qu.:13.30
Max.   :19.8400      Max.   :19.8400      Max.   :22.59

cls_hh_bc_t54    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 2.560   Min.   : 2.560    Min.   : 2.560    Min.   : 2.560    Min.   : 2.56     Min.   : 2.560    Min.   :-2.311    Min.   :-0.7268   Min.   : 0.500
1st Qu.: 7.425   1st Qu.: 6.880    1st Qu.: 6.880    1st Qu.: 6.300    1st Qu.: 7.42     1st Qu.: 6.880    1st Qu.: 7.680    1st Qu.: 8.5067   1st Qu.: 7.694
Median : 9.910   Median : 9.810    Median : 9.500    Median : 8.070    Median :10.15     Median : 9.430    Median :10.232    Median :11.1300   Median : 9.798
Mean   : 9.497   Mean   : 9.619    Mean   : 9.706    Mean   : 8.737    Mean   :10.20     Mean   : 9.607    Mean   :10.228    Mean   :11.0537   Mean   :10.150
3rd Qu.:11.250   3rd Qu.:13.900    3rd Qu.:13.000    3rd Qu.:12.880    3rd Qu.:13.55     3rd Qu.:13.900    3rd Qu.:13.000    3rd Qu.:13.3600   3rd Qu.:12.272
Max.   :20.310   Max.   :20.310    Max.   :20.310    Max.   :20.310    Max.   :20.31     Max.   :20.310    Max.   :23.680    Max.   :23.6800   Max.   :23.680
NA's   :94
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.711       Min.   :-0.2676      Min.   : 2.560
1st Qu.: 7.970       1st Qu.: 7.9700      1st Qu.: 8.304
Median :10.900       Median :10.6761      Median : 9.910
Mean   :10.675       Mean   :10.6638      Mean   : 9.648
3rd Qu.:13.150       3rd Qu.:13.0813      3rd Qu.:10.845
Max.   :25.819       Max.   :23.6800      Max.   :20.310

cls_hh_bc_t72    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.500   Min.   : 0.50     Min.   : 0.50     Min.   : 0.50     Min.   : 0.50     Min.   : 0.50     Min.   :0.2260    Min.   :0.2260    Min.   :0.2260
1st Qu.: 7.755   1st Qu.: 6.90     1st Qu.: 6.80     1st Qu.: 6.88     1st Qu.: 6.31     1st Qu.: 6.86     1st Qu.:0.3480    1st Qu.:0.3400    1st Qu.:0.3480
Median :10.290   Median :11.04     Median :10.81     Median :10.90     Median :10.23     Median : 9.80     Median :0.3900    Median :0.3900    Median :0.3900
Mean   :10.684   Mean   :11.84     Mean   :11.28     Mean   :11.40     Mean   :10.96     Mean   :10.74     Mean   :0.3895    Mean   :0.3883    Mean   :0.3898
3rd Qu.:13.320   3rd Qu.:16.15     3rd Qu.:16.15     3rd Qu.:15.19     3rd Qu.:14.96     3rd Qu.:14.50     3rd Qu.:0.4300    3rd Qu.:0.4300    3rd Qu.:0.4300
Max.   :23.680   Max.   :23.68     Max.   :23.68     Max.   :23.68     Max.   :23.68     Max.   :23.68     Max.   :0.5920    Max.   :0.5920    Max.   :0.5920
NA's   :90
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.2260       Min.   :0.2260       Min.   : 0.500
1st Qu.:0.3490       1st Qu.:0.3480       1st Qu.: 9.071
Median :0.3900       Median :0.3900       Median :10.900
Mean   :0.3898       Mean   :0.3907       Mean   :10.832
3rd Qu.:0.4300       3rd Qu.:0.4300       3rd Qu.:12.431
Max.   :0.5920       Max.   :0.5920       Max.   :23.680

cls_hh_hct_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.2260   Min.   :0.2260    Min.   :0.2260    Min.   :0.2260    Min.   :0.2260    Min.   :0.1900    Min.   :0.1900    Min.   :0.1847
1st Qu.:0.3440   1st Qu.:0.3400    1st Qu.:0.3480    1st Qu.:0.3400    1st Qu.:0.3400    1st Qu.:0.3480    1st Qu.:0.3000    1st Qu.:0.3109    1st Qu.:0.3100
Median :0.3900   Median :0.3900    Median :0.3900    Median :0.3900    Median :0.3900    Median :0.3900    Median :0.3410    Median :0.3482    Median :0.3447
Mean   :0.3895   Mean   :0.3878    Mean   :0.3887    Mean   :0.3878    Mean   :0.3878    Mean   :0.3911    Mean   :0.3440    Mean   :0.3525    Mean   :0.3478
3rd Qu.:0.4300   3rd Qu.:0.4300    3rd Qu.:0.4300    3rd Qu.:0.4300    3rd Qu.:0.4300    3rd Qu.:0.4300    3rd Qu.:0.3800    3rd Qu.:0.3956    3rd Qu.:0.3782
Max.   :0.5920   Max.   :0.5920    Max.   :0.5920    Max.   :0.5920    Max.   :0.5920    Max.   :0.5920    Max.   :0.5585    Max.   :0.5277    Max.   :0.5566
NA's   :6
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.1754       Min.   :0.1627       Min.   :0.2260
1st Qu.:0.3062       1st Qu.:0.3070       1st Qu.:0.3490
Median :0.3410       Median :0.3410       Median :0.3900
Mean   :0.3464       Mean   :0.3467       Mean   :0.3896
3rd Qu.:0.3800       3rd Qu.:0.3815       3rd Qu.:0.4300
Max.   :0.5200       Max.   :0.5358       Max.   :0.5920

cls_hh_hct_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.1900   Min.   :0.1900    Min.   :0.1900    Min.   :0.1900    Min.   :0.190     Min.   :0.190     Min.   :0.1229    Min.   :0.1442    Min.   :0.2001
1st Qu.:0.3092   1st Qu.:0.3000    1st Qu.:0.3000    1st Qu.:0.2970    1st Qu.:0.300     1st Qu.:0.290     1st Qu.:0.2932    1st Qu.:0.2956    1st Qu.:0.2915
Median :0.3445   Median :0.3400    Median :0.3400    Median :0.3410    Median :0.340     Median :0.341     Median :0.3300    Median :0.3370    Median :0.3313
Mean   :0.3482   Mean   :0.3471    Mean   :0.3444    Mean   :0.3477    Mean   :0.345     Mean   :0.345     Mean   :0.3233    Mean   :0.3293    Mean   :0.3255
3rd Qu.:0.3800   3rd Qu.:0.3900    3rd Qu.:0.3800    3rd Qu.:0.4000    3rd Qu.:0.390     3rd Qu.:0.390     3rd Qu.:0.3582    3rd Qu.:0.3688    3rd Qu.:0.3600
Max.   :0.5200   Max.   :0.5200    Max.   :0.5200    Max.   :0.5200    Max.   :0.520     Max.   :0.520     Max.   :0.4133    Max.   :0.4346    Max.   :0.4362
NA's   :69
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.1842       Min.   :0.1286       Min.   :0.1900
1st Qu.:0.2900       1st Qu.:0.2900       1st Qu.:0.3192
Median :0.3293       Median :0.3279       Median :0.3442
Mean   :0.3214       Mean   :0.3194       Mean   :0.3466
3rd Qu.:0.3500       3rd Qu.:0.3545       3rd Qu.:0.3744
Max.   :0.4223       Max.   :0.4289       Max.   :0.5200
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Satyam Vatts
Avneet Kaur

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cls_hh_hct_t72   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.2200   Min.   :0.2200   Min.   :0.2200   Min.   :0.2200   Min.   :0.220   Min.   : 36.00   Min.   : 36.00   Min.   : 36.00
1st Qu.:0.2840   1st Qu.:0.2550   1st Qu.:0.2870   1st Qu.:0.2700   1st Qu.:0.2500   1st Qu.:0.250   1st Qu.: 73.00   1st Qu.: 73.00   1st Qu.: 73.10
Median :0.3300   Median :0.3000   Median :0.3320   Median :0.3320   Median :0.3100   Median :0.330   Median : 86.00   Median : 86.00   Median : 87.00
Mean   :0.3206   Mean   :0.3099   Mean   :0.3258   Mean   :0.3237   Mean   :0.3108   Mean   :0.316   Mean   : 86.46   Mean   : 86.06   Mean   : 86.85
3rd Qu.:0.3600   3rd Qu.:0.3700   3rd Qu.:0.3720   3rd Qu.:0.3790   3rd Qu.:0.3700   3rd Qu.:0.372   3rd Qu.: 99.00   3rd Qu.: 99.00   3rd Qu.: 99.00
Max.   :0.4100   Max.   :0.4100   Max.   :0.4100   Max.   :0.4100   Max.   :0.4100   Max.   :0.410   Max.   :150.00   Max.   :150.00   Max.   :150.00
NA's   :92
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 36.00       Min.   : 36.00       Min.   :0.2200
1st Qu.: 73.10       1st Qu.: 74.00       1st Qu.:0.2991
Median : 87.00       Median : 87.00       Median :0.3290
Mean   : 87.25       Mean   : 87.37       Mean   :0.3216
3rd Qu.:100.00       3rd Qu.: 99.00       3rd Qu.:0.3400
Max.   :150.00       Max.   :150.00       Max.   :0.4100

 cls_hh_pt_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 36.00   Min.   : 36.00   Min.   : 36.00   Min.   : 36.00   Min.   : 36.0   Min.   : 45.22   Min.   : 34.57   Min.   : 33.83
1st Qu.: 73.33   1st Qu.: 73.00   1st Qu.: 73.10   1st Qu.: 73.00   1st Qu.: 73.00   1st Qu.: 73.0   1st Qu.: 69.59   1st Qu.: 67.93   1st Qu.: 69.90
Median : 86.95   Median : 86.00   Median : 86.90   Median : 86.90   Median : 86.00   Median : 86.9   Median : 78.61   Median : 79.52   Median : 80.33
Mean   : 86.76   Mean   : 86.33   Mean   : 86.55   Mean   : 86.21   Mean   : 86.33   Mean   : 85.9   Mean   : 79.26   Mean   : 78.81   Mean   : 80.72
3rd Qu.: 99.00   3rd Qu.: 98.00   3rd Qu.: 99.00   3rd Qu.: 98.00   3rd Qu.: 99.00   3rd Qu.: 98.0   3rd Qu.: 88.97   3rd Qu.: 89.00   3rd Qu.: 90.53
Max.   :150.00   Max.   :150.00   Max.   :150.00   Max.   :150.00   Max.   :150.00   Max.   :150.0   Max.   :115.79   Max.   :115.00   Max.   :117.39
NA's   :11
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 43.94       Min.   : 44.73       Min.   : 36.00
1st Qu.: 69.50       1st Qu.: 72.60       1st Qu.: 74.00
Median : 78.26       Median : 80.00       Median : 86.90
Mean   : 79.41       Mean   : 81.35       Mean   : 86.67
3rd Qu.: 88.00       3rd Qu.: 89.56       3rd Qu.: 98.00
Max.   :131.40       Max.   :115.00       Max.   :150.00

cls_hh_pt_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 50.1   Min.   : 50.10   Min.   : 50.10   Min.   : 50.10   Min.   : 50.10   Min.   : 24.98   Min.   : 40.28   Min.   : 45.42
1st Qu.: 69.9   1st Qu.: 63.90   1st Qu.: 63.10   1st Qu.: 66.10   1st Qu.: 66.00   1st Qu.: 70.40   1st Qu.: 72.82   1st Qu.: 71.37
Median : 80.0   Median : 78.70   Median : 77.00   Median : 80.00   Median : 81.00   Median : 82.00   Median : 78.36   Median : 83.15   Median : 82.25
Mean   : 81.0   Mean   : 80.56   Mean   : 80.37   Mean   : 81.78   Mean   : 81.84   Mean   : 83.28   Mean   : 79.02   Mean   : 82.74   Mean   : 82.00
3rd Qu.: 91.0   3rd Qu.:101.00   3rd Qu.:100.00   3rd Qu.: 95.00   3rd Qu.:101.00   3rd Qu.:103.00   3rd Qu.: 86.93   3rd Qu.: 92.00   3rd Qu.: 91.36
Max.   :115.0   Max.   :115.00   Max.   :115.00   Max.   :115.00   Max.   :115.00   Max.   :115.00   Max.   :134.10   Max.   :134.10   Max.   :134.10
NA's   :88
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 18.58       Min.   : 22.48       Min.   : 50.10
1st Qu.: 70.50       1st Qu.: 74.00       1st Qu.: 75.86
Median : 83.00       Median : 81.89       Median : 81.72
Mean   : 82.65       Mean   : 82.68       Mean   : 81.27
3rd Qu.: 93.00       3rd Qu.: 93.00       3rd Qu.: 86.49
Max.   :134.10       Max.   :134.10       Max.   :115.00

cls_hh_pt_t72    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 51.00   Min.   : 51.00   Min.   : 51.0   Min.   : 51.00   Min.   : 51.00   Min.   : 51.00   Min.   :0.760   Min.   :0.7206   Min.   :0.5143
1st Qu.: 70.35   1st Qu.: 56.70   1st Qu.: 56.7   1st Qu.: 55.40   1st Qu.: 55.40   1st Qu.: 56.70   1st Qu.:0.980   1st Qu.:0.9800   1st Qu.:0.9800
Median : 82.45   Median : 83.00   Median : 83.2   Median : 78.10   Median : 83.00   Median : 85.00   Median :1.060   Median :1.0600   Median :1.0600
Mean   : 82.64   Mean   : 84.11   Mean   : 86.6   Mean   : 83.06   Mean   : 85.41   Mean   : 87.48   Mean   :1.151   Mean   :1.1506   Mean   :1.1452
3rd Qu.: 93.25   3rd Qu.:106.40   3rd Qu.:114.0   3rd Qu.:106.40   3rd Qu.:114.00   3rd Qu.:114.00   3rd Qu.:1.190   3rd Qu.:1.2000   3rd Qu.:1.1800
Max.   :134.10   Max.   :134.10   Max.   :134.1   Max.   :134.10   Max.   :134.10   Max.   :134.10   Max.   :4.160   Max.   :4.1600   Max.   :4.1600
NA's   :105
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.7134       Min.   :0.760        Min.   : 51.00
1st Qu.:0.9800       1st Qu.:0.980        1st Qu.: 76.34
Median :1.0500       Median :1.060        Median : 81.09
Mean   :1.1428       Mean   :1.146        Mean   : 81.86
3rd Qu.:1.1800       3rd Qu.:1.170        3rd Qu.: 86.49
Max.   :4.1600       Max.   :4.160        Max.   :134.10

cls_hh_aptt_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.760   Min.   :0.760   Min.   :0.76   Min.   :0.760   Min.   :0.76   Min.   :0.760   Min.   :0.5522   Min.   :0.6722   Min.   :0.2819
1st Qu.:0.980   1st Qu.:0.980   1st Qu.:0.98   1st Qu.:0.980   1st Qu.:0.98   1st Qu.:0.980   1st Qu.:1.0400   1st Qu.:0.9930   1st Qu.:0.9467
Median :1.050   Median :1.060   Median :1.06   Median :1.050   Median :1.05   Median :1.040   Median :1.2200   Median :1.1072   Median :1.1120
Mean   :1.144   Mean   :1.154   Mean   :1.15   Mean   :1.142   Mean   :1.15   Mean   :1.136   Mean   :1.2581   Mean   :1.1487   Mean   :1.1560
3rd Qu.:1.160   3rd Qu.:1.170   3rd Qu.:1.18   3rd Qu.:1.170   3rd Qu.:1.17   3rd Qu.:1.160   3rd Qu.:1.4130   3rd Qu.:1.2500   3rd Qu.:1.2200
Max.   :4.160   Max.   :4.160   Max.   :4.16   Max.   :4.160   Max.   :4.16   Max.   :4.160   Max.   :3.4600   Max.   :3.4600   Max.   :3.4600
NA's   :12
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.8195       Min.   :0.1709       Min.   :0.760
1st Qu.:0.9900       1st Qu.:0.9900       1st Qu.:0.980
Median :1.1251       Median :1.1500       Median :1.070
Mean   :1.1585       Mean   :1.2098       Mean   :1.145
3rd Qu.:1.2583       3rd Qu.:1.3900       3rd Qu.:1.170
Max.   :3.4600       Max.   :3.4600       Max.   :4.160

cls_hh_aptt_t30 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.840   Min.   :0.840   Min.   :0.840   Min.   :0.840   Min.   :0.840   Min.   :0.84   Min.   :0.7164   Min.   :0.9239   Min.   :1.254
1st Qu.:0.990   1st Qu.:0.980   1st Qu.:0.930   1st Qu.:0.970   1st Qu.:0.960   1st Qu.:0.99   1st Qu.: 4.1000   1st Qu.: 4.1000   1st Qu.: 4.100
Median :1.110   Median :1.210   Median :1.100   Median :1.130   Median :1.120   Median :1.23   Median : 5.4500   Median : 5.5920   Median : 5.590
Mean   :1.186   Mean   :1.375   Mean   :1.249   Mean   :1.296   Mean   :1.246   Mean   :1.35   Mean   : 5.5797   Mean   : 5.6227   Mean   : 5.639
3rd Qu.:1.288   3rd Qu.:1.670   3rd Qu.:1.380   3rd Qu.:1.440   3rd Qu.:1.410   3rd Qu.:1.67   3rd Qu.: 7.1820   3rd Qu.: 7.1820   3rd Qu.: 7.182
Max.   :3.460   Max.   :3.460   Max.   :3.460   Max.   :3.460   Max.   :3.460   Max.   :3.46   Max.   :12.0000   Max.   :12.0000   Max.   :12.000
NA's   :87
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 1.254       Min.   : 1.254       Min.   :0.840
1st Qu.: 4.100       1st Qu.: 4.100       1st Qu.:1.100
Median : 5.509       Median : 5.410       Median :1.189
Mean   : 5.576       Mean   : 5.597       Mean   :1.209
3rd Qu.: 7.040       3rd Qu.: 7.100       3rd Qu.:1.278
Max.   :12.000       Max.   :12.000       Max.   :3.460

cls_hh_fib_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.254   Min.   : 1.254   Min.   : 1.254   Min.   : 1.254   Min.   : 1.254   Min.   : 1.254   Min.   : 0.9138   Min.   : 1.175   Min.   : 1.840
1st Qu.: 4.100   1st Qu.: 4.100   1st Qu.: 4.120   1st Qu.: 4.100   1st Qu.: 4.040   1st Qu.: 4.100   1st Qu.: 4.6584   1st Qu.: 4.966   1st Qu.: 5.337
Median : 5.509   Median : 5.590   Median : 5.600   Median : 5.592   Median : 5.592   Median : 5.590   Median : 6.0620   Median : 6.285   Median : 6.429
Mean   : 5.609   Mean   : 5.639   Mean   : 5.681   Mean   : 5.675   Mean   : 5.621   Mean   : 5.612   Mean   : 5.9497   Mean   : 6.154   Mean   : 6.467
3rd Qu.: 7.182   3rd Qu.: 7.182   3rd Qu.: 7.290   3rd Qu.: 7.200   3rd Qu.: 7.182   3rd Qu.: 7.182   3rd Qu.: 7.3089   3rd Qu.: 7.338   3rd Qu.: 7.588
Max.   :12.000   Max.   :12.000   Max.   :12.000   Max.   :12.000   Max.   :12.000   Max.   :12.000   Max.   :11.0100   Max.   :11.010   Max.   :13.584
NA's   :12
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 1.840       Min.   : 1.840       Min.   : 1.254
1st Qu.: 5.059       1st Qu.: 5.080       1st Qu.: 4.140
Median : 6.390       Median : 6.155       Median : 5.509
Mean   : 6.210       Mean   : 6.166       Mean   : 5.621
3rd Qu.: 7.431       3rd Qu.: 7.202       3rd Qu.: 7.000
Max.   :11.807       Max.   :11.010       Max.   :12.000

cls_hh_fib_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.840   Min.   : 1.840   Min.   : 1.840   Min.   : 1.840   Min.   : 1.840   Min.   : 1.840   Min.   :-2.331   Min.   :-2.144   Min.   : 0.3978
1st Qu.: 5.060   1st Qu.: 3.923   1st Qu.: 3.923   1st Qu.: 3.923   1st Qu.: 3.470   1st Qu.: 4.162   1st Qu.: 2.800   1st Qu.: 2.800   1st Qu.: 2.8000
Median : 6.490   Median : 6.390   Median : 6.430   Median : 6.050   Median : 6.009   Median : 6.490   Median : 3.800   Median : 3.800   Median : 3.8000
Mean   : 6.304   Mean   : 6.031   Mean   : 6.107   Mean   : 5.869   Mean   : 5.808   Mean   : 6.167   Mean   : 5.348   Mean   : 5.443   Mean   : 5.4422
3rd Qu.: 7.630   3rd Qu.: 8.200   3rd Qu.: 8.164   3rd Qu.: 7.790   3rd Qu.: 7.830   3rd Qu.: 8.200   3rd Qu.: 5.571   3rd Qu.: 5.700   3rd Qu.: 5.7000
Max.   :11.010   Max.   :11.010   Max.   :11.010   Max.   :11.010   Max.   :11.010   Max.   :11.010   Max.   :66.000   Max.   :66.000   Max.   :66.0000
NA's   :86
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 1.200       Min.   : 1.200       Min.   : 1.840
1st Qu.: 2.800       1st Qu.: 2.800       1st Qu.: 5.650
Median : 3.800       Median : 3.800       Median : 6.268
Mean   : 5.398       Mean   : 5.364       Mean   : 6.243
3rd Qu.: 5.700       3rd Qu.: 5.500       3rd Qu.: 6.900
Max.   :66.000       Max.   :66.000       Max.   :11.010
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cls_sh_ure_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.20   Min.   : 1.200   Min.   : 1.200   Min.   : 1.20   Min.   : 1.200   Min.   : 1.200   Min.   :-1.591   Min.   :-2.355   Min.   :-4.738
1st Qu.: 2.80   1st Qu.: 2.800   1st Qu.: 2.800   1st Qu.: 2.80   1st Qu.: 2.800   1st Qu.: 2.800   1st Qu.: 2.700   1st Qu.: 2.600   1st Qu.: 2.200
Median : 3.80   Median : 3.800   Median : 3.800   Median : 3.80   Median : 3.800   Median : 3.800   Median : 4.145   Median : 3.743   Median : 3.761
Mean   : 5.42   Mean   : 5.438   Mean   : 5.462   Mean   : 5.45   Mean   : 5.457   Mean   : 5.399   Mean   : 4.564   Mean   : 4.209   Mean   : 4.025
3rd Qu.: 5.60   3rd Qu.: 5.600   3rd Qu.: 5.700   3rd Qu.: 5.60   3rd Qu.: 5.600   3rd Qu.: 5.700   3rd Qu.: 5.700   3rd Qu.: 5.200   3rd Qu.: 5.227
Max.   :66.00   Max.   :66.000   Max.   :66.000   Max.   :66.00   Max.   :66.000   Max.   :66.000   Max.   :15.838   Max.   :16.695   Max.   :21.078
NA's   :4
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-0.6894      Min.   :-1.579       Min.   : 1.200
1st Qu.: 2.6000      1st Qu.: 2.700       1st Qu.: 2.800
Median : 3.7000      Median : 4.000       Median : 3.800
Mean   : 4.2160      Mean   : 4.474       Mean   : 5.384
3rd Qu.: 5.4000      3rd Qu.: 5.746       3rd Qu.: 5.500
Max.   :14.3000      Max.   :14.471       Max.   :66.000

cls_sh_ure_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.200   Min.   : 1.200   Min.   : 1.200   Min.   : 1.200   Min.   : 1.20   Min.   :-3.127   Min.   : 0.140   Min.   :-1.467
1st Qu.: 2.675   1st Qu.: 2.600   1st Qu.: 2.200   1st Qu.: 2.500   1st Qu.: 2.600   1st Qu.: 2.60   1st Qu.: 3.057   1st Qu.: 3.000   1st Qu.: 3.100
Median : 3.800   Median : 4.000   Median : 3.900   Median : 3.800   Median : 4.500   Median : 4.00   Median : 4.356   Median : 4.301   Median : 5.244
Mean   : 4.400   Mean   : 4.567   Mean   : 4.537   Mean   : 4.712   Mean   : 5.097   Mean   : 4.75   Mean   : 5.377   Mean   : 5.110   Mean   : 5.882
3rd Qu.: 5.200   3rd Qu.: 5.500   3rd Qu.: 5.700   3rd Qu.: 5.800   3rd Qu.: 6.900   3rd Qu.: 5.80   3rd Qu.: 6.588   3rd Qu.: 5.973   3rd Qu.: 7.276
Max.   :14.300   Max.   :14.300   Max.   :14.300   Max.   :14.300   Max.   :14.300   Max.   :14.30   Max.   :41.900   Max.   :41.900   Max.   :41.900
NA's   :81
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-4.572       Min.   :-2.257       Min.   : 1.200
1st Qu.: 2.852       1st Qu.: 3.000       1st Qu.: 3.292
Median : 4.200       Median : 4.500       Median : 3.946
Mean   : 5.524       Mean   : 5.583       Mean   : 4.352
3rd Qu.: 7.000       3rd Qu.: 6.902       3rd Qu.: 4.788
Max.   :41.900       Max.   :41.900       Max.   :14.300

cls_sh_ure_t72   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.300   Min.   : 1.300   Min.   : 1.300   Min.   : 1.30   Min.   : 1.300   Min.   : 1.80   Min.   : 1.80   Min.   : 1.80
1st Qu.: 3.000   1st Qu.: 3.100   1st Qu.: 2.100   1st Qu.: 2.900   1st Qu.: 3.00   1st Qu.: 2.800   1st Qu.: 51.00   1st Qu.: 51.00   1st Qu.: 52.00
Median : 3.800   Median : 4.900   Median : 5.100   Median : 4.100   Median : 4.70   Median : 3.800   Median : 68.00   Median : 69.00   Median : 70.00
Mean   : 5.315   Mean   : 7.459   Mean   : 7.318   Mean   : 7.121   Mean   : 6.65   Mean   : 7.271   Mean   : 82.62   Mean   : 83.86   Mean   : 86.15
3rd Qu.: 5.550   3rd Qu.:10.300   3rd Qu.:10.300   3rd Qu.: 7.800   3rd Qu.: 8.30   3rd Qu.:13.500   3rd Qu.: 90.00   3rd Qu.: 92.00   3rd Qu.: 95.00
Max.   :41.900   Max.   :41.900   Max.   :41.900   Max.   :41.900   Max.   :41.90   Max.   :41.900   Max.   :727.00   Max.   :727.00   Max.   :727.00
NA's   :90
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 1.80        Min.   : 1.80        Min.   : 1.300
1st Qu.: 51.00       1st Qu.: 52.00       1st Qu.: 3.752
Median : 70.00       Median : 69.00       Median : 4.603
Mean   : 84.96       Mean   : 83.91       Mean   : 5.198
3rd Qu.: 92.00       3rd Qu.: 91.00       3rd Qu.: 5.500
Max.   :727.00       Max.   :727.00       Max.   :41.900

cls_sh_cre_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.80   Min.   : 1.80   Min.   : 1.80   Min.   : 1.80   Min.   : 1.80   Min.   : 4.768   Min.   :-54.44   Min.   :-59.92
1st Qu.: 51.00   1st Qu.: 51.00   1st Qu.: 51.00   1st Qu.: 51.00   1st Qu.: 52.00   1st Qu.: 49.000   1st Qu.: 49.92   1st Qu.: 45.00
Median : 68.00   Median : 68.00   Median : 68.00   Median : 68.00   Median : 70.00   Median : 70.00   Median : 63.000   Median : 63.00   Median : 63.00
Mean   : 83.61   Mean   : 83.94   Mean   : 84.03   Mean   : 84.44   Mean   : 83.79   Mean   : 84.58   Mean   : 70.708   Mean   : 70.52   Mean   : 69.26
3rd Qu.: 90.50   3rd Qu.: 91.00   3rd Qu.: 91.00   3rd Qu.: 91.00   3rd Qu.: 91.00   3rd Qu.: 91.00   3rd Qu.: 82.000   3rd Qu.: 81.94   3rd Qu.: 88.00
Max.   :727.00   Max.   :727.00   Max.   :727.00   Max.   :727.00   Max.   :727.00   Max.   :727.00   Max.   :406.000   Max.   :406.00   Max.   :406.00
NA's   :6
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : -5.648      Min.   :-17.51       Min.   :  1.80
1st Qu.: 49.106      1st Qu.: 49.00       1st Qu.: 52.00
Median : 63.282      Median : 62.00       Median : 70.00
Mean   : 72.434      Mean   : 70.20       Mean   : 83.21
3rd Qu.: 87.851      3rd Qu.: 88.00       3rd Qu.: 90.00
Max.   :406.000      Max.   :406.00       Max.   :727.00
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cls_sh_cre_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 25.00   Min.   : 25.00   Min.   : 25.00   Min.   : 25.00   Min.   : 25.00   Min.   :-1.419   Min.   :-6.133   Min.   :-0.4646
1st Qu.: 50.75   1st Qu.: 38.00   1st Qu.: 51.00   1st Qu.: 45.00   1st Qu.: 51.00   1st Qu.: 50.00   1st Qu.: 7.000   1st Qu.: 7.000   1st Qu.: 7.0000
Median : 62.00   Median : 59.00   Median : 66.00   Median : 61.00   Median : 66.00   Median : 64.00   Median :10.600   Median :10.600   Median :10.6000
Mean   : 71.93   Mean   : 72.06   Mean   : 74.96   Mean   : 73.04   Mean   : 78.34   Mean   : 75.67   Mean   :11.519   Mean   :11.725   Mean   :11.3433
3rd Qu.: 79.25   3rd Qu.: 93.00   3rd Qu.: 94.00   3rd Qu.: 88.00   3rd Qu.: 96.00   3rd Qu.: 94.00   3rd Qu.:14.000   3rd Qu.:14.400   3rd Qu.:13.8935
Max.   :406.00   Max.   :406.00   Max.   :406.00   Max.   :406.00   Max.   :406.00   Max.   :406.00   Max.   :66.000   Max.   :66.000   Max.   :66.0000
NA's   :81
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-6.748       Min.   :-1.877       Min.   : 25.00
1st Qu.: 7.000       1st Qu.: 6.800       1st Qu.: 57.00
Median :10.150       Median : 9.700       Median : 66.00
Mean   :11.741       Mean   :11.158       Mean   : 73.35
3rd Qu.:14.300       3rd Qu.:13.900       3rd Qu.: 80.00
Max.   :66.000       Max.   :66.000       Max.   :406.00

cls_sh_glu_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 3.200   Min.   : 3.20   Min.   : 3.20   Min.   : 3.20   Min.   : 3.20   Min.   : 2.607   Min.   :-3.322   Min.   : 1.97
1st Qu.: 6.865   1st Qu.: 6.80   1st Qu.: 7.00   1st Qu.: 6.80   1st Qu.: 6.80   1st Qu.: 6.80   1st Qu.: 9.570   1st Qu.: 9.320   1st Qu.: 9.64
Median : 9.675   Median : 9.54   Median :10.60   Median : 9.70   Median : 9.70   Median :10.10   Median :13.030   Median :12.670   Median :13.45
Mean   :11.289   Mean   :11.21   Mean   :11.93   Mean   :11.65   Mean   :11.37   Mean   :11.78   Mean   :14.653   Mean   :14.240   Mean   :14.73
3rd Qu.:13.200   3rd Qu.:12.90   3rd Qu.:14.40   3rd Qu.:14.10   3rd Qu.:13.40   3rd Qu.:14.10   3rd Qu.:18.018   3rd Qu.:17.870   3rd Qu.:18.35
Max.   :66.000   Max.   :66.00   Max.   :66.00   Max.   :66.00   Max.   :66.00   Max.   :66.00   Max.   :35.130   Max.   :35.130   Max.   :35.13
NA's   :35
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-2.772       Min.   :-3.354       Min.   : 3.20
1st Qu.: 9.640       1st Qu.: 9.320       1st Qu.: 7.20
Median :13.450       Median :12.870       Median :10.60
Mean   :14.587       Mean   :14.384       Mean   :11.41
3rd Qu.:18.204       3rd Qu.:18.092       3rd Qu.:13.16
Max.   :35.130       Max.   :35.130       Max.   :66.00

cls_sh_chol_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 3.910   Min.   : 3.91   Min.   : 3.91   Min.   : 3.91   Min.   : 3.91   Min.   :-0.9201   Min.   :-6.206   Min.   :-2.109
1st Qu.: 9.545   1st Qu.: 9.52   1st Qu.: 9.52   1st Qu.: 9.52   1st Qu.: 9.32   1st Qu.: 3.9608   1st Qu.: 4.788   1st Qu.: 4.041
Median :13.030   Median :13.34   Median :13.57   Median :13.45   Median :13.03   Median : 6.0200   Median : 6.790   Median : 6.266
Mean   :14.737   Mean   :14.63   Mean   :14.83   Mean   :14.92   Mean   :14.54   Mean   : 6.4044   Mean   : 7.268   Mean   : 6.686
3rd Qu.:18.255   3rd Qu.:18.44   3rd Qu.:18.87   3rd Qu.:18.44   3rd Qu.:18.35   3rd Qu.:17.90   3rd Qu.: 8.1355   3rd Qu.: 9.562   3rd Qu.: 8.370
Max.   :35.130   Max.   :35.13   Max.   :35.13   Max.   :35.13   Max.   :35.13   Max.   :35.13   Max.   :19.8000   Max.   :19.800   Max.   :19.800
NA's   :30
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-2.552       Min.   :-0.2186      Min.   : 3.91
1st Qu.: 5.252       1st Qu.: 4.4054      1st Qu.:10.09
Median : 7.048       Median : 6.3700      Median :12.59
Mean   : 7.406       Mean   : 6.8823      Mean   :14.49
3rd Qu.: 9.704       3rd Qu.: 8.7739      3rd Qu.:17.87
Max.   :19.800       Max.   :19.8000      Max.   :35.13

cls_sh_chol_t30  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 3.100   Min.   : 3.100   Min.   : 3.100   Min.   : 3.100   Min.   : 3.100   Min.   :-41.13   Min.   : -8.778   Min.   : 11.21
1st Qu.: 5.103   1st Qu.: 5.103   1st Qu.: 5.103   1st Qu.: 5.103   1st Qu.: 5.103   1st Qu.: 14.36   1st Qu.: 14.380   1st Qu.: 14.39
Median : 6.605   Median : 6.605   Median : 6.605   Median : 6.605   Median : 6.605   Median : 18.22   Median : 18.220   Median : 19.54
Mean   : 7.941   Mean   : 7.941   Mean   : 7.941   Mean   : 7.941   Mean   : 7.941   Mean   : 26.84   Mean   : 27.222   Mean   : 27.59
3rd Qu.: 7.855   3rd Qu.: 7.855   3rd Qu.: 7.855   3rd Qu.: 7.855   3rd Qu.: 7.855   3rd Qu.: 30.49   3rd Qu.: 30.490   3rd Qu.: 30.49
Max.   :19.800   Max.   :19.800   Max.   :19.800   Max.   :19.800   Max.   :19.800   Max.   :131.55   Max.   :131.550   Max.   :131.55
NA's   :131      NA's   :131      NA's   :131      NA's   :131      NA's   :131      NA's   :131
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-95.49       Min.   :-20.38       Min.   : 3.100
1st Qu.: 14.36       1st Qu.: 14.28       1st Qu.: 6.725
Median : 18.22       Median : 18.83       Median : 7.487
Mean   : 26.44       Mean   : 27.16       Mean   : 8.184
3rd Qu.: 29.52       3rd Qu.: 30.49       3rd Qu.: 9.116
Max.   :131.55       Max.   :131.55       Max.   :19.800
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cls_sh_tri_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 11.21   Min.   : 11.21   Min.   : 11.21   Min.   : 11.21   Min.   : 11.21   Min.   :-19.698   Min.   :-13.61   Min.   :-18.209
1st Qu.: 14.39   1st Qu.: 14.39   1st Qu.: 14.39   1st Qu.: 14.39   1st Qu.: 14.10   1st Qu.:  3.740   1st Qu.:  4.20   1st Qu.:  3.980
Median : 18.52   Median : 18.22   Median : 18.22   Median : 19.44   Median : 18.22   Median : 17.15   Median :  8.444   Median :  8.60   Median :  8.580
Mean   : 27.48   Mean   : 27.30   Mean   : 27.83   Mean   : 27.76   Mean   : 28.35   Mean   : 27.03   Mean   :  9.370   Mean   : 11.02   Mean   :  9.913
3rd Qu.: 29.77   3rd Qu.: 29.53   3rd Qu.: 29.53   3rd Qu.: 30.49   3rd Qu.: 30.49   3rd Qu.: 29.49   3rd Qu.: 13.613   3rd Qu.: 15.69   3rd Qu.: 13.217
Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   : 84.420   Max.   : 84.42   Max.   : 84.420
NA's   :5
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-16.950      Min.   :-9.426       Min.   : 11.21
1st Qu.:  3.090      1st Qu.: 3.571       1st Qu.: 14.39
Median :  7.610      Median : 7.310       Median : 18.22
Mean   :  8.658      Mean   : 8.288       Mean   : 27.19
3rd Qu.: 12.675      3rd Qu.:11.470       3rd Qu.: 29.49
Max.   : 84.420      Max.   :84.420       Max.   :131.55

cls_sh_tri_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.720   Min.   : 0.72    Min.   : 0.72    Min.   : 0.72    Min.   : 0.72    Min.   :-662.0    Min.   :-452.1   Min.   :-740.6
1st Qu.: 5.395   1st Qu.: 3.53    1st Qu.: 4.49    1st Qu.: 3.53    1st Qu.: 3.74    1st Qu.: 3.09    1st Qu.: 117.0    1st Qu.:  98.2   1st Qu.: 101.0
Median : 7.320   Median : 6.04    Median : 8.29    Median : 7.31    Median : 7.16    Median : 8.00    Median : 320.0    Median : 320.0   Median : 355.0
Mean   : 9.377   Mean   :10.02    Mean   :10.67    Mean   :12.06    Mean   :11.04    Mean   :11.50    Mean   : 393.8    Mean   : 380.4   Mean   : 395.2
3rd Qu.:10.110   3rd Qu.:12.11    3rd Qu.:13.66    3rd Qu.:13.91    3rd Qu.:12.11    3rd Qu.:13.66    3rd Qu.: 592.0    3rd Qu.: 562.0   3rd Qu.: 575.3
Max.   :84.420   Max.   :84.42    Max.   :84.42    Max.   :84.42    Max.   :84.42    Max.   :84.42    Max.   :1519.8    Max.   :1519.8   Max.   :1519.8
NA's   :94
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1248.5      Min.   :-485.5       Min.   : 0.720
1st Qu.:  120.0      1st Qu.: 106.0       1st Qu.: 6.390
Median :  343.0      Median : 308.0       Median : 7.840
Mean   :  368.0      Mean   : 362.9       Mean   : 9.334
3rd Qu.:  551.8      3rd Qu.: 551.0       3rd Qu.: 9.963
Max.   : 1519.8      Max.   :1519.8       Max.   :84.420

cls_sh_amy_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :   6.67   Min.   :   6.67   Min.   :   6.67   Min.   :   6.67   Min.   :   6.67   Min.   :-532.2    Min.   :-420.4   Min.   :-110.4
1st Qu.: 118.50   1st Qu.: 127.00   1st Qu.: 117.00   1st Qu.: 120.00   1st Qu.: 117.00   1st Qu.: 236.6    1st Qu.: 246.8   1st Qu.: 245.3
Median : 320.00   Median : 356.00   Median : 355.00   Median : 343.00   Median : 306.00   Median : 308.00   Median : 421.0    Median : 428.2   Median : 461.9
Mean   : 414.31   Mean   : 425.33   Mean   : 462.34   Mean   : 413.60   Mean   : 435.77   Mean   : 417.65   Mean   : 489.4    Mean   : 478.6   Mean   : 519.1
3rd Qu.: 561.00   3rd Qu.: 584.00   3rd Qu.: 679.00   3rd Qu.: 562.00   3rd Qu.: 598.00   3rd Qu.: 598.00   3rd Qu.: 722.0    3rd Qu.: 695.0   3rd Qu.: 770.2
Max.   :1519.80   Max.   :1519.80   Max.   :1519.80   Max.   :1519.80   Max.   :1519.80   Max.   :1519.80   Max.   :1728.1    Max.   :1728.1   Max.   :1728.1
NA's   :62
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-229.7       Min.   :-343.0       Min.   :   6.67
1st Qu.: 244.9       1st Qu.: 211.0       1st Qu.: 193.05
Median : 444.1       Median : 411.0       Median : 356.00
Mean   : 525.3       Mean   : 471.7       Mean   : 408.20
3rd Qu.: 777.0       3rd Qu.: 733.0       3rd Qu.: 511.51
Max.   :1728.1       Max.   :1728.1       Max.   :1519.80

cls_sh_lip_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :   6.0   Min.   :   6.0   Min.   :   6.0   Min.   :   6.0   Min.   :   6.0   Min.   :  6.0     Min.   :  6.0    Min.   :  6.0
1st Qu.: 228.6   1st Qu.: 183.0   1st Qu.: 239.0   1st Qu.: 203.0   1st Qu.: 211.0   1st Qu.: 207.0    1st Qu.: 53.33   1st Qu.: 52.70
Median : 414.0   Median : 411.0   Median : 505.0   Median : 470.0   Median : 418.7   Median : 411.0    Median : 59.62   Median : 59.80
Mean   : 513.7   Mean   : 547.3   Mean   : 570.4   Mean   : 547.5   Mean   : 556.2   Mean   : 533.8    Mean   : 59.30   Mean   : 59.33
3rd Qu.: 772.4   3rd Qu.: 784.0   3rd Qu.: 816.0   3rd Qu.: 781.0   3rd Qu.: 805.0   3rd Qu.: 777.0    3rd Qu.: 64.30   3rd Qu.: 64.40
Max.   :1728.1   Max.   :1728.1   Max.   :1728.1   Max.   :1728.1   Max.   :1728.1   Max.   :1728.1    Max.   : 84.30   Max.   : 90.47
NA's   :79
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :27.56        Min.   :32.10        Min.   :   6.0
1st Qu.:53.40        1st Qu.:53.40        1st Qu.: 344.6
Median :60.01        Median :59.50        Median : 509.5
Mean   :59.75        Mean   :59.07        Mean   : 523.6
3rd Qu.:65.40        3rd Qu.:63.86        3rd Qu.: 666.4
Max.   :95.05        Max.   :84.30        Max.   :1728.1
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cls_sh_pro_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :32.10    Min.   :32.10    Min.   :32.10    Min.   :32.10    Min.   :32.10    Min.   :108.0     Min.   :107.6    Min.   :108.0
1st Qu.:53.40    1st Qu.:53.40    1st Qu.:53.40    1st Qu.:53.40    1st Qu.:53.40    1st Qu.:53.10     1st Qu.:128.0    1st Qu.:129.0    1st Qu.:128.3
Median :59.80    Median :60.30    Median :60.30    Median :60.00    Median :60.00    Median :59.50     Median :132.0    Median :132.0    Median :132.0
Mean   :59.19    Mean   :60.69    Mean   :60.56    Mean   :60.22    Mean   :60.47    Mean   :59.28     Mean   :131.8    Mean   :131.8    Mean   :131.8
3rd Qu.:62.90    3rd Qu.:66.40    3rd Qu.:65.80    3rd Qu.:65.90    3rd Qu.:66.40    3rd Qu.:64.40     3rd Qu.:135.0    3rd Qu.:135.0    3rd Qu.:135.0
Max.   :84.30    Max.   :84.30    Max.   :84.30    Max.   :84.30    Max.   :84.30    Max.   :84.30     Max.   :154.0    Max.   :154.0    Max.   :154.0
NA's   :40
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :108.0        Min.   :108.0        Min.   :32.10
1st Qu.:128.0        1st Qu.:129.0        1st Qu.:54.70
Median :132.0        Median :132.0        Median :59.50
Mean   :131.8        Mean   :132.0        Mean   :59.27
3rd Qu.:135.0        3rd Qu.:135.0        3rd Qu.:63.00
Max.   :154.0        Max.   :156.6        Max.   :84.30

 cls_sh_na_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :108.0    Min.   :108.0    Min.   :108.0    Min.   :108.0    Min.   :108.0    Min.   :126.0     Min.   :125.7    Min.   :126.0
1st Qu.:128.8    1st Qu.:128.0    1st Qu.:128.0    1st Qu.:129.0    1st Qu.:129.0    1st Qu.:128.0     1st Qu.:134.0    1st Qu.:134.0    1st Qu.:133.0
Median :132.0    Median :132.0    Median :132.0    Median :132.0    Median :132.0    Median :132.0     Median :136.5    Median :136.9    Median :136.0
Mean   :131.9    Mean   :131.9    Mean   :131.8    Mean   :131.9    Mean   :131.9    Mean   :131.7     Mean   :136.2    Mean   :136.6    Mean   :135.8
3rd Qu.:135.0    3rd Qu.:135.0    3rd Qu.:135.0    3rd Qu.:135.0    3rd Qu.:135.0    3rd Qu.:135.0     3rd Qu.:139.0    3rd Qu.:139.1    3rd Qu.:138.7
Max.   :154.0    Max.   :154.0    Max.   :154.0    Max.   :154.0    Max.   :154.0    Max.   :154.0     Max.   :144.5    Max.   :150.4    Max.   :144.2
NA's   :9
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :123.4        Min.   :126.0        Min.   :108.0
1st Qu.:133.0        1st Qu.:133.0        1st Qu.:129.0
Median :135.3        Median :136.0        Median :132.3
Mean   :135.5        Mean   :135.9        Mean   :131.9
3rd Qu.:138.1        3rd Qu.:139.0        3rd Qu.:135.0
Max.   :144.2        Max.   :145.9        Max.   :154.0

cls_sh_na_t30    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :126.0    Min.   :126.0    Min.   :126      Min.   :126.0    Min.   :126.0    Min.   :126.0     Min.   :2.600    Min.   :2.600    Min.   :1.463
1st Qu.:133.0    1st Qu.:131.0    1st Qu.:133      1st Qu.:133.0    1st Qu.:134.0    1st Qu.:133.0     1st Qu.:3.300    1st Qu.:3.300    1st Qu.:3.300
Median :136.0    Median :136.0    Median :136      Median :137.0    Median :137.0    Median :136.0     Median :3.600    Median :3.600    Median :3.600
Mean   :135.8    Mean   :135.8    Mean   :136      Mean   :136.2    Mean   :136.6    Mean   :135.7     Mean   :3.679    Mean   :3.677    Mean   :3.668
3rd Qu.:139.0    3rd Qu.:140.0    3rd Qu.:140      3rd Qu.:139.0    3rd Qu.:141.0    3rd Qu.:139.0     3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000
Max.   :144.0    Max.   :144.0    Max.   :144      Max.   :144.0    Max.   :144.0    Max.   :144.0     Max.   :5.300    Max.   :5.300    Max.   :5.300
NA's   :76
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :2.600        Min.   :2.600        Min.   :126.0
1st Qu.:3.300        1st Qu.:3.300        1st Qu.:134.4
Median :3.600        Median :3.600        Median :136.2
Mean   :3.659        Mean   :3.689        Mean   :136.0
3rd Qu.:4.000        3rd Qu.:4.000        3rd Qu.:137.9
Max.   :5.300        Max.   :5.434        Max.   :144.0

 cls_sh_ka_t0    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :2.600    Min.   :2.600    Min.   :2.600    Min.   :2.600    Min.   :2.600    Min.   :2.591     Min.   :2.036    Min.   :2.099
1st Qu.:3.300    1st Qu.:3.300    1st Qu.:3.300    1st Qu.:3.300    1st Qu.:3.300    1st Qu.:3.155     1st Qu.:3.100    1st Qu.:3.139
Median :3.600    Median :3.600    Median :3.600    Median :3.600    Median :3.600    Median :3.400     Median :3.302    Median :3.377
Mean   :3.679    Mean   :3.667    Mean   :3.677    Mean   :3.668    Mean   :3.678    Mean   :3.687     Mean   :3.461    Mean   :3.402    Mean   :3.418
3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000    3rd Qu.:4.000     3rd Qu.:3.703    3rd Qu.:3.600    3rd Qu.:3.625
Max.   :5.300    Max.   :5.300    Max.   :5.300    Max.   :5.300    Max.   :5.300    Max.   :5.300     Max.   :4.900    Max.   :4.900    Max.   :4.900
NA's   :11
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :2.398        Min.   :2.650        Min.   :2.600
1st Qu.:3.149        1st Qu.:3.100        1st Qu.:3.300
Median :3.377        Median :3.361        Median :3.600
Mean   :3.413        Mean   :3.414        Mean   :3.678
3rd Qu.:3.600        3rd Qu.:3.624        3rd Qu.:3.930
Max.   :4.900        Max.   :4.900        Max.   :5.300
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Satyam Vatts
Avneet Kaur

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cls_sh_ka_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :2.800   Min.   :2.800   Min.   :2.800   Min.   :2.800   Min.   :2.800   Min.   :7.10    Min.   :7.100   Min.   :7.10
1st Qu.:3.100   1st Qu.:3.100   1st Qu.:3.170   1st Qu.:3.100   1st Qu.:3.100   1st Qu.:7.36    1st Qu.:7.360   1st Qu.:7.36
Median :3.200   Median :3.400   Median :3.500   Median :3.400   Median :3.400   Median :7.39    Median :7.397   Median :7.39
Mean   :3.418   Mean   :3.517   Mean   :3.547   Mean   :3.488   Mean   :3.518   Mean   :7.39    Mean   :7.392   Mean   :7.39
3rd Qu.:3.600   3rd Qu.:3.800   3rd Qu.:3.800   3rd Qu.:3.800   3rd Qu.:3.800   3rd Qu.:7.43    3rd Qu.:7.430   3rd Qu.:7.43
Max.   :4.900   Max.   :4.900   Max.   :4.900   Max.   :4.900   Max.   :4.900   Max.   :7.57    Max.   :7.570   Max.   :7.57
NA's   :74
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :7.100        Min.   :7.100        Min.   :2.800
1st Qu.:7.351        1st Qu.:7.360        1st Qu.:3.297
Median :7.390        Median :7.390        Median :3.400
Mean   :7.390        Mean   :7.391        Mean   :3.419
3rd Qu.:7.430        3rd Qu.:7.430        3rd Qu.:3.500
Max.   :7.570        Max.   :7.570        Max.   :4.900

 cls_km_ph_t0  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :7.10   Min.   :7.100   Min.   :7.10   Min.   :7.100   Min.   :7.100   Min.   :7.10    Min.   :7.200   Min.   :7.200
1st Qu.:7.36   1st Qu.:7.360   1st Qu.:7.36   1st Qu.:7.360   1st Qu.:7.360   1st Qu.:7.36    1st Qu.:7.350   1st Qu.:7.363   1st Qu.:7.370
Median :7.39   Median :7.397   Median :7.39   Median :7.390   Median :7.390   Median :7.39    Median :7.399   Median :7.400   Median :7.415
Mean   :7.39   Mean   :7.392   Mean   :7.39   Mean   :7.389   Mean   :7.391   Mean   :7.39    Mean   :7.398   Mean   :7.399   Mean   :7.414
3rd Qu.:7.43   3rd Qu.:7.430   3rd Qu.:7.43   3rd Qu.:7.430   3rd Qu.:7.430   3rd Qu.:7.43    3rd Qu.:7.450   3rd Qu.:7.441   3rd Qu.:7.453
Max.   :7.57   Max.   :7.570   Max.   :7.57   Max.   :7.570   Max.   :7.570   Max.   :7.57    Max.   :7.630   Max.   :7.630   Max.   :7.633
NA's   :10
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :7.200        Min.   :7.200        Min.   :7.100
1st Qu.:7.375        1st Qu.:7.380        1st Qu.:7.360
Median :7.420        Median :7.411        Median :7.400
Mean   :7.421        Mean   :7.417        Mean   :7.392
3rd Qu.:7.460        3rd Qu.:7.457        3rd Qu.:7.430
Max.   :7.630        Max.   :7.630        Max.   :7.570

cls_km_ph_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :7.200   Min.   :7.200   Min.   :7.200   Min.   :7.20    Min.   :7.200   Min.   :7.200   Min.   : 9.00   Min.   : 9.00   Min.   : 9.00
1st Qu.:7.364   1st Qu.:7.330   1st Qu.:7.310   1st Qu.:7.31    1st Qu.:7.330   1st Qu.:7.330   1st Qu.:28.00   1st Qu.:28.00   1st Qu.:28.00
Median :7.400   Median :7.410   Median :7.430   Median :7.41    Median :7.410   Median :7.430   Median :32.00   Median :31.80   Median :31.00
Mean   :7.403   Mean   :7.399   Mean   :7.406   Mean   :7.40    Mean   :7.399   Mean   :7.421   Mean   :31.86   Mean   :31.56   Mean   :31.48
3rd Qu.:7.452   3rd Qu.:7.480   3rd Qu.:7.500   3rd Qu.:7.49    3rd Qu.:7.480   3rd Qu.:7.500   3rd Qu.:37.00   3rd Qu.:36.00   3rd Qu.:36.00
Max.   :7.630   Max.   :7.630   Max.   :7.630   Max.   :7.63    Max.   :7.630   Max.   :7.630   Max.   :56.00   Max.   :56.00   Max.   :56.00
NA's   :102
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 9.00        Min.   : 9.00        Min.   :7.200
1st Qu.:28.00        1st Qu.:28.00        1st Qu.:7.389
Median :31.70        Median :31.80        Median :7.407
Mean   :31.58        Mean   :31.64        Mean   :7.406
3rd Qu.:37.00        3rd Qu.:37.00        3rd Qu.:7.429
Max.   :56.00        Max.   :56.00        Max.   :7.630

cls_km_paco2_t0 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 9.00   Min.   : 9.00   Min.   : 9.00   Min.   : 9.00   Min.   : 9.00   Min.   :14.61   Min.   :18.00   Min.   : 7.40
1st Qu.:28.00   1st Qu.:27.00   1st Qu.:28.00   1st Qu.:28.00   1st Qu.:28.00   1st Qu.:29.00   1st Qu.:29.62   1st Qu.:28.79
Median :31.70   Median :31.00   Median :31.80   Median :31.70   Median :31.00   Median :33.88   Median :33.56   Median :32.29
Mean   :31.46   Mean   :31.47   Mean   :31.48   Mean   :31.44   Mean   :31.55   Mean   :31.58   Mean   :33.65   Mean   :32.38
3rd Qu.:37.00   3rd Qu.:37.00   3rd Qu.:37.00   3rd Qu.:37.00   3rd Qu.:37.00   3rd Qu.:37.00   3rd Qu.:38.32   3rd Qu.:37.40   3rd Qu.:36.00
Max.   :56.00   Max.   :56.00   Max.   :56.00   Max.   :56.00   Max.   :56.00   Max.   :56.00   Max.   :53.00   Max.   :53.00   Max.   :53.00
NA's   :12
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 8.397       Min.   :14.19        Min.   : 9.0
1st Qu.:27.067       1st Qu.:28.18        1st Qu.:28.0
Median :32.335       Median :32.64        Median :32.0
Mean   :32.040       Mean   :32.37        Mean   :31.6
3rd Qu.:36.366       3rd Qu.:37.13        3rd Qu.:36.0
Max.   :53.000       Max.   :53.00        Max.   :56.0
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cls_km_paco2_t30 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :18.00   Min.   :18.00   Min.   :18.00   Min.   :18.00   Min.   :18.00   Min.   : 32.00   Min.   : 32.00   Min.   : 32.00
1st Qu.:29.00   1st Qu.:21.00   1st Qu.:21.00   1st Qu.:21.00   1st Qu.:21.00   1st Qu.:23.00   1st Qu.: 75.00   1st Qu.: 75.00   1st Qu.: 75.00
Median :33.20   Median :29.00   Median :36.00   Median :32.20   Median :34.00   Median :35.00   Median : 89.00   Median : 88.20   Median : 89.00
Mean   :33.41   Mean   :31.24   Mean   :34.56   Mean   :32.78   Mean   :34.15   Mean   :34.03   Mean   : 92.68   Mean   : 92.07   Mean   : 92.38
3rd Qu.:39.00   3rd Qu.:41.00   3rd Qu.:45.00   3rd Qu.:41.00   3rd Qu.:45.00   3rd Qu.:45.00   3rd Qu.:105.00   3rd Qu.:102.00   3rd Qu.:103.00
Max.   :53.00   Max.   :53.00   Max.   :53.00   Max.   :53.00   Max.   :53.00   Max.   :53.00   Max.   :251.00   Max.   :251.00   Max.   :251.00
NA's   :103
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 32.00       Min.   : 32.00       Min.   :18.00
1st Qu.: 75.00       1st Qu.: 74.00       1st Qu.:31.57
Median : 88.50       Median : 88.00       Median :33.88
Mean   : 92.81       Mean   : 91.99       Mean   :33.52
3rd Qu.:103.00       3rd Qu.:102.00       3rd Qu.:35.67
Max.   :251.00       Max.   :251.00       Max.   :53.00

cls_km_pao2_t0  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 32.00   Min.   : 32.00   Min.   : 32.00   Min.   : 32.00   Min.   : 32.00   Min.   :  2.00   Min.   :  2.00   Min.   : -0.4195
1st Qu.: 75.00   1st Qu.: 75.00   1st Qu.: 73.00   1st Qu.: 75.00   1st Qu.: 75.00   1st Qu.: 70.32   1st Qu.: 63.37   1st Qu.: 60.0000
Median : 88.25   Median : 89.00   Median : 88.00   Median : 89.00   Median : 88.20   Median : 88.00   Median : 84.00   Median : 80.79   Median : 77.2431
Mean   : 92.30   Mean   : 93.48   Mean   : 91.59   Mean   : 93.52   Mean   : 92.22   Mean   : 92.27   Mean   : 85.28   Mean   : 80.08   Mean   : 77.1078
3rd Qu.:102.75   3rd Qu.:104.00   3rd Qu.:102.00   3rd Qu.:104.00   3rd Qu.:102.00   3rd Qu.:102.00   3rd Qu.: 98.28   3rd Qu.: 95.07   3rd Qu.: 93.8665
Max.   :251.00   Max.   :251.00   Max.   :251.00   Max.   :251.00   Max.   :251.00   Max.   :251.00   Max.   :201.00   Max.   :201.00   Max.   :201.0000
NA's   :11
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-31.17       Min.   :  2.00       Min.   : 32.00
1st Qu.: 62.12       1st Qu.: 63.30       1st Qu.: 75.00
Median : 82.00       Median : 82.00       Median : 88.00
Mean   : 79.87       Mean   : 84.32       Mean   : 92.02
3rd Qu.: 98.00       3rd Qu.:101.33       3rd Qu.:102.00
Max.   :201.00       Max.   :201.00       Max.   :251.00

cls_km_pao2_t30  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :  2.00   Min.   :  2.00   Min.   :  2.0   Min.   :  2.00   Min.   :  2.00   Min.   :  3.00   Min.   :  3.00   Min.   :  3.00
1st Qu.: 74.50   1st Qu.: 54.00   1st Qu.: 48.0   1st Qu.: 54.00   1st Qu.: 54.00   1st Qu.: 54.00   1st Qu.:16.50   1st Qu.:16.50   1st Qu.:16.50
Median : 84.00   Median : 81.00   Median : 83.0   Median : 86.00   Median : 86.30   Median : 86.30   Median :19.90   Median :19.90   Median :19.70
Mean   : 87.68   Mean   : 84.26   Mean   : 93.3   Mean   : 94.28   Mean   : 94.58   Mean   : 93.64   Mean   :19.71   Mean   :19.65   Mean   :19.53
3rd Qu.: 97.75   3rd Qu.:119.00   3rd Qu.:142.0   3rd Qu.:142.00   3rd Qu.:142.00   3rd Qu.:139.00   3rd Qu.:23.60   3rd Qu.:23.10   3rd Qu.:23.05
Max.   :201.00   Max.   :201.00   Max.   :201.0   Max.   :201.00   Max.   :201.00   Max.   :201.00   Max.   :39.80   Max.   :39.80   Max.   :39.80
NA's   :103
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 3.00        Min.   : 3.00        Min.   :  2.00
1st Qu.:16.50        1st Qu.:16.70        1st Qu.: 79.72
Median :19.90        Median :19.90        Median : 83.61
Mean   :19.72        Mean   :19.68        Mean   : 85.26
3rd Qu.:23.60        3rd Qu.:23.10        3rd Qu.: 88.60
Max.   :39.80        Max.   :39.80        Max.   :201.00

cls_km_hco3_t0  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 3.00   Min.   : 3.00   Min.   : 3.00   Min.   : 3.00   Min.   : 3.00   Min.   : 3.00   Min.   : 5.942   Min.   : 7.70   Min.   : 6.124
1st Qu.:16.40   1st Qu.:16.50   1st Qu.:16.30   1st Qu.:16.50   1st Qu.:16.50   1st Qu.:16.50   1st Qu.:18.411   1st Qu.:18.70   1st Qu.:18.600
Median :19.70   Median :19.70   Median :19.70   Median :19.80   Median :19.90   Median :19.80   Median :21.600   Median :21.20   Median :21.618
Mean   :19.43   Mean   :19.54   Mean   :19.99   Mean   :19.47   Mean   :19.57   Mean   :19.58   Mean   :21.142   Mean   :21.16   Mean   :21.628
3rd Qu.:23.10   3rd Qu.:23.60   3rd Qu.:23.10   3rd Qu.:23.10   3rd Qu.:23.10   3rd Qu.:23.60   3rd Qu.:24.156   3rd Qu.:23.53   3rd Qu.:25.124
Max.   :39.80   Max.   :39.80   Max.   :39.80   Max.   :39.80   Max.   :39.80   Max.   :39.80   Max.   :33.600   Max.   :33.60   Max.   :35.392
NA's   :14
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 7.70        Min.   : 7.242       Min.   : 3.00
1st Qu.:18.20        1st Qu.:18.154       1st Qu.:16.70
Median :21.13        Median :21.586       Median :20.10
Mean   :21.19        Mean   :21.107       Mean   :19.62
3rd Qu.:24.30        3rd Qu.:24.540       3rd Qu.:23.00
Max.   :33.60        Max.   :33.600       Max.   :39.80
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 cls_km_be_t0     mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i
Min.   :-24.700   Min.   :-24.700   Min.   :-24.700   Min.   :-24.700   Min.   :-24.700   Min.   :-107.000   Min.   :-107.00   Min.   :-107.000
1st Qu.: -8.550   1st Qu.: -8.800   1st Qu.: -8.800   1st Qu.: -8.800   1st Qu.: -8.500   1st Qu.:  -7.062   1st Qu.: -20.45   1st Qu.:  -6.615
Median : -4.550   Median : -4.700   Median : -4.800   Median : -4.800   Median : -4.700   Median : -4.400   Median :  -3.622   Median :  -7.30   Median :  -2.300
Mean   : -4.874   Mean   : -4.911   Mean   : -5.078   Mean   : -5.054   Mean   : -5.007   Mean   : -4.816   Mean   :  -4.226   Mean   : -11.21   Mean   :  -3.044
3rd Qu.: -1.250   3rd Qu.: -1.100   3rd Qu.: -1.400   3rd Qu.: -1.300   3rd Qu.: -1.100   3rd Qu.: -1.300   3rd Qu.:  -0.100   3rd Qu.:  -0.40   3rd Qu.:   1.506
Max.   : 16.000   Max.   : 16.000   Max.   : 16.000   Max.   : 16.000   Max.   : 16.000   Max.   : 16.000   Max.   :  11.879   Max.   :  24.21   Max.   :  11.332
NA's   :17
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-107.000     Min.   :-107.000     Min.   :-24.700
1st Qu.: -12.798     1st Qu.: -16.284     1st Qu.: -8.300
Median :  -5.591     Median :  -7.608     Median : -4.300
Mean   :  -6.962     Mean   :  -8.997     Mean   : -4.778
3rd Qu.:   0.300     3rd Qu.:  -1.500     3rd Qu.: -1.800
Max.   :  21.516     Max.   :  31.805     Max.   : 16.000

cls_km_be_t30     mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[,
Min.   :-107.000   Min.   :-107.000   Min.   :-107.000   Min.   :-107.000   Min.   :-107.000   Min.   : 32.5      Min.   : 85.0      Min.   : 16.25
1st Qu.:  -6.350   1st Qu.: -11.500   1st Qu.: -11.500   1st Qu.: -11.500   1st Qu.: -11.500   1st Qu.: -10.300   1st Qu.:269.7      1st Qu.:249.8      1st Qu.:267.52
Median :  -3.250   Median :  -5.100   Median :  -5.900   Median :  -3.400   Median :  -2.600   Median :  -2.600   Median :347.0      Median :337.6      Median :348.00
Mean   :  -4.965   Mean   :  -9.561   Mean   :  -8.817   Mean   :  -8.851   Mean   :  -8.659   Mean   :  -7.822   Mean   :348.7      Mean   :341.0      Mean   :340.11
3rd Qu.:  -0.250   3rd Qu.:   4.100   3rd Qu.:   4.100   3rd Qu.:   4.100   3rd Qu.:   4.100   3rd Qu.:   4.100   3rd Qu.:425.4      3rd Qu.:423.0      3rd Qu.:420.00
Max.   :  10.000   Max.   :  10.000   Max.   :  10.000   Max.   :  10.000   Max.   :  10.000   Max.   :  10.000   Max.   :713.6      Max.   :819.0      Max.   :640.23
NA's   :105
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 85.0        Min.   :  2.72       Min.   :-107.000
1st Qu.:249.8        1st Qu.:259.27       1st Qu.:  -6.200
Median :340.0        Median :342.80       Median :  -4.040
Mean   :332.0        Mean   :344.14       Mean   :  -4.867
3rd Qu.:408.0        3rd Qu.:423.80       3rd Qu.:  -2.360
Max.   :645.1        Max.   :617.90       Max.   :  10.000

 cls_km_pf_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 85.0   Min.   : 85.0      Min.   : 85.0      Min.   : 85.0      Min.   : 85.0      Min.   : 85.0      Min.   : 26.36     Min.   : 52.58     Min.   : 95.0
1st Qu.:260.0   1st Qu.:260.0      1st Qu.:219.0      1st Qu.:255.0      1st Qu.:219.0      1st Qu.:255.0      1st Qu.:219.80     1st Qu.:224.80     1st Qu.:224.0
Median :342.8   Median :342.8      Median :329.0      Median :352.0      Median :310.0      Median :340.0      Median :272.78     Median :290.00     Median :299.9
Mean   :340.5   Mean   :344.4      Mean   :323.6      Mean   :342.2      Mean   :315.9      Mean   :341.8      Mean   :282.94     Mean   :297.10     Mean   :303.8
3rd Qu.:423.0   3rd Qu.:428.5      3rd Qu.:422.0      3rd Qu.:427.0      3rd Qu.:420.0      3rd Qu.:423.8      3rd Qu.:335.39     3rd Qu.:361.26     3rd Qu.:369.9
Max.   :562.0   Max.   :562.0      Max.   :562.0      Max.   :562.0      Max.   :562.0      Max.   :562.0      Max.   :586.00     Max.   :586.00     Max.   :586.0
NA's   :68
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 78.82       Min.   : 63.97       Min.   : 85.0
1st Qu.:206.44       1st Qu.:198.48       1st Qu.:288.8
Median :266.00       Median :226.83       Median :345.6
Mean   :272.02       Mean   :242.40       Mean   :341.8
3rd Qu.:317.51       3rd Qu.:277.74       3rd Qu.:400.0
Max.   :586.00       Max.   :586.00       Max.   :562.0

cls_km_pf_t30   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :105.0   Min.   :105.0      Min.   :105.0      Min.   :105.0      Min.   :105.0      Min.   :-0.4716    Min.   :-0.5215    Min.   :-0.3262
1st Qu.:209.0   1st Qu.:126.0      1st Qu.:135.0      1st Qu.:163.0      1st Qu.:126.0      1st Qu.: 1.0000    1st Qu.: 1.0300    1st Qu.: 1.1000
Median :256.5   Median :245.0      Median :260.0      Median :304.0      Median :211.0      Median :215.0      Median : 1.6000    Median : 1.6000    Median : 1.6787
Mean   :281.5   Mean   :291.9      Mean   :307.4      Mean   :330.5      Mean   :269.4      Mean   :288.9      Mean   : 2.0818    Mean   : 2.1482    Mean   : 2.1371
3rd Qu.:326.0   3rd Qu.:476.0      3rd Qu.:476.0      3rd Qu.:476.0      3rd Qu.:410.0      3rd Qu.:476.0      3rd Qu.: 2.6000    3rd Qu.: 2.7000    3rd Qu.: 2.6000
Max.   :586.0   Max.   :586.0      Max.   :586.0      Max.   :586.0      Max.   :586.0      Max.   :586.0      Max.   : 9.0000    Max.   : 9.0000    Max.   : 9.0000
NA's   :125
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-0.8722      Min.   :-1.295       Min.   :105.0
1st Qu.: 1.0000      1st Qu.: 1.030       1st Qu.:250.3
Median : 1.7000      Median : 1.700       Median :280.4
Mean   : 2.1526      Mean   : 2.132       Mean   :284.2
3rd Qu.: 2.7777      3rd Qu.: 2.642       3rd Qu.:309.2
Max.   : 9.0000      Max.   : 9.000       Max.   :586.0
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cls_km_lac_t0   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.400   Min.   :0.400      Min.   :0.400      Min.   :0.400      Min.   :0.400      Min.   :-0.5501    Min.   :-0.4924    Min.   :-0.6620
1st Qu.:1.015   1st Qu.:1.000      1st Qu.:1.030      1st Qu.:1.000      1st Qu.:1.000      1st Qu.: 0.7000    1st Qu.: 0.7786    1st Qu.: 0.8369
Median :1.600   Median :1.600      Median :1.600      Median :1.600      Median :1.600      Median : 1.0000    Median : 1.1063    Median : 1.1758
Mean   :2.125   Mean   :2.141      Mean   :2.161      Mean   :2.156      Mean   :2.059      Mean   : 2.145     Mean   : 1.2011    Mean   : 1.2660    Mean   : 1.3226
3rd Qu.:2.600   3rd Qu.:2.600      3rd Qu.:2.600      3rd Qu.:2.600      3rd Qu.:2.560      3rd Qu.: 2.600     3rd Qu.: 1.6340    3rd Qu.: 1.7197    3rd Qu.: 1.7000
Max.   :9.000   Max.   :9.000      Max.   :9.000      Max.   :9.000      Max.   :9.000      Max.   : 9.000     Max.   : 4.7000    Max.   : 4.7000    Max.   : 4.7000
NA's   :18
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-0.5396      Min.   :-0.678       Min.   :0.400
1st Qu.: 0.9000      1st Qu.: 0.656       1st Qu.:1.100
Median : 1.2825      Median : 1.036       Median :1.700
Mean   : 1.3549      Mean   : 1.145       Mean   :2.112
3rd Qu.: 1.7537      3rd Qu.: 1.510       3rd Qu.:2.500
Max.   : 4.7000      Max.   : 4.700       Max.   :9.000

cls_km_lac_t30  mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.400   Min.   :0.400      Min.   :0.400      Min.   :0.400      Min.   :0.400      Min.   :-2100      Min.   :-2100      Min.   :-2100
1st Qu.:0.775   1st Qu.:0.500      1st Qu.:0.400      1st Qu.:0.400      1st Qu.:0.500      1st Qu.: 1096      1st Qu.: 1020      1st Qu.: 1040
Median :1.000   Median :1.100      Median :0.900      Median :0.900      Median :0.600      Median : 1100      Median : 1900      Median : 1900
Mean   :1.262   Mean   :1.693      Mean   :1.565      Mean   :1.578      Mean   :1.227      Mean   : 1629      Mean   : 2160      Mean   : 2088      Mean   : 2121
3rd Qu.:1.700   3rd Qu.:2.500      3rd Qu.:2.800      3rd Qu.:2.800      3rd Qu.:1.800      3rd Qu.:2.500      3rd Qu.: 3100      3rd Qu.: 2900      3rd Qu.: 3000
Max.   :4.700   Max.   :4.700      Max.   :4.700      Max.   :4.700      Max.   :4.700      Max.   :4.700      Max.   : 6040      Max.   : 6653      Max.   : 6040
NA's   :109
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-2100        Min.   :-2100        Min.   :0.400
1st Qu.: 1040        1st Qu.: 1040        1st Qu.:0.923
Median : 1900        Median : 1900        Median :1.252
Mean   : 2070        Mean   : 2065        Mean   :1.316
3rd Qu.: 2900        3rd Qu.: 2800        3rd Qu.:1.594
Max.   : 6040        Max.   : 6040        Max.   :4.700

dt_dich_bilan_t24 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :-2100     Min.   :-2100      Min.   :-2100      Min.   :-2100      Min.   :-2100      Min.   :-2100      Min.   :-4550      Min.   :-4550      Min.   :-4550
1st Qu.: 1055     1st Qu.: 1000      1st Qu.: 1000      1st Qu.: 1000      1st Qu.: 1000      1st Qu.: 1070      1st Qu.:  250      1st Qu.:  250      1st Qu.:  260
Median : 1950     Median : 1980      Median : 1900      Median : 1900      Median : 1950      Median : 1950      Median : 1150      Median : 1100      Median : 1173
Mean   : 2122     Mean   : 2132      Mean   : 2105      Mean   : 2090      Mean   : 2137      Mean   : 2143      Mean   : 1151      Mean   : 1112      Mean   : 1175
3rd Qu.: 2950     3rd Qu.: 3100      3rd Qu.: 3000      3rd Qu.: 2900      3rd Qu.: 3000      3rd Qu.: 3050      3rd Qu.: 2040      3rd Qu.: 1940      3rd Qu.: 2040
Max.   : 6040     Max.   : 6040      Max.   : 6040      Max.   : 6040      Max.   : 6040      Max.   : 6040      Max.   : 6830      Max.   : 6830      Max.   : 6830
NA's   :18
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-4550        Min.   :-4550        Min.   :-2100
1st Qu.:  220        1st Qu.:  190        1st Qu.: 1200
Median : 1161        Median : 1100        Median : 1980
Mean   : 1111        Mean   : 1046        Mean   : 2109
3rd Qu.: 2023        3rd Qu.: 1940        3rd Qu.: 2750
Max.   : 6830        Max.   : 6830        Max.   : 6040

dt_dich_bilan_t48 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :-4550     Min.   :-4550      Min.   :-4550      Min.   :-4550      Min.   :-4550      Min.   :-3780.0    Min.   :-3780.00   Min.   :-3780.000
1st Qu.:  250     1st Qu.:    0      1st Qu.:  250      1st Qu.:  250      1st Qu.:  250      1st Qu.:  230      1st Qu.:   50.0    1st Qu.:  -49.15   1st Qu.:   -9.133
Median : 1120     Median : 1100      Median : 1100      Median : 1100      Median : 1100      Median : 1120      Median :  800.0    Median :  800.00   Median :  640.082
Mean   : 1142     Mean   :  956      Mean   : 1051      Mean   : 1097      Mean   : 1112      Mean   : 1072      Mean   :  668.9    Mean   :  665.01   Mean   :  626.854
3rd Qu.: 2045     3rd Qu.: 1940      3rd Qu.: 1940      3rd Qu.: 2050      3rd Qu.: 2020      3rd Qu.: 2020      3rd Qu.: 1541.1    3rd Qu.: 1550.00   3rd Qu.: 1500.000
Max.   : 6830     Max.   : 6830      Max.   : 6830      Max.   : 6830      Max.   : 6830      Max.   : 6830      Max.   : 2650.0    Max.   : 3339.10   Max.   : 3943.800
NA's   :26
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-3780        Min.   :-3780.0      Min.   :-4550
1st Qu.: -100        1st Qu.:   90.0      1st Qu.:  390
Median :  740        Median :  800.0      Median : 1100
Mean   :  579        Mean   :  715.6      Mean   : 1124
3rd Qu.: 1520        3rd Qu.: 1600.0      3rd Qu.: 1900
Max.   : 3790        Max.   : 2650.0      Max.   : 6830
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dt_dich_bilan_t72 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i
Min.   :-3780.0   Min.   :-3780.0   Min.   :-3780.0   Min.   :-3780.0   Min.   :-3780.0   Min.   :-1.323    Min.   :-0.3524   Min.   :-1.197
1st Qu.:  152.5   1st Qu.:   50.0   1st Qu.: -120.0   1st Qu.: -100.0   1st Qu.:   90.0   1st Qu.: -100.0   1st Qu.: 1.0000   1st Qu.: 1.000
Median :  820.0   Median :  800.0   Median :  800.0   Median :  800.0   Median : 1000.0   Median :  750.0   Median : 1.000    Median : 1.0000   Median : 1.000
Mean   :  745.3   Mean   :  687.1   Mean   :  573.1   Mean   :  567.5   Mean   :  732.7   Mean   :  550.9   Mean   : 1.589    Mean   : 1.6163   Mean   : 1.605
3rd Qu.: 1650.0   3rd Qu.: 1650.0   3rd Qu.: 1600.0   3rd Qu.: 1600.0   3rd Qu.: 1740.0   3rd Qu.: 1550.0   3rd Qu.: 2.000    3rd Qu.: 2.0000   3rd Qu.: 2.000
Max.   : 2650.0   Max.   : 2650.0   Max.   : 2650.0   Max.   : 2650.0   Max.   : 2650.0   Max.   : 2650.0   Max.   :12.000    Max.   :12.0000   Max.   :12.000
NA's   :43
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   : 0.000       Min.   : 0.000       Min.   :-3780.0
1st Qu.: 1.000       1st Qu.: 1.000       1st Qu.:  290.0
Median : 1.000       Median : 1.000       Median :  836.2
Mean   : 1.625       Mean   : 1.625       Mean   :  741.6
3rd Qu.: 2.000       3rd Qu.: 2.000       3rd Qu.: 1340.0
Max.   :12.000       Max.   :12.000       Max.   : 2650.0

 dt_nhin_ngay    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.000   Min.   : 0.000   Min.   : 0.000   Min.   : 0.00   Min.   : 0.000   Min.   : 0.000   Min.   :0.4729   Min.   :0.7421   Min.   :1.000
1st Qu.: 1.000   1st Qu.: 1.000   1st Qu.: 1.000   1st Qu.: 1.00   1st Qu.: 1.000   1st Qu.: 1.000   1st Qu.:1.0000   1st Qu.:1.0000   1st Qu.:1.000
Median : 1.000   Median : 1.000   Median : 1.000   Median : 1.00   Median : 1.000   Median : 1.000   Median :1.2128   Median :1.2146   Median :1.295
Mean   : 1.626   Mean   : 1.606   Mean   : 1.618   Mean   : 1.63   Mean   : 1.655   Mean   : 1.618   Mean   :1.3518   Mean   :1.3560   Mean   :1.314
3rd Qu.: 2.000   3rd Qu.: 2.000   3rd Qu.: 2.000   3rd Qu.: 2.00   3rd Qu.: 2.000   3rd Qu.: 2.000   3rd Qu.:1.6624   3rd Qu.:1.6719   3rd Qu.:1.533
Max.   :12.000   Max.   :12.000   Max.   :12.000   Max.   :12.00   Max.   :12.000   Max.   :12.000   Max.   :3.0000   Max.   :3.0000   Max.   :3.000
NA's   :10
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :0.2312       Min.   :0.3252       Min.   : 0.000
1st Qu.:1.0000       1st Qu.:1.0000       1st Qu.: 1.000
Median :1.0880       Median :1.0000       Median : 1.000
Mean   :1.2500       Mean   :1.2006       Mean   : 1.614
3rd Qu.:1.4350       3rd Qu.:1.3827       3rd Qu.: 2.000
Max.   :3.0000       Max.   :3.0000       Max.   :12.000

  dt_pex_lan    mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :1.000   Min.   :-10.572   Min.   :-2.516   Min.   :-1.367
1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:1.000   1st Qu.:  6.014   1st Qu.: 7.472   1st Qu.: 9.000
Median :1.000   Median :1.000   Median :1.000   Median :1.000   Median :1.000   Median :1.000   Median : 11.766   Median :13.000   Median :13.000
Mean   :1.157   Mean   :1.309   Mean   :1.345   Mean   :1.491   Mean   :1.303   Mean   :1.382   Mean   : 12.889   Mean   :13.867   Mean   :14.668
3rd Qu.:1.000   3rd Qu.:2.000   3rd Qu.:2.000   3rd Qu.:2.000   3rd Qu.:2.000   3rd Qu.:2.000   3rd Qu.: 19.000   3rd Qu.:20.000   3rd Qu.:20.000
Max.   :3.000   Max.   :3.000   Max.   :3.000   Max.   :3.000   Max.   :3.000   Max.   :3.000   Max.   : 41.000   Max.   :41.000   Max.   :41.000
NA's   :82
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-7.805       Min.   :-0.9352      Min.   : 1.000
1st Qu.:10.000       1st Qu.: 9.0000      1st Qu.: 1.000
Median :15.734       Median :14.0000      Median : 1.160
Mean   :16.448       Mean   :15.2148      Mean   : 1.232
3rd Qu.:23.213       3rd Qu.:20.6347      3rd Qu.: 1.350
Max.   :41.000       Max.   :41.0000      Max.   : 3.000

 dt_pex_sauvv   mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 0.25   Min.   : 0.25   Min.   : 0.25   Min.   : 0.25   Min.   : 0.25   Min.   : 0.25   Min.   :-10.94    Min.   : -8.835   Min.   :-10.03
1st Qu.: 9.00   1st Qu.: 6.00   1st Qu.: 6.00   1st Qu.: 5.00   1st Qu.: 6.00   1st Qu.: 4.50   1st Qu.: 13.98    1st Qu.: 15.371   1st Qu.: 14.40
Median :13.00   Median :13.00   Median :14.00   Median :13.00   Median :13.00   Median :10.00   Median : 20.12    Median : 24.735   Median : 23.03
Mean   :15.02   Mean   :16.26   Mean   :17.69   Mean   :15.24   Mean   :16.44   Mean   :13.51   Mean   : 27.75    Mean   : 28.519   Mean   : 27.44
3rd Qu.:21.01   3rd Qu.:24.00   3rd Qu.:28.00   3rd Qu.:23.00   3rd Qu.:24.00   3rd Qu.:21.00   3rd Qu.: 36.16    3rd Qu.: 33.197   3rd Qu.: 30.50
Max.   :41.00   Max.   :41.00   Max.   :41.00   Max.   :41.00   Max.   :41.00   Max.   :41.00   Max.   :131.55    Max.   :131.550   Max.   :131.55
NA's   :87
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-21.81       Min.   :-14.91       Min.   : 0.25
1st Qu.: 13.87       1st Qu.: 14.54       1st Qu.:12.27
Median : 20.55       Median : 21.82       Median :14.91
Mean   : 26.61       Mean   : 27.01       Mean   :15.49
3rd Qu.: 32.24       3rd Qu.: 32.83       3rd Qu.:19.00
Max.   :131.55       Max.   :131.55       Max.   :41.00
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dt_pex_tri_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :  2.41   Min.   :  2.41   Min.   :  2.41   Min.   :  2.41   Min.   :  2.41   Min.   :-9.53     Min.   :-9.357    Min.   : 1.010
1st Qu.: 15.27   1st Qu.: 13.87   1st Qu.: 14.53   1st Qu.: 14.53   1st Qu.: 15.10   1st Qu.: 13.49   1st Qu.: 5.43     1st Qu.: 4.780    1st Qu.: 5.819
Median : 22.68   Median : 18.83   Median : 17.15   Median : 22.81   Median : 26.65   Median : 16.50   Median : 8.79     Median : 8.920    Median :12.590
Mean   : 31.90   Mean   : 30.14   Mean   : 29.22   Mean   : 31.15   Mean   : 36.52   Mean   : 25.06   Mean   :10.93     Mean   :11.072    Mean   :13.264
3rd Qu.: 30.50   3rd Qu.: 30.49   3rd Qu.: 28.91   3rd Qu.: 38.68   3rd Qu.: 45.35   3rd Qu.: 27.01   3rd Qu.:14.99     3rd Qu.:14.630    3rd Qu.:17.936
Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :131.55   Max.   :76.94     Max.   :76.940    Max.   :76.940
NA's   :83
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-9.579       Min.   :-9.576       Min.   :  2.41
1st Qu.: 5.630       1st Qu.: 4.162       1st Qu.: 19.13
Median :10.379       Median : 7.127       Median : 26.78
Mean   :12.169       Mean   : 9.396       Mean   : 31.64
3rd Qu.:16.860       3rd Qu.:12.366       3rd Qu.: 37.28
Max.   :76.940       Max.   :76.940       Max.   :131.55

dt_pex_tri_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.010   Min.   : 1.01    Min.   : 1.01    Min.   : 1.01    Min.   : 1.010   Min.   : 1.01    Min.   :-2.487    Min.   :-0.5822   Min.   :-3.620
1st Qu.: 4.150   1st Qu.: 4.17    1st Qu.: 4.71    1st Qu.: 4.71    1st Qu.: 2.700   1st Qu.: 4.09    1st Qu.: 8.947    1st Qu.: 9.7927   1st Qu.: 9.586
Median : 6.225   Median : 7.13    Median : 8.94    Median : 8.31    Median : 4.780   Median : 7.81    Median :12.540    Median :12.8128   Median :13.030
Mean   : 9.717   Mean   :12.80    Mean   :16.62    Mean   :14.45    Mean   : 8.706   Mean   :11.88    Mean   :13.769    Mean   :14.1982   Mean   :14.136
3rd Qu.: 9.812   3rd Qu.:15.26    3rd Qu.:24.88    3rd Qu.:20.50    3rd Qu.: 8.940   3rd Qu.:14.44    3rd Qu.:18.040    3rd Qu.:17.8980   3rd Qu.:18.198
Max.   :76.940   Max.   :76.94    Max.   :76.94    Max.   :76.94    Max.   :76.940   Max.   :76.94    Max.   :39.662    Max.   :34.4000   Max.   :34.400
NA's   :85
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.495       Min.   : 1.14        Min.   : 1.01
1st Qu.: 9.270       1st Qu.:10.07        1st Qu.: 6.30
Median :13.170       Median :13.65        Median :11.60
Mean   :13.948       Mean   :14.48        Mean   :11.68
3rd Qu.:18.040       3rd Qu.:18.04        3rd Qu.:14.67
Max.   :34.400       Max.   :34.40        Max.   :76.94

dt_pex_chol_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 1.14    Min.   : 1.14    Min.   : 1.14    Min.   : 1.14    Min.   : 1.14    Min.   : 1.14    Min.   :-0.422    Min.   :-0.8114   Min.   :-1.597
1st Qu.:10.33    1st Qu.: 9.26    1st Qu.: 6.73    1st Qu.: 7.31    1st Qu.: 9.88    1st Qu.: 7.47    1st Qu.: 4.370    1st Qu.: 5.2441   1st Qu.: 4.964
Median :15.37    Median :15.21    Median :12.54    Median :10.41    Median :16.28    Median :15.24    Median : 5.941    Median : 7.5400   Median : 7.298
Mean   :16.15    Mean   :15.67    Mean   :14.14    Mean   :12.87    Mean   :17.06    Mean   :16.25    Mean   : 6.783    Mean   : 8.0054   Mean   : 7.575
3rd Qu.:20.17    3rd Qu.:21.09    3rd Qu.:19.56    3rd Qu.:17.70    3rd Qu.:22.59    3rd Qu.:22.13    3rd Qu.: 8.683    3rd Qu.:10.4075   3rd Qu.: 9.640
Max.   :34.40    Max.   :34.40    Max.   :34.40    Max.   :34.40    Max.   :34.40    Max.   :34.40    Max.   :21.770    Max.   :21.7700   Max.   :21.770
NA's   :95
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-2.530       Min.   :-0.009023    Min.   : 1.14
1st Qu.: 4.871       1st Qu.: 4.665811    1st Qu.:11.55
Median : 7.353       Median : 6.495666    Median :14.84
Mean   : 7.467       Mean   : 7.040582    Mean   :15.45
3rd Qu.: 9.545       3rd Qu.: 9.103037    3rd Qu.:18.31
Max.   :21.770       Max.   :21.770000    Max.   :34.40

dt_pex_chol_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 2.070   Min.   : 2.070   Min.   : 2.070   Min.   : 2.070   Min.   : 2.07    Min.   : 2.070   Min.   :-1.949    Min.   :-6.647    Min.   :-2.449
1st Qu.: 4.490   1st Qu.: 3.000   1st Qu.: 2.270   1st Qu.: 3.224   1st Qu.: 3.00    1st Qu.: 3.000   1st Qu.: 1.028    1st Qu.: 1.641    1st Qu.: 1.442
Median : 5.600   Median : 5.450   Median : 3.730   Median : 7.260   Median : 6.25    Median : 8.370   Median : 3.000    Median : 3.066    Median : 3.359
Mean   : 7.283   Mean   : 8.735   Mean   : 7.202   Mean   : 8.576   Mean   : 9.44    Mean   : 9.791   Mean   : 3.390    Mean   : 3.576    Mean   : 3.600
3rd Qu.: 9.240   3rd Qu.:16.890   3rd Qu.:14.720   3rd Qu.:14.720   3rd Qu.:14.89    3rd Qu.:16.080   3rd Qu.: 4.965    3rd Qu.: 5.471    3rd Qu.: 5.848
Max.   :21.770   Max.   :21.770   Max.   :21.770   Max.   :21.770   Max.   :21.77    Max.   :21.770   Max.   :16.000    Max.   :16.000    Max.   :16.000
NA's   :120
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.786       Min.   :-3.510       Min.   : 2.070
1st Qu.: 1.225       1st Qu.: 1.096       1st Qu.: 6.250
Median : 3.000       Median : 3.069       Median : 7.871
Mean   : 3.397       Mean   : 3.507       Mean   : 7.935
3rd Qu.: 5.000       3rd Qu.: 5.643       3rd Qu.: 9.482
Max.   :16.000       Max.   :16.000       Max.   :21.770
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Satyam Vatts
Avneet Kaur

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dt_pex_apache_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i
Min.   : 0.000       Min.   : 0.000       Min.   : 0.000       Min.   : 0.000       Min.   : 0.000       Min.   :-4.259       Min.   :-2.417       Min.   :-1.373
1st Qu.: 2.000       1st Qu.: 1.000       1st Qu.: 0.620       1st Qu.: 0.620       1st Qu.: 1.000       1st Qu.: 1.000       1st Qu.: 0.000       1st Qu.: 1.000
Median : 4.000       Median : 3.000       Median : 3.000       Median : 2.000       Median : 3.000       Median : 1.000       Median : 2.000       Median : 2.181
Mean   : 3.971       Mean   : 3.672       Mean   : 3.317       Mean   : 3.381       Mean   : 3.551       Mean   : 3.446       Mean   : 1.259       Mean   : 1.838       Mean   : 2.357
3rd Qu.: 6.000       3rd Qu.: 6.000       3rd Qu.: 6.000       3rd Qu.: 6.000       3rd Qu.: 6.000       3rd Qu.: 6.000       3rd Qu.: 2.166       3rd Qu.: 3.000       3rd Qu.: 3.417
Max.   :16.000       Max.   :16.000       Max.   :16.000       Max.   :16.000       Max.   :16.000       Max.   :16.000       Max.   : 9.000       Max.   : 9.000       Max.   : 9.000
NA's   :83
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-0.8638      Min.   :-4.477       Min.   : 0.000
1st Qu.: 0.4658      1st Qu.: 0.000       1st Qu.: 2.151
Median : 2.0000      Median : 1.017       Median : 3.632
Mean   : 2.2201      Mean   : 1.224       Mean   : 3.844
3rd Qu.: 3.4040      3rd Qu.: 2.072       3rd Qu.: 5.000
Max.   : 9.6824      Max.   : 9.000       Max.   :16.000

dt_pex_apache_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i
Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :-0.8389      Min.   :-0.294       Min.   :-0.3729
1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.: 1.0000      1st Qu.: 1.000       1st Qu.: 1.0000
Median :2.000        Median :2.000        Median :2.000        Median :3.000        Median :3.000        Median : 1.2471      Median : 1.274       Median : 1.2411
Mean   :1.962        Mean   :2.376        Mean   :2.394        Mean   :3.121        Mean   :3.479        Mean   : 1.3873      Mean   : 1.394       Mean   : 1.4114
3rd Qu.:3.000        3rd Qu.:4.000        3rd Qu.:4.000        3rd Qu.:6.000        3rd Qu.:6.000        3rd Qu.: 2.0000      3rd Qu.: 2.000       3rd Qu.: 2.0000
Max.   :9.000        Max.   :9.000        Max.   :9.000        Max.   :9.000        Max.   :9.000        Max.   : 4.0000      Max.   : 4.000       Max.   : 4.0000
NA's   :85
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.0667      Min.   :-0.1465      Min.   :0.000
1st Qu.: 0.9769      1st Qu.: 1.0000      1st Qu.:1.320
Median : 1.2771      Median : 1.2541      Median :2.000
Mean   : 1.3806      Mean   : 1.3913      Mean   :1.966
3rd Qu.: 2.0000      3rd Qu.: 2.0000      3rd Qu.:2.400
Max.   : 4.0000      Max.   : 4.0000      Max.   :9.000

dt_pex_imrie_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.0          Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :-0.6513      Min.   :-1.6532      Min.   :-0.88433
1st Qu.:1.0          1st Qu.:1.000        1st Qu.:1.000        1st Qu.:1.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.: 0.0000      1st Qu.: 0.0000      1st Qu.: 0.01884
Median :2.0          Median :2.000        Median :2.000        Median :1.000        Median :1.000        Median :1.000        Median : 0.9868      Median : 0.9937      Median : 1.00000
Mean   :1.5          Mean   :1.582        Mean   :1.679        Mean   :1.388        Mean   :1.194        Mean   :1.279        Mean   : 0.7885      Mean   : 0.7595      Mean   : 0.79470
3rd Qu.:2.0          3rd Qu.:2.000        3rd Qu.:3.000        3rd Qu.:2.000        3rd Qu.:2.000        3rd Qu.:2.000        3rd Qu.: 1.1326      3rd Qu.: 1.0771      3rd Qu.: 1.19439
Max.   :4.0          Max.   :4.000        Max.   :4.000        Max.   :4.000        Max.   :4.000        Max.   :4.000        Max.   : 3.0000      Max.   : 3.0000      Max.   : 3.00000
NA's   :83
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.8201      Min.   :-1.42340     Min.   :0.000
1st Qu.: 0.0000      1st Qu.: 0.09436     1st Qu.:1.000
Median : 0.9151      Median : 0.98999     Median :1.340
Mean   : 0.7767      Mean   : 0.81726     Mean   :1.451
3rd Qu.: 1.1641      3rd Qu.: 1.18040     3rd Qu.:2.000
Max.   : 3.0000      Max.   : 3.00000     Max.   :4.000

dt_pex_imrie_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.0000       Min.   :0.0000       Min.   :0.0000       Min.   :0.0000       Min.   :0.0000       Min.   :-1.973       Min.   :-1.479       Min.   :-0.4614
1st Qu.:0.0000       1st Qu.:0.0000       1st Qu.:0.0000       1st Qu.:0.0000       1st Qu.:0.0000       1st Qu.: 0.000       1st Qu.: 0.000       1st Qu.: 0.2070
Median :1.0000       Median :0.0000       Median :1.000        Median :1.0000       Median :0.0000       Median : 1.169       Median : 1.000       Median : 1.1000
Mean   :0.7468       Mean   :0.5152       Mean   :0.703        Mean   :0.7697       Mean   :0.8364       Mean   :0.7758       Mean   : 1.558       Mean   : 1.212       Mean   : 1.5889
3rd Qu.:1.0000       3rd Qu.:1.0000       3rd Qu.:1.000        3rd Qu.:1.0000       3rd Qu.:1.0000       3rd Qu.:1.0000       3rd Qu.: 2.735       3rd Qu.: 2.000       3rd Qu.: 2.4687
Max.   :3.0000       Max.   :3.0000       Max.   :3.000        Max.   :3.0000       Max.   :3.0000       Max.   :3.0000       Max.   : 7.388       Max.   : 7.000       Max.   : 7.0000
NA's   :86
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.8344      Min.   :-2.046       Min.   :0.0000
1st Qu.: 0.5525      1st Qu.: 0.000       1st Qu.:0.5300
Median : 1.2776      Median : 1.000       Median :0.8500
Mean   : 1.7730      Mean   : 1.346       Mean   :0.7819
3rd Qu.: 2.9755      3rd Qu.: 2.187       3rd Qu.:1.0000
Max.   : 7.0000      Max.   : 7.000       Max.   :3.0000

dt_pex_sofa_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :-3.1795      Min.   :-2.9660      Min.   :-2.403
1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.: 0.0000      1st Qu.: 0.0000      1st Qu.: 0.000
Median :1.000        Median :1.000        Median :1.000        Median :1.000        Median :1.000        Median :2.000        Median : 0.7956      Median : 0.8391      Median : 1.000
Mean   :1.422        Mean   :1.873        Mean   :1.782        Mean   :1.558        Mean   :1.909        Mean   :2.006        Mean   : 0.8962      Mean   : 0.9381      Mean   : 1.149
3rd Qu.:2.500        3rd Qu.:3.000        3rd Qu.:3.000        3rd Qu.:3.000        3rd Qu.:3.000        3rd Qu.:3.000        3rd Qu.: 2.0000      3rd Qu.: 1.6768      3rd Qu.: 2.000
Max.   :7.000        Max.   :7.000        Max.   :7.000        Max.   :7.000        Max.   :7.000        Max.   :7.000        Max.   : 8.0000      Max.   : 8.0000      Max.   : 8.000
NA's   :82
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.598       Min.   :-1.7570      Min.   :0.000
1st Qu.: 0.000       1st Qu.: 0.0000      1st Qu.:0.600
Median : 1.000       Median : 0.8722      Median :1.120
Mean   : 1.307       Mean   : 1.0022      Mean   :1.507
3rd Qu.: 2.000       3rd Qu.: 1.7539      3rd Qu.:2.060
Max.   : 8.000       Max.   : 8.0000      Max.   :7.000

dt_pex_sofa_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :0.000        Min.   :-2.669       Min.   :-0.2538      Min.   :-7.699
1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:0.000        1st Qu.:12.729       1st Qu.:12.3093      1st Qu.:11.000
Median :1.000        Median :0.000        Median :1.000        Median :1.000        Median :2.000        Median :1.000        Median :16.011       Median :16.8871      Median :15.290
Mean   :1.171        Mean   :1.133        Mean   :1.624        Mean   :1.564        Mean   :2.545        Mean   :1.752        Mean   :17.025       Mean   :17.0302      Mean   :15.934
3rd Qu.:2.000        3rd Qu.:2.000        3rd Qu.:3.000        3rd Qu.:2.000        3rd Qu.:4.000        3rd Qu.:3.000        3rd Qu.:21.198       3rd Qu.:21.0000      3rd Qu.:20.525
Max.   :8.000        Max.   :8.000        Max.   :8.000        Max.   :8.000        Max.   :8.000        Max.   :8.000        Max.   :46.000       Max.   :46.0000      Max.   :46.000
NA's   :89
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-14.01       Min.   : 4.565       Min.   :0.000
1st Qu.: 12.10       1st Qu.:13.211       1st Qu.:0.730
Median : 15.41       Median :17.364       Median :1.000
Mean   : 16.42       Mean   :17.700       Mean   :1.216
3rd Qu.: 21.00       3rd Qu.:21.000       3rd Qu.:1.660
Max.   : 46.00       Max.   :46.000       Max.   :8.000

dt_pex_alob_t_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 6.00        Min.   : 6.00        Min.   : 6.00        Min.   : 6.00        Min.   : 6.00        Min.   :-2.026       Min.   :-2.168       Min.   : 3.493
1st Qu.:13.38        1st Qu.: 9.00        1st Qu.:10.00        1st Qu.:10.00        1st Qu.: 9.00        1st Qu.:11.723       1st Qu.:12.305       1st Qu.:12.000
Median :18.00        Median :13.00        Median :16.00        Median :18.00        Median :14.00        Median :15.648       Median :15.846       Median :14.625
Mean   :19.72        Mean   :16.35        Mean   :19.53        Mean   :21.29        Mean   :17.88        Mean   :19.78        Mean   :15.436       Mean   :15.626       Mean   :15.257
3rd Qu.:25.00        3rd Qu.:22.00        3rd Qu.:28.00        3rd Qu.:32.00        3rd Qu.:25.00        3rd Qu.:32.00        3rd Qu.:18.522       3rd Qu.:18.562       3rd Qu.:18.267
Max.   :46.00        Max.   :46.00        Max.   :46.00        Max.   :46.00        Max.   :46.00        Max.   :46.00        Max.   :35.097       Max.   :33.000       Max.   :33.000
NA's   :109
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
Min.   :-1.425       Min.   :-5.626       Min.   : 6.00
1st Qu.:11.875       1st Qu.:11.733       1st Qu.:16.68
Median :14.745       Median :15.085       Median :19.00
Mean   :15.000       Mean   :15.071       Mean   :19.27
3rd Qu.:18.000       3rd Qu.:18.012       3rd Qu.:21.00
Max.   :33.000       Max.   :33.000       Max.   :46.00

dt_pex_alob_s_lan1 mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
Min.   : 5.00        Min.   : 5.00        Min.   : 5.00        Min.   : 5.00        Min.   : 5.00        0: 34                0: 31                0: 37
1st Qu.:13.00        1st Qu.:12.00        1st Qu.:11.00        1st Qu.:11.00        1st Qu.:11.00        1:131                1:134                1:128
Median :17.00        Median :24.00        Median :20.00        Median :24.00        Median :18.00        Median :14.00
Mean   :16.92        Mean   :21.22        Mean   :19.12        Mean   :20.18        Mean   :18.23        Mean   :16.57
3rd Qu.:20.00        3rd Qu.:25.00        3rd Qu.:25.00        3rd Qu.:25.00        3rd Qu.:25.00        3rd Qu.:24.00
Max.   :33.00        Max.   :33.00        Max.   :33.00        Max.   :33.00        Max.   :33.00        Max.   :33.00
NA's   :120
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
0: 26                0: 34                Min.   : 5.00
1:139                1:131                1st Qu.:15.54
                                          Median :16.52
                                          Mean   :16.72
                                          3rd Qu.:17.97
                                          Max.   :33.00
```

```
   kq      mice_imp_vtc1[, i] mice_imp_vtc2[, i] mice_imp_vtc3[, i] mice_imp_vtc4[, i] mice_imp_vtc5[, i] amelia_imp_vtc1[, i] amelia_imp_vtc2[, i] amelia_imp_vtc3[, i]
0   : 20   0: 47              0: 49              0: 50              0: 50              0: 47              0:86               0:86               0:86
1   :105   1:118              1:116              1:115              1:115              1:118              1:79               1:79               1:79
NA's: 40
amelia_imp_vtc4[, i] amelia_imp_vtc5[, i] missfor_imp_vtc1[, i]
0:86                 0:86                 0: 20
1:79                 1:79                 1:145
```

In the above we have compared the summary statistics of all the dataset imputed using the MICE, Amelia and Missforest. Based on the comparison of mean, median, quartiles, minimum and maximum with the original dataset with NA values, the 3rd Dataset denoted by mice_imp_vtc3 is the

closest one to the original. Apart from that the 1st dataset in the Amelia imputations denoted by amelia_imp_vtc1 is the one that resembles the distribution of original dataset closely. Since the missforest creates a single dataset, we just take it for imputation. Comparing the 3 datasets it can be seen that:

- The MICE imputations are the closest to the distribution of most of the variables of original dataset.
- Then comes the Amelia package that resembles some of the variables closely regarding distribution and statistics.
- The missforest packages has the least amount of resemblance regarding distribution & summary statistics.

Based on the comparisons, MICE imputations are better and thus would produce better results.

Regression Modelling: Variable Identification

The complete study is based on the analysis whether the two treatments are effective in treating the Acute Pancreatitis. Thus, the main variable that identifies the success or failure of the study is 'kq' which identifies the patient as 'Dead 'or 'Alive'. Thus, the following variables are taken into consideration for building regression model:

Response Variable: **kq**

Explanatory Variable: Rest of the variables except ID since it is a nominal variable without any information about the outcome.

Regression Modelling: Building Model

The regression analysis was done on the selected 3 datasets from the above imputations:

- Mice: 3rd Dataset named as mice_imp_vtc3
- Amelia: 1st Dataset named as amelia_imp_vtc1
- Missforest: Only one dataset named missfor_imp_vtc1 is generated

The following steps are performed for each dataset:

1. Split the data into training and test dataset with a split ratio of 0.8.
2. Create training and test dataset for cross-validation for all 3 datasets
3. Use glm() function in R with family as 'binomial' to perform Logistic Regression on Training dataset for all the three datasets.

The result of the regression models is given below:

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MICE:

Model Call:

```
Call:
glm(formula = kq ~ ., family = binomial, data = train_mice, maxit = 100)

Deviance Residuals:
       Min          1Q      Median          3Q         Max
-3.445e-06  -2.110e-08   2.110e-08   1.405e-06   2.761e-06
```

```
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 1.6194e+02  on 131  degrees of freedom
Residual deviance: 2.6679e-10  on  46  degrees of freedom
AIC: 172

Number of Fisher Scoring iterations: 27
```

Test Data Probabilities:

```
          23           26           27           32           33           35
 2.220446e-16 1.797886e-02 1.000000e+00 1.000000e+00 2.220446e-16 1.000000e+00
```

Accuracy on Test Data:

```
[1] 0.8181818
```

Amelia:

Model Call:

```
Call:
glm(formula = kq ~ ., family = binomial, data = train_amelia,
    maxit = 100)

Deviance Residuals:
       Min          1Q      Median          3Q         Max
-3.719e-06   2.110e-08   2.110e-08   1.306e-06   3.674e-06
```

```
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 1.3375e+02  on 131  degrees of freedom
Residual deviance: 2.5696e-10  on  45  degrees of freedom
AIC: 174

Number of Fisher Scoring iterations: 27
```

Test Data Probabilities:

```
          1           3           6          10          14          16
4.270098e-01 1.000000e+00 1.000000e+00 1.000000e+00 2.220446e-16 1.000000e+00
```

Model Accuracy on Test Data:

```
[1] 0.6969697
```

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missForest:

```
Call:
glm(formula = kq ~ ., family = binomial, data = train_missfor,
    maxit = 100)

Deviance Residuals:
       Min          1Q      Median          3Q         Max
-4.270e-06   2.110e-08   2.461e-07   1.620e-06   3.232e-06
```

```
(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 9.7504e+01  on 131  degrees of freedom
Residual deviance: 3.2666e-10  on  45  degrees of freedom
AIC: 174

Number of Fisher Scoring iterations: 27
```

Test Data Probabilities:

```
           6           15           19           20           25           31
2.220446e-16 1.000000e+00 1.000000e+00 2.220446e-16 1.000000e+00 2.220446e-16
```

Model Accuracy on Test Data:

```
[1] 0.6060606
```

Based on the results above the following can be interpreted:

- The accuracy of the model is highest for the MICE dataset. It is because the statistical property of the dataset is not changed much after imputation using MICE as already seen in the comparison of datasets.
- The other two datasets have similar accuracies but are lower than that of MICE.
- The p-value of variables in the prediction models are 0 or 1 due to low number of observations as compared to data. Thus, the glm () function cannot distinguish the p-values.
- The results observed are for a highly sparsed data with huge number of variables and less observations, thus, the results can be different than reality.

Summary

In this analysis, we have analysed the AP dataset to figure out the various imputation techniques to handle missing data in sparsed datasets. We have compared the techniques and performed regression to verify the best imputations. In essence we have performed following activities:

- Cleaned the datatset removing outliers, invalid ranges etc.
- Performed missing data imputations based on popular packages MICE, Amelia and missForest.
- Compared the results of imputations and discovered that Mice is the best imputation techniques among the given three.
- Performed Logistic Regression taking outcome of treatments (Dead or Alive) as the response variable.
- Compared the results of regression on test dataset (20% of complete) and discovered that MICE imputations have the highest accuracy.

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Appendix:

Rcode:

 # Loading libraries

```{r}

library(readxl)

library(ggplot2)

library(mice)

library(Amelia)

library(missForest)

```

 # Importing dataset

```{r}

vtc.df<-read_xlsx("APNotCleanedData.xlsm", sheet =1, na = c("","NA"))

```

#Filtered dataset

```{r}

vars_to_remove <-
c(4,5,6,7,10,11,14,17,18,20,21,22,23,24,28,30,37,40,41,42,44,45,47,51,52,53,54,55,57,60,61,62,63,64,66,70,72,74,76,78,82,84,86,87,88,89,90,91,92,93,94,95,96,97,99,101,103,105,107,108,110,112,113,115,116,118,121,123,124,126,128,130,132,133,135,137,138,140,142,143,145,147,148,150,152,153,155,157,158,172,177,178,179,182,183,186,187)

vtc.subset<- vtc.df[-vars_to_remove]

```

 # Analysing Data

```{r}

summary(vtc.subset)

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```

# Cleaning invalid values

## Cleaning Hours Data

```{r}

unique(vtc.subset$dt_pex_sauvv)

hour_clean <- function (data_val) {
 hr_min <- data.frame("hr"=c(0), "mins"=c(0))
 if (grepl('gio', data_val)) {hrs <- strcapture('gio ([[:digit:]]+).*', data_val,proto =
data.frame(hr=integer()))
 hr_min$hr<-hrs}
 else {
  if (grepl(',', data_val)){
   hr_min <- strcapture("([[:digit:]]+), ?([[:digit:]]+)",
                 data_val,
                 proto = data.frame(hr=integer(), mins=integer()))
   hr_min[is.na(hr_min)] <- 0
  }
  if (hr_min$hr == 0 && hr_min$mins == 0){
    hr_min <- strcapture("([[:digit:]]+)h([[:digit:]]+).*",
                 data_val,
                 proto = data.frame(hr=integer(), mins=integer()))
    hr_min[is.na(hr_min)] <- 0
  }

  if (hr_min$hr == 0 && hr_min$mins == 0){
   hr_min$hr <- as.numeric(data_val)
  }
 }
 hrs <- as.numeric(hr_min$hr) + (as.numeric(hr_min$mins)/60)
 return(hrs)
```
```

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```
}

vtc.subset$dt_pex_sauvv <-as.numeric(lapply(vtc.subset$dt_pex_sauvv, hour_clean))

unique(vtc.subset$dt_pex_sauvv)
```

Cleaning Categorical Variables

```{r}
vtc.subset$ts_giadinh[is.na(vtc.subset$ts_giadinh)] <- 'khong'

vtc.subset$ts_ruou[is.na(vtc.subset$ts_ruou)] <- 'Khong'

vtc.subset$ts_ruou_nam[is.na(vtc.subset$ts_ruou_nam)] <- 0

apply(vtc.subset[c('ts_dtd', 'ts_vtc','cls_sa_tuy_t0','cls_sa_mat_t0','cls_ct_dichob_lan1')], 2, unique)

vtc.subset$ts_dtd[vtc.subset$ts_dtd=='3']<-'Khong'

vtc.subset$ts_vtc[is.na(vtc.subset$ts_vtc) | vtc.subset$ts_vtc %in% c('3','5')]<-'Khong'

vtc.subset$non[is.na(vtc.subset$non)] <- 0

vtc.subset$cls_sa_tuy_t0 <- unlist(lapply(vtc.subset$cls_sa_tuy_t0, tolower))

vtc.subset$cls_sa_tuy_t0[vtc.subset$cls_sa_tuy_t0 %in% c('vt man', 'han che tham kham', 'tang kt dua tuy', 'khong quan sat duoc', 'khong quan sat', 'kho qs', 'dich xa', 'kho thay')] <- 'khong'

vtc.subset$cls_sa_tuy_t0[is.na(vtc.subset$cls_sa_tuy_t0)] <- 'khong'

vtc.subset$cls_sa_dichob_t0[is.na(vtc.subset$cls_sa_dichob_t0)]<- 'Khong'

vtc.subset$cls_sa_mat_t0[vtc.subset$cls_sa_mat_t0 %in% c('0', 'khong')] <- 'khong'

vtc.subset$cls_sa_mat_t0[vtc.subset$cls_sa_mat_t0 %in% c('bt', 'polyp tu')] <- 'co'

# Replacing 2 and dich tu do with khong as it is in cls_sa_dichob_t0 and replacing 'it' and 'Nhieu' with co as it has co in cls_sa_dichob_t0

capt <- strcapture('(K|k)h.*', vtc.subset$cls_ct_dichob_lan1, proto = data.frame(resp=character()))

vtc.subset$cls_ct_dichob_lan1[!is.na(capt$resp)] <- unlist(lapply(capt$resp[!is.na(capt$resp)], tolower))

capt <- strcapture('(C|c).*', vtc.subset$cls_ct_dichob_lan1, proto = data.frame(resp=character()))

vtc.subset$cls_ct_dichob_lan1[!is.na(capt$resp)] <- unlist(lapply(capt$resp[!is.na(capt$resp)], tolower))

vtc.subset$cls_ct_dichob_lan1[vtc.subset$cls_ct_dichob_lan1 %in% c('k', '2', 'dich tu do')] <- 'khong'

vtc.subset$cls_ct_dichob_lan1[vtc.subset$cls_ct_dichob_lan1 %in% c('c','it','Nhieu', 'day 50mm')] <- 'co'
```

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 # levels(vtc.subset$kq)<- c(levels(vtc.subset$kq),1)

vtc.subset$kq[vtc.subset$kq == 'Song']<- 1

 # vtc.subset$kq<-droplevels(vtc.subset$kq)

vtc.subset$pex[is.na(vtc.subset$pex)]<- 0

vtc.subset$bcxa[is.na(vtc.subset$bcxa)] <- 0

apply(vtc.subset[c('ts_dtd', 'ts_vtc','cls_sa_tuy_t0','cls_sa_mat_t0','cls_ct_dichob_lan1')], 2, unique)

```

kq - Replace song with '1', na values to be imputed using packages

bcxa - no outliers, na values not possible to impute as pex treatment not done. Thus replacing NA with 0.

pex - no outliers, replacing Na values with 0 as by analysing data we realized no pex treatment was done for those patients and we can find values for treatment variables

Factoring Categorical Variables

```{r}

cat_vars <- c(3,5,6,8,9,10,20,21,22,23,95,96,97)

vtc.subset[cat_vars] <- lapply(vtc.subset[cat_vars], as.factor)

```

Cleaning Numerical Variables

Summary of Numerical Variables

```{r}

summary(vtc.subset[-cat_vars])

```

Boxplots of Numerical Variables

```{r}

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```
for (i in 1:ncol(vtc.subset[-cat_vars])){

  boxplot(unlist(vtc.subset[-cat_vars][,i]), xlab = colnames(vtc.subset[-cat_vars][,i]),main =
paste("Boxplot of" , colnames(vtc.subset[-cat_vars][,i])),col = 'orange')

}
```

Observations and comments

dt_pex_apache_t_lan1,dt_pex_apache_s_lan1 - within range 0 to 71 , hence no outliers, na values not possible to impute as pex treatment not done

dt_pex_imrie_t_lan1,dt_pex_imrie_s_lan1 - within range 0 to 8, no outliers, na values not possible to impute as pex treatment not done

dt_pex_sofa_t_lan1, dt_pex_sofa_s_lan1 - within range 0 to 24, no outliers, na values not possible to impute as pex treatment not done

dt_pex_alob_t_lan1, dt_pex_alob_s_lan1 - within range, no outliers, na values not possible to impute as pex treatment not done

- Negative balance fluid values are fine as fluid intake is more than fluid output.

- dt_dich_bilan_t24 - 2 values greater than 10,000 (10700 and 23200). These values can be calculated by subtracting dt_dich_vao_t24 and dt_dich_ra_t24. It can be noticed there's an extra zero at end . The correct values should be 1070 and 2320.

- dt_pex_chol_t_lan1 : 2 values out of range, replace them with NA as we dont have corresponding dt_pex_chol_s_lan1 for them(i.e cholestrol after pex). Hence no analysis for chiolestrol levels can be done for these patients

- dt_pex_ngaybenh -delete this variable as we already have dt_pex_sauvv

- dt_pex_tri_t_lan1, dt_pex_tri_s_lan1 - no out of range values

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- delete dt_dich_vao and dt_dich_ra variables (70 to 75) as we already have calculated field of balance fluid

- cls_km_pf_t0 - 2 out of range values for obs 18 and 70 (values 3.8 and 33.3). Value 33.3 is in KPA instead of mmHg so will convert it to mmHg. Value 3.8 is invalid hence replace by NA.

-cls_km_be_t30, cls_km_be_t0 : base excess can have negative values , so no out of range values.

- cls_km_hco3_t0,

1. value cannot be negative (-18.6), change to positive

2. 77.6 is invalid value, hence replace with NA

3. it seems 17.08 is misspelled as 1708 based on the value of HCO3 at t30 which is 18.6, so replace 1708 with 17.08

- cls_km_hco3_t30

1. value cannot be negative (-18.9), change to positive

2. it seems 15.5 is misspelled as 155 based on the value of HCO3 at t0 which is 14.2, so replace 155 with 15.5

- cls_km_pao2_t0, cls_km_pao2_t30 no out of range values

- cls_km_paco2_t0 - 97 is out of range value, seems like PaO2 value was filled instead (as it is same in that column), replace with NA

- cls_km_ph_t0 : out of range value 741 should be replaced with 7.41 as PH value lies in that range.

- cls_sh_ka_t30 : Out of range values detected. Replace 137 with NA. Replae 33 with 3.3 as it seems it was misspelled based on cls_sh_ka_t0

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```{r}

# BMI has an invalid value of 258.

vtc.subset$ls_tt_bmi_t0[vtc.subset$ls_tt_bmi_t0 == 258] <-  25.8

# Temperature has an invalid value of 366

vtc.subset$ls_tn_nhiet_t0[vtc.subset$ls_tn_nhiet_t0 == 366] <-36.6

# Percentage values

vtc.subset$cls_hh_hct_t0[vtc.subset$cls_hh_hct_t0>1] <- NaN


# SInce the values are increasing for later observations, there is an issue of decimal number which can be corrected like this. It also has a 879 value which doesn't has any future observations so replaced by NaN.

vtc.subset$cls_hh_pt_t0[vtc.subset$cls_hh_pt_t0 == 565] <- 56.5

vtc.subset$cls_hh_pt_t0[vtc.subset$cls_hh_pt_t0 > 150] <- NaN


# Removed invalid value of more than 6k as it is out of range.

vtc.subset$cls_hh_pt_t30[vtc.subset$cls_hh_pt_t30 > 150] <- NaN


# Based on value at t0, this must have a decimal point error which is corrected below.

vtc.subset$cls_hh_pt_t72[vtc.subset$cls_hh_pt_t72 == 0.98] <- 98

# Since the outlier value is too high and there is NA for corresponding t30 value, we can not determine the error hence treat it as NA.

vtc.subset$cls_hh_aptt_t0[vtc.subset$cls_hh_aptt_t0 > 5] <- NaN


vtc.subset$cls_hh_fib_t0[vtc.subset$cls_hh_fib_t0 > 15] <- NaN


# Decimal value issue as discoverd from t30 and t72 values

vtc.subset$cls_sh_ure_t0[vtc.subset$cls_sh_ure_t0 == 193] <- 19.3


#Creatinine levels are in micromoles per liter
```

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 # The cholestrol values are also NA for after 30hrs for 99.

vtc.subset$cls_sh_chol_t0[vtc.subset$cls_sh_chol_t0==99] <- NaN

vtc.subset$cls_sh_na_t0[vtc.subset$cls_sh_na_t0 == 4.2] <- NA

vtc.subset$cls_sh_na_t30[vtc.subset$cls_sh_na_t30 == 3.7] <- NA

vtc.subset$cls_sh_ka_t30[vtc.subset$cls_sh_ka_t30 == 33]<- 3.3

vtc.subset$cls_sh_ka_t30[vtc.subset$cls_sh_ka_t30 == 137] <- NA

vtc.subset$cls_km_ph_t0[vtc.subset$cls_km_ph_t0 == 741]<- 7.41

vtc.subset$cls_km_paco2_t0[vtc.subset$cls_km_paco2_t0 == 97]<- NA

vtc.subset$cls_km_hco3_t0[vtc.subset$cls_km_hco3_t0 == -18.6] <- 18.6

vtc.subset$cls_km_hco3_t0[vtc.subset$cls_km_hco3_t0 == 77.6]<- NA

vtc.subset$cls_km_hco3_t0[vtc.subset$cls_km_hco3_t0 == 1708] <- 17.08

vtc.subset$cls_km_hco3_t30[vtc.subset$cls_km_hco3_t30 == -18.9] <- 18.9

vtc.subset$cls_km_hco3_t30[vtc.subset$cls_km_hco3_t30 == 155] <- 15.5

vtc.subset$cls_km_pf_t0[vtc.subset$cls_km_pf_t0 == 3.8] <- NA

vtc.subset$cls_km_pf_t0[vtc.subset$cls_km_pf_t0 == 33.3] <- 33.3 * 7.5

vtc.subset$dt_dich_bilan_t24[vtc.subset$dt_dich_bilan_t24 == 10700] <- 1070

vtc.subset$dt_dich_bilan_t24[vtc.subset$dt_dich_bilan_t24 == 23200] <- 2320

vtc.subset$dt_pex_chol_t_lan1[vtc.subset$dt_pex_chol_t_lan1 == 99]<- NA

vtc.subset$dt_pex_chol_t_lan1[vtc.subset$dt_pex_chol_t_lan1 == 135.13]<- NA

```

**## Deleting Variables:**
```

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```{r}

#Remove Albumin as covered in IMRIE Score

vtc.clean = subset(vtc.subset, select = -
c(dt_pex_ngaybenh,dt_dich_vao_t24,dt_dich_vao_t48,dt_dich_vao_t72,dt_dich_ra_t24,dt_dich_ra_t48,dt_dich_ra_t72,cls_sh_alb_t0))
```

Analysing Final Cleaned Dataset

```{r}

clean_cat_vars<-c(3,5,6,8,9,10,20,21,22,23,87,88,89)

summary(vtc.clean)
```

```{r}

for (i in 1:ncol(vtc.clean[-clean_cat_vars])){

  boxplot(unlist(vtc.clean[-clean_cat_vars][,i]), xlab = colnames(vtc.clean[-clean_cat_vars][,i]),main = paste("Boxplot of" , colnames(vtc.clean[-clean_cat_vars][,i])),col = 'orange')

}

apply(vtc.clean[clean_cat_vars],2,unique)
```

```{r}

```

Imputing Missing Data

MICE Imputation:

Step 1: Check percentage of missing data and remove columns with higher than 50% missing data from imputations

```{r}

p_missing <- unlist(lapply(vtc.clean, function(x) sum(is.na(x))))/nrow(vtc.clean)

sort(p_missing[p_missing > 0], decreasing = TRUE)
```

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Step 2: Modify the prediction matrix and imputation methods based on type and data of variables

```{r}

```
vars_miss_more_50 <- c('cls_sh_chol_t30','cls_km_pf_t30',
                       'dt_pex_chol_s_lan1','dt_pex_alob_s_lan1',
                       'cls_km_lac_t30','dt_pex_alob_t_lan1',
                       'cls_hh_pt_t72','cls_km_be_t30',
                       'cls_km_paco2_t30','cls_km_pao2_t30',
                       'cls_km_ph_t30','cls_km_hco3_t30',
                       'dt_pex_chol_t_lan1','cls_hh_bc_t54',
                       'cls_sh_tri_t30','cls_hh_hct_t72',
                       'cls_hh_bc_t72','cls_sh_ure_t72',
                       'dt_pex_sofa_s_lan1','cls_hh_pt_t30',
                       'cls_hh_aptt_t30','dt_pex_sauvv',
                       'cls_hh_fib_t30','dt_pex_imrie_s_lan1',
                       'bcxa','dt_pex_tri_s_lan1',
                       'dt_pex_apache_s_lan1','cls_sa_mat_t0',
                       'dt_pex_tri_t_lan1','dt_pex_apache_t_lan1',
                       'dt_pex_imrie_t_lan1')


mice_imp <- mice(vtc.clean, maxit=0)
pred_mat <- mice_imp$predictorMatrix
pred_meth <- mice_imp$method


pred_mat[,c('ID')]<-0
pred_mat[,vars_miss_more_50]<-0


#Binary Variables
bin_vars <- c('Gender','ts_giadinh','ts_ruou','ts_dtd','ts_vtc','non', 'cls_sa_dichob_t0',
'cls_sa_mat_t0','cls_ct_dichob_lan1','kq','bcxa','pex')
```

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#Unordered Categorical Variable

uno_cat <- c('cls_sa_tuy_t0')

pred_meth[bin_vars] <- "logreg"

pred_meth[uno_cat] <- "polyreg"

pred_meth

```

Step 3: Apply MICE imputation on the cleaned dataset

```{r}

mice_imp_final <- mice(vtc.clean, maxit = 5,

predictorMatrix = pred_mat,

method = pred_meth, print = FALSE)

summary(mice_imp_final)

```

Step 4: Extract imputed datasets from mice object

```{r}

mice_imp_vtc1 <- mice::complete(mice_imp_final,1)

mice_imp_vtc2 <- mice::complete(mice_imp_final,2)

mice_imp_vtc3 <- mice::complete(mice_imp_final,3)

mice_imp_vtc4 <- mice::complete(mice_imp_final,4)

mice_imp_vtc5 <- mice::complete(mice_imp_final,5)

```

Pooled Regression

 # ```{r}

 # fitimp <- with(anesimp_long_mids,

 # lm(ft_hclinton ~ manuf + pid_x +

 # patriot_amident + china_econ + LogMANO))

#

 # summary(pool(fitimp))

 # ```

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Amelia Imputation

Step 1: Apply Amelia Imputation using ID as idvars, categorical variables as noms and empri as 8% of number of observations

```{r}
amelia_imp <- amelia(as.data.frame(vtc.clean[-c(20)]),m=5,
                     p2s=1,frontend = FALSE,
                     idvars = c("ID"),noms =
c('Gender','ts_giadinh','ts_ruou','ts_dtd','ts_vtc','non','cls_sa_dichob_t0','cls_sa_mat_t0','cls_ct_dichob_lan1','kq','bcxa', 'pex'),empri = 0.08*nrow(vtc.clean[-c(20)]))
```

Step 2: Extract imputation results from Amelia Object

```{r}
amelia_imp_vtc1<-amelia_imp$imputations[[1]]
amelia_imp_vtc2<-amelia_imp$imputations[[2]]
amelia_imp_vtc3<-amelia_imp$imputations[[3]]
amelia_imp_vtc4<-amelia_imp$imputations[[4]]
amelia_imp_vtc5<-amelia_imp$imputations[[5]]
```

missForest Imputation

```{r}
missfor_imp <- missForest(as.data.frame(vtc.clean), variablewise = TRUE)
missfor_imp_vtc1 <- missfor_imp$ximp
```

Checking results of imputation

```{r}
for (i in 1:ncol(vtc.clean)){
  print(paste(colnames(vtc.clean[,i]), " - ", names(missfor_imp$OOBerror[i]), ":"
,round(missfor_imp$OOBerror[i],4)))
```

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}

```

Comparing the imputed datasets

```{r}

for (i in 1:ncol(vtc.clean)){

if (sum(is.na(vtc.clean[,i]))>0){

print(summary(cbind(vtc.clean[,i],mice_imp_vtc1[,i],mice_imp_vtc2[,i],mice_imp_vtc3[,i],mice_imp_vtc4[,i],mice_imp_vtc5[,i],amelia_imp_vtc1[,i],amelia_imp_vtc2[,i],amelia_imp_vtc3[,i],amelia_imp_vtc4[,i],amelia_imp_vtc5[,i],missfor_imp_vtc1[,i])))

}

}

```

```{r}

for (i in 1:ncol(vtc.clean[-clean_cat_vars])){

hist(unlist(vtc.clean[-clean_cat_vars][,i]), xlab = colnames(vtc.clean[-clean_cat_vars][,i]),main = paste("Histogram of" , colnames(vtc.clean[-clean_cat_vars][,i])),col = 'orange')

}

```

Regression Modelling

```{r}

cor(as.data.frame(vtc.clean))

```

```{r}

require(caTools)

set.seed(101)

sample_mice <- sample.split(mice_imp_vtc3$kq, SplitRatio = .8)

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```
sample_amelia <- sample.split(amelia_imp_vtc1$kq, SplitRatio = .8)
sample_missfor <- sample.split(missfor_imp_vtc1$kq, SplitRatio = .8)

train_mice <- subset(mice_imp_vtc3[-c(1,45,20)], sample_mice == TRUE)
test_mice <- subset(mice_imp_vtc3[-c(1,45,20)], sample_mice == FALSE)

train_amelia <- subset(amelia_imp_vtc1[-c(1)], sample_amelia == TRUE)
test_amelia <- subset(amelia_imp_vtc1[-c(1)], sample_amelia == FALSE)

train_missfor <- subset(missfor_imp_vtc1[-c(1,20)], sample_missfor == TRUE)
test_missfor <- subset(missfor_imp_vtc1[-c(1,20)], sample_missfor == FALSE)

mice_model <- glm(kq~., data=train_mice, family = binomial, maxit=100)
amelia_model <- glm(kq~., data=train_amelia, family = binomial, maxit=100)
missfor_model <- glm(kq~., data=train_missfor, family = binomial, maxit=100)
```

```{r}
summary(mice_model)
```

```{r}
summary(amelia_model)
```

```{r}
summary(missfor_model)
```

#Predict The probabilities

```{r}
library(dplyr)
mice_probabilities <- mice_model %>% predict(test_mice, type = "response")
head(mice_probabilities)
```

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amelia_probabilities <- amelia_model %>% predict(test_amelia, type = "response")

head(amelia_probabilities)

missfor_probabilities <- missfor_model %>% predict(test_missfor, type = "response")

head(missfor_probabilities)

```

#Checking Dummy Coding

```{r}

contrasts(test_mice$kq)

contrasts(test_amelia$kq)

contrasts(test_missfor$kq)

```

#Predict Class of Individual

```{r}

mice_pred.classes <- ifelse(mice_probabilities > 0.5, 1, 0)

head(mice_pred.classes)

amelia_pred.classes <- ifelse(amelia_probabilities > 0.5, 1, 0)

head(amelia_pred.classes)

missfor_pred.classes <- ifelse(missfor_probabilities > 0.5, 1, 0)

head(missfor_pred.classes)

```

 # Model Accuracy

```{r}

mean(mice_pred.classes == test_mice$kq)

mean(amelia_pred.classes == test_amelia$kq)

mean(missfor_pred.classes == test_missfor$kq)

```