



Materials, Methods and Data Analysis of Diabetes Registers

The Diabetes Register of Upper Silesia, Poland

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Special BIRO Academy Meeting
"Coordinated Information Delivery from Diabetes Registers to
improve quality and outcomes in Europe"

Rome 4-5th June 2010

Upper Silesia, Poland Reference Population



Country: Poland
Region: Upper Silesia
Total Population: 4,645,665
Diabetes Prevalence: 0,09%
Type of Data Sources: Hospital
Clinic (Diabetes)

N.Participating Centres: 1

Upper Silesian Register for
children below 15 years old

Upper Silesia, Poland

Reference Diabetes Data



Year: **2010**

Region: Upper Silesia

Total N. Subjects: 839

Total N.Episodes: 1,174

N subjects:

T1: 837 (99,8%)

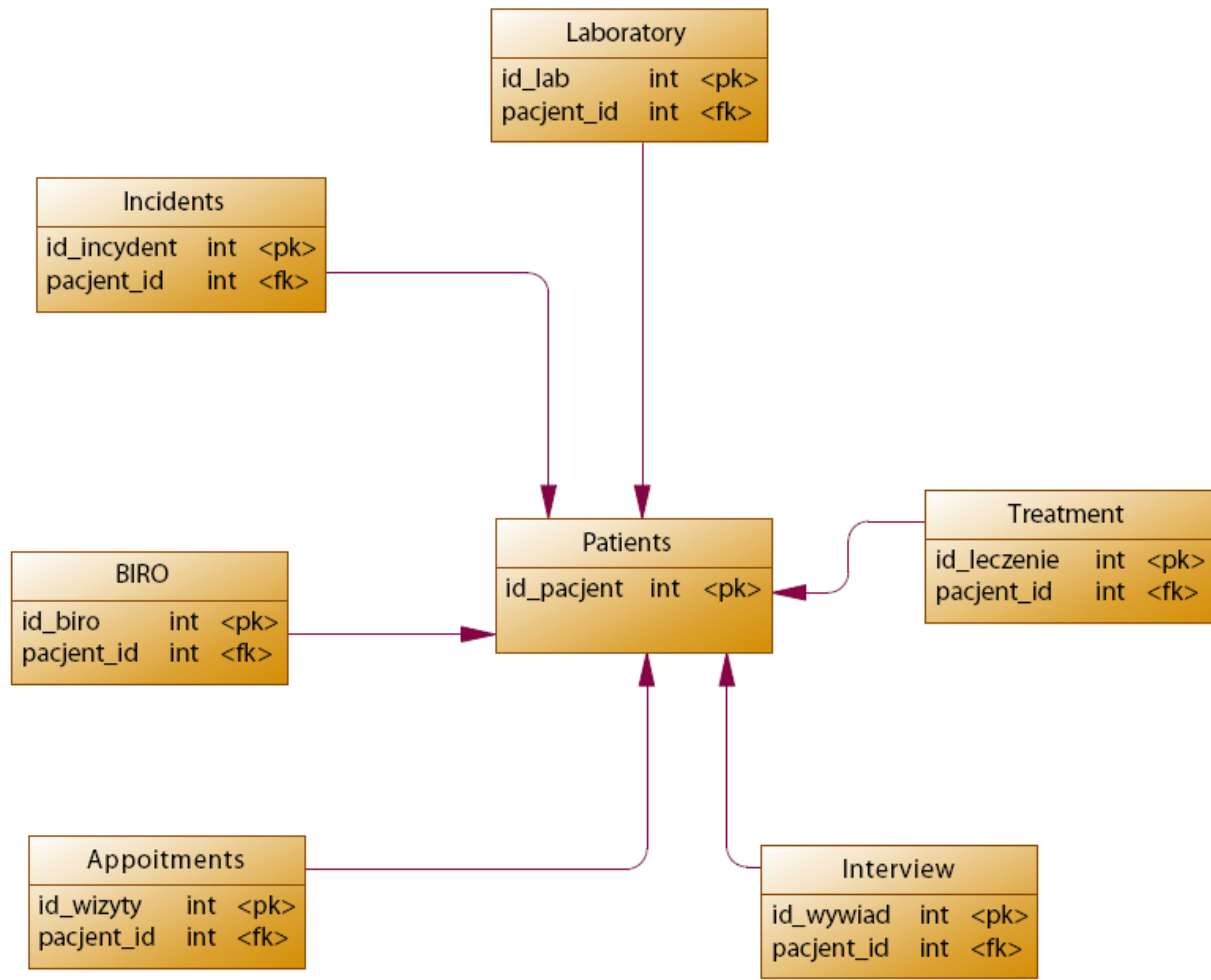
T2: 0 (0%)

MODY 2 (0,2%)

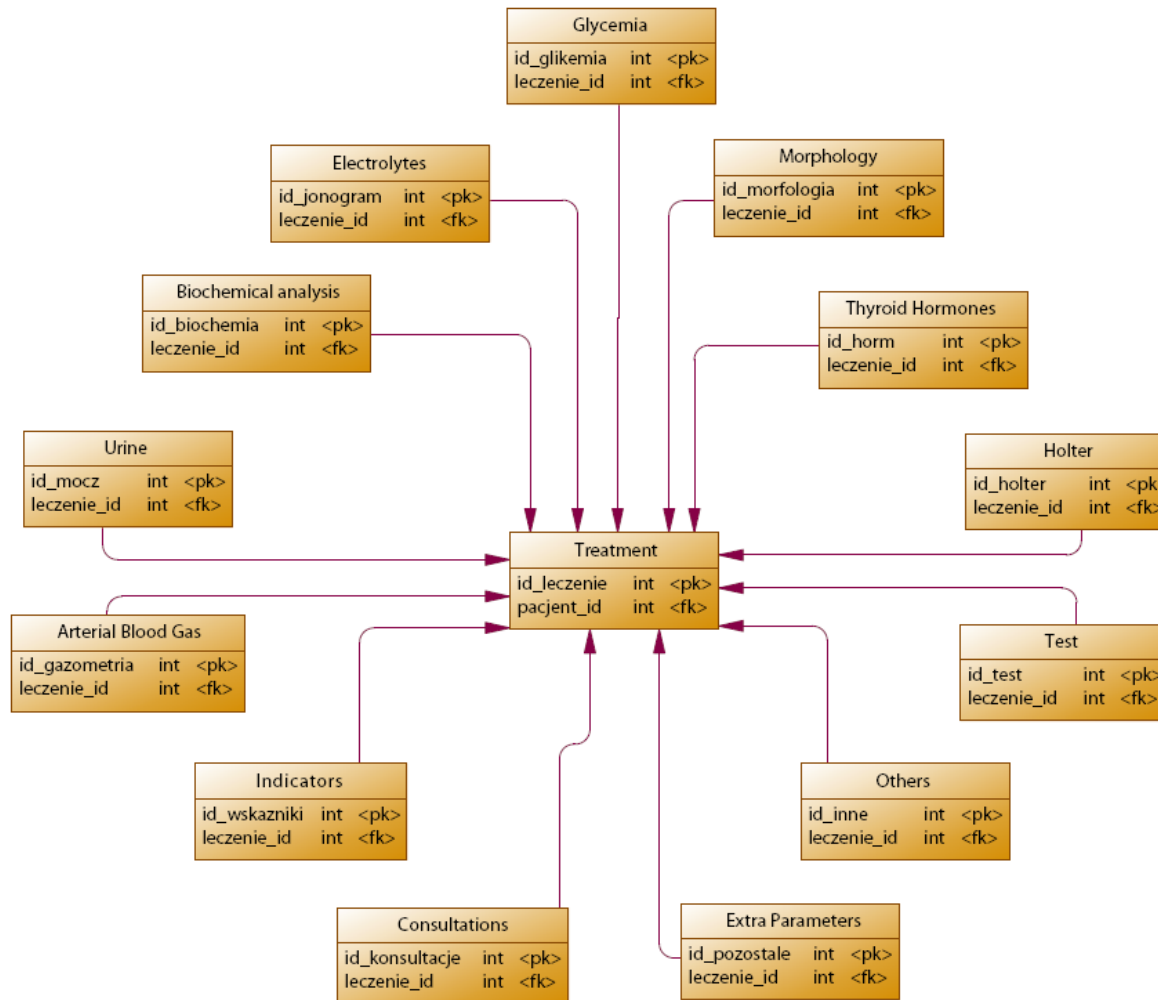
Upper Silesia, Poland Local Database Structure

- Local Hospital Register
- Based on Microsoft SQL Server Express
- Relational 20-table database
- Gathering over 150 parameters
- Multiterminal application working on an intranet network
- Personnel involved in data acquisition:
 - Statisticians
 - Diabetes Nurses
 - Doctors
 - Trainees
- Customisable reports performed by IT specialists from Silesian University of Technology

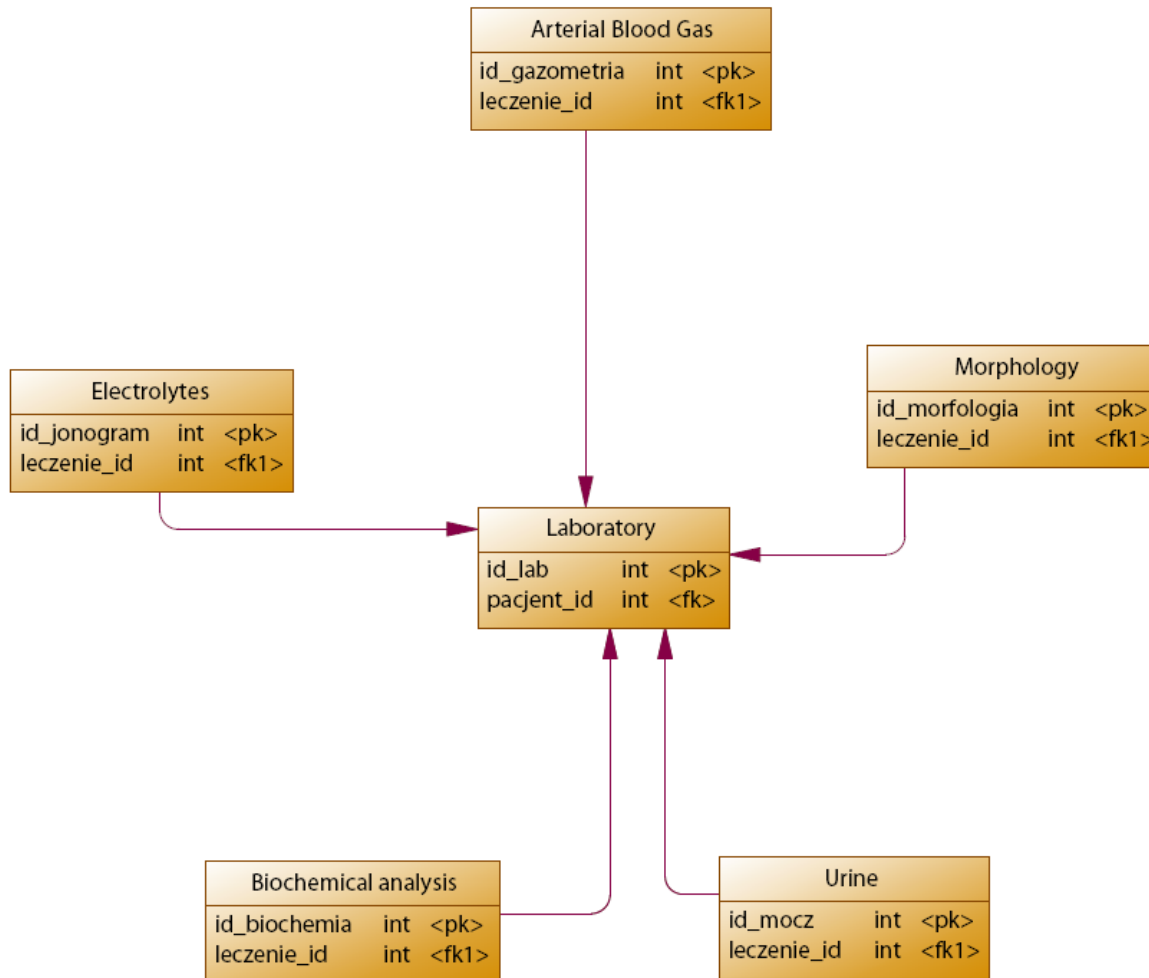
Upper Silesia, Poland Local Database Structure



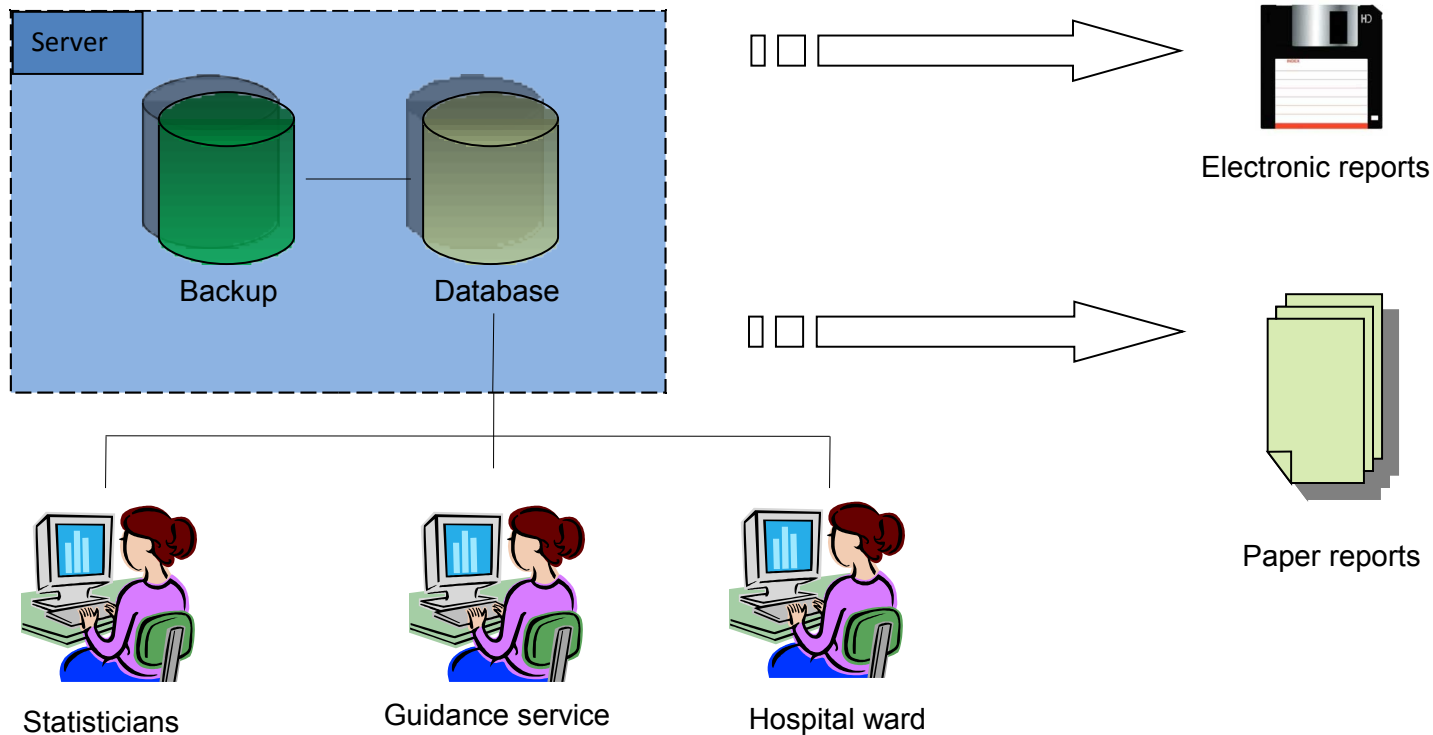
Upper Silesia, Poland Local Database Structure



Upper Silesia, Poland Local Database Structure

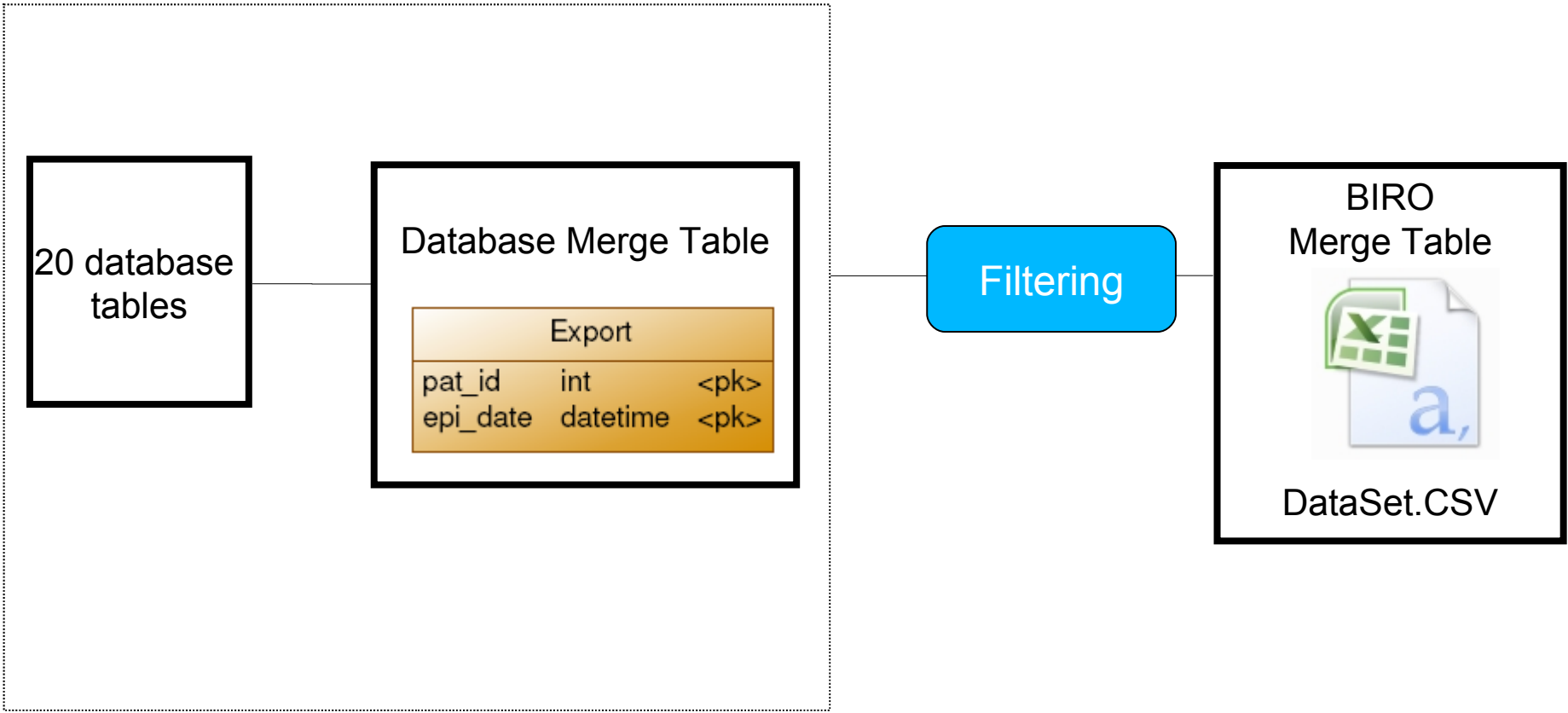


Upper Silesia, Poland Local Database Structure: IT



Upper Silesia, Poland

Local Database Structure and the BIRO Merge Table



Upper Silesia, Poland

Using BIRO



- Problems/Weaknesses in Local Register
 - Gathering unusual data for clinic profile
 - Rotation of hospital ward trainees
 - Hospital ward and statisticians acquisition only

Upper Silesia, Poland

Using BIRO



- Problems/Weaknesses in using BIRO:
 - Not fully detailed User Manual – absence of:
 - Reasons of Quality and Validation Report errors
 - Solutions for specific errors
 - Messages with lack of information ex.:
 - „Something went wrong connecting to database“
 - „Something wrong with SQL Access for:
org.postgresql.util.PSQLException:“
 - „It is not possible to save the configuration“

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Using BIRO



- Problems/Weaknesses in using BIRO:
 - Not understandable messages in Statistical Engine

```
„ERROR: relation "episode_wide" does not exist”
```

- No R Exception handling:

```
„Error in `[<-.data.frame`(`*tmp*`, , pmatch("Age in  
class", names(data4_1_1)), :  
replacement has 9 rows, data has 0”
```

Upper Silesia, Poland

Using BIRO



- Problems/Weaknesses in using BIRO:
 - Too many steps and adjustments needed
 - Unfriendly application environment
 - Need of IT consultant
 - JAVA technology causes Processor Consumption-sometimes javaw process stays active after closing BiroBox
 - After successful analyse program reported only 98% completion

Upper Silesia, Poland

Using BIRO



- Strengths
 - Detailed Quality report
 - Many report features PDF HTML JPG
 - Local Postgres Database allowing IT consultants to view Imported data

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Mapping to BIRO European Standard



- Problems/Weaknesses in Local Register
 - Still a lot of data in paper registers: Diagnosis dates, HBA1C

Upper Silesia, Poland

Mapping to BIRO European Standard



- Problems/Weaknesses of BIRO Standard:
 - Lost of individual patient data by averaging
 - Not taking into consideration other indicators
- Strengths
 - Linkage of many Diabetic Centers
 - Standardization

Upper Silesia, Poland

Merge Table Contents



Put in bold/grey (your/not your) fields!

Patient ID		
Data Source ID		End Stage Renal Therapy
Type Of Diabetes		Renal Dialysis
Sex		Renal Transplant
Date of Birth		Stroke
Date of Diagnosis		Active Foot Ulcer
Episode Date		Myocardial Infarction
Smoking Status		Laser
Cigarettes per day		Hypertension
Alcohol Intake		Blindness
Weight		Amputation
Height		Antihypertensive Medication
Body Mass Index		Hypoglycemic Drug Therapy
Systolic Blood Pressure		Oral Drug Therapy
Diastolic Blood Pressure		Pump Therapy
HbA1c		
Creatinine		
Microalbumin		
	Total Cholesterol	
	HDL	
	Triglycerides	
	Eye Examination	
	Retinopathy Status	
	Maculopathy Status	
	Foot Examination	
	Foot Pulses	
	Foot Sensation	
	Nasal Therapy	
	Average Injections	
	Self Monitoring	
	Diabetes Specific Education	
	Lipid Lowering Therapy	
	Anti-platelet Therapy	
	Patient Enrolment in DMP	

Upper Silesia, Poland

Additional Data



Activity Table:

- We are not able to collect data about other Diabetic Centers and activity of adult patients

Population Table:

- Data only for 0-14 age band

Diabetic Population Table:

- No such data collected in Poland

Upper Silesia, Poland

Running BIRO: Data Quality Results



Distribution of missing values:

bmi: 280 (23.85%)
chol: 358 (30.49%)
cigs_day: 1173 (99.91%)
dbp: 950 (80.92%)
dt_diag: 985 (83.90%)
hdl: 361 (30.75%)
height: 278 (23.68%)
sbp: 950 (80.92%)
tg: 359 (30.58%)
weight: 254 (21.64%)

Distribution of not parsable values:

Distribution of out of range values:

chol: 816 (69.51%)
hdl: 813 (69.25%)
height: 4 (0.34%)
tg: 815 (69.42%)
weight: 186 (15.84%)

List of out of range values:

record_id: 1; field_name: hdl
record_id: 1; field_name: chol
record_id: 1; field_name: tg
record_id: 2; field_name: hdl
record_id: 2; field_name: chol
record_id: 2; field_name: tg
record_id: 3; field_name: hdl

...

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 1.1. Age (Classes)

Age	Male	Female	
0 - 34	147 (100.00 %)	137 (100.00 %)	284 (100 %)
	147 (51.76 %)	137 (48.24 %)	284 (100 %)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.1.1. Type of diabetes

Type of Diabetes	0 - 34	35 - 54	55 - 74	75 +	
Type 1	284 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	284 (100 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.2.1.1. Weight (the most recent episode in 12 months)

Weight	Type 1									
	0 - 34		35 - 54		55 - 74		75 +			
	Male	Female	Male	Female	Male	Female	Male	Female		
0 - 49	45 (30.61 %)	44 (32.12 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	89 (31.34 %)
50 - 69	33 (22.45 %)	38 (27.74 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	71 (25 %)
70 - 89	19 (12.93 %)	6 (4.38 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	25 (8.8 %)
90 - 109	2 (1.36 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	2 (0.7 %)
missing	48 (32.65 %)	49 (35.77 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	97 (34.15 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

C-M-H Chi-Squared Test

One or more cells have less than 2 obs

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.2.1.2. BMI (the most recent episode in 12 months)

BMI	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
0 - 24	108 (73.47 %)	98 (71.53 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	206 (72.54 %)
25 - 26	5 (3.40 %)	7 (5.11 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	12 (4.23 %)
27 - 29	4 (2.72 %)	2 (1.46 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	6 (2.11 %)
40 +	1 (0.68 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	1 (0.35 %)
missing	29 (19.73 %)	30 (21.90 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	59 (20.77 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

C-M-H Chi-Squared Test

One or more cells have less than 2 obs

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.2.3.1. Systolic BP (the most recent episode in 12 months)

SBP	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
0 - 129	54 (36.73 %)	63 (45.99 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	117 (41.2 %)
missing	93 (63.27 %)	74 (54.01 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	167 (58.8 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

C-M-H Chi-Squared Test

One or more cells have less than 2 obs

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.2.3.2. Diastolic BP (the most recent episode in 12 months)

DBP	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
0 - 69	38 (25.85 %)	48 (35.04 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	86 (30.28 %)
70 - 99	16 (10.88 %)	15 (10.95 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	31 (10.92 %)
missing	93 (63.27 %)	74 (54.01 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	167 (58.8 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

C-M-H Chi-Squared Test

One or more cells have less than 2 obs

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.3.1. Retinopathy (the most recent episode in 12 months)

Retinopathy	0 - 9	10 - 19	20 +	
No Retinopathy	35 (100.00 %)	1 (100.00 %)	0 (0.00 %)	36 (100 %)
	35 (97.22 %)	1 (2.78 %)	0 (0 %)	36 (100 %)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.3.2. End stage renal failure

E.S.R.F.	0 - 9	10 - 19	20 +	
No	35 (100.00 %)	1 (100.00 %)	0 (0.00 %)	36 (100 %)
	35 (97.22 %)	1 (2.78 %)	0 (0 %)	36 (100 %)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.3.3. Foot ulcer

Foot Ulcer	0 - 9	10 - 19	20 +	
No	35 (100.00 %)	1 (100.00 %)	0 (0.00 %)	36 (100 %)
	35 (97.22 %)	1 (2.78 %)	0 (0 %)	36 (100 %)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.3.4. Amputation

Amputation	0 - 9	10 - 19	20 +	
No	35 (100.00 %)	1 (100.00 %)	0 (0.00 %)	36 (100 %)
	35 (97.22 %)	1 (2.78 %)	0 (0 %)	36 (100 %)

Upper Silesia, Poland

Statistical Report: General Characteristics (Tables)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 2.3.5. Stroke

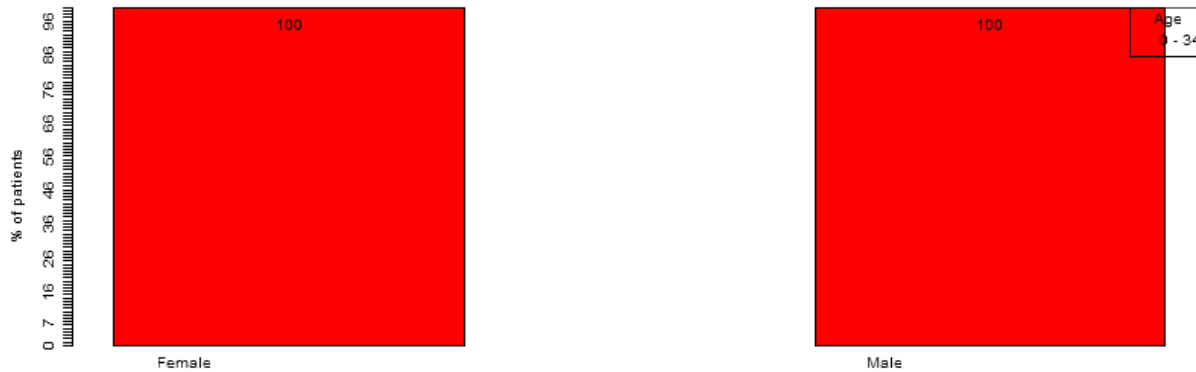
Stroke	0 - 9	10 - 19	20 +	
No	35 (100.00 %)	1 (100.00 %)	0 (0.00 %)	36 (100 %)
	35 (97.22 %)	1 (2.78 %)	0 (0 %)	36 (100 %)

Upper Silesia, Poland

Statistical Report: General Characteristics (Figures)



Age class



Type of diabetes

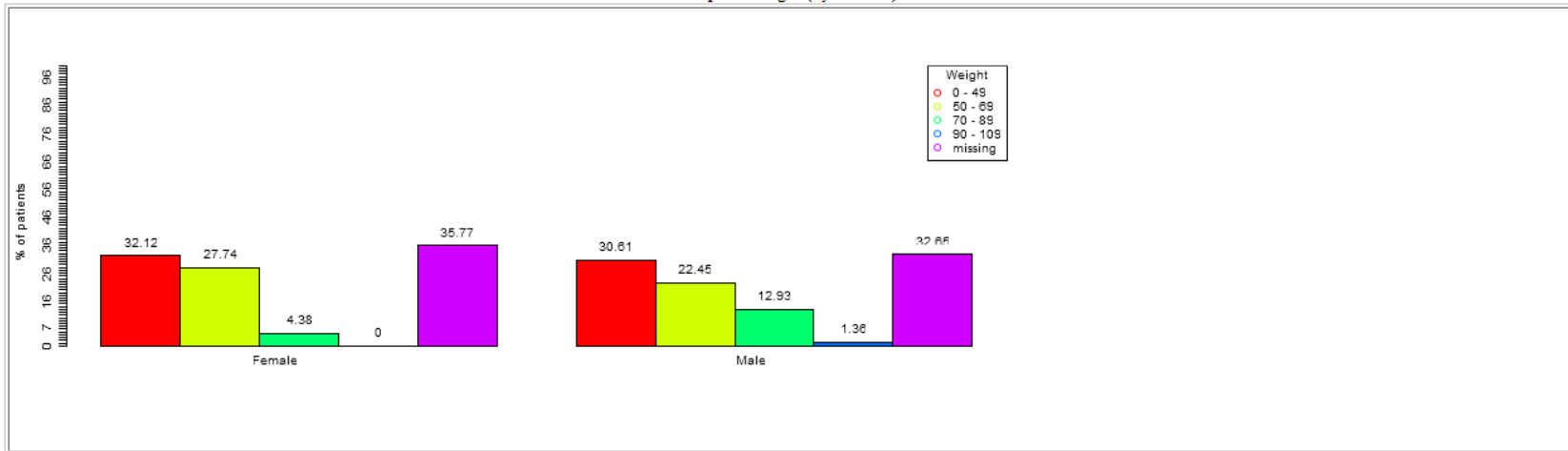


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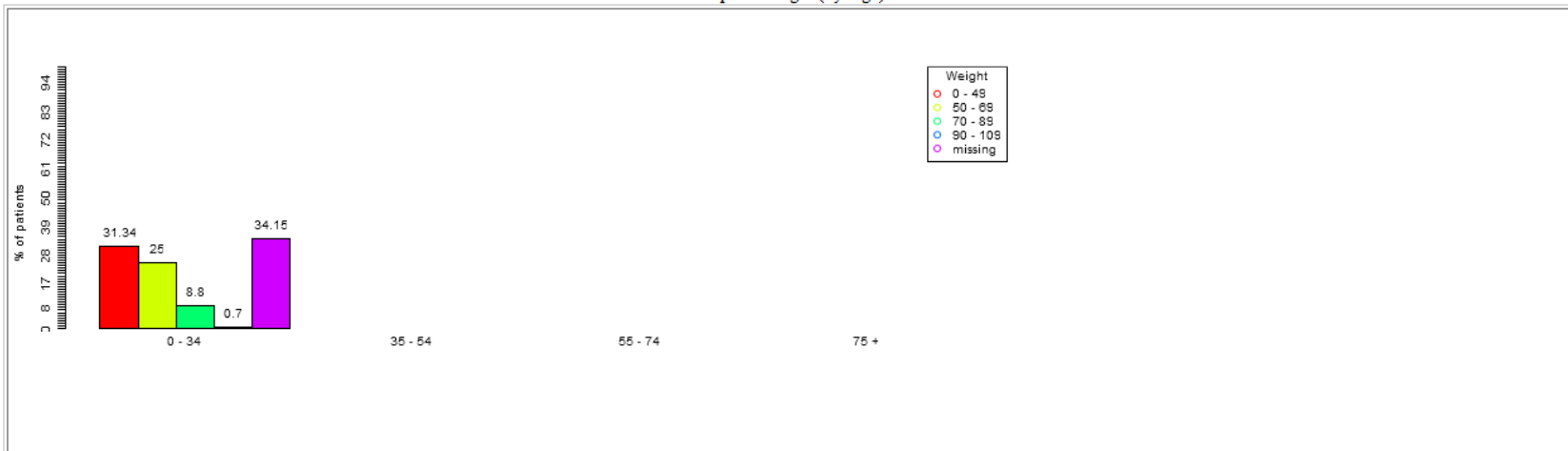
Statistical Report: General Characteristics (Figures)



Barplot: Weight (by Gender)



Barplot: Weight (by Age)

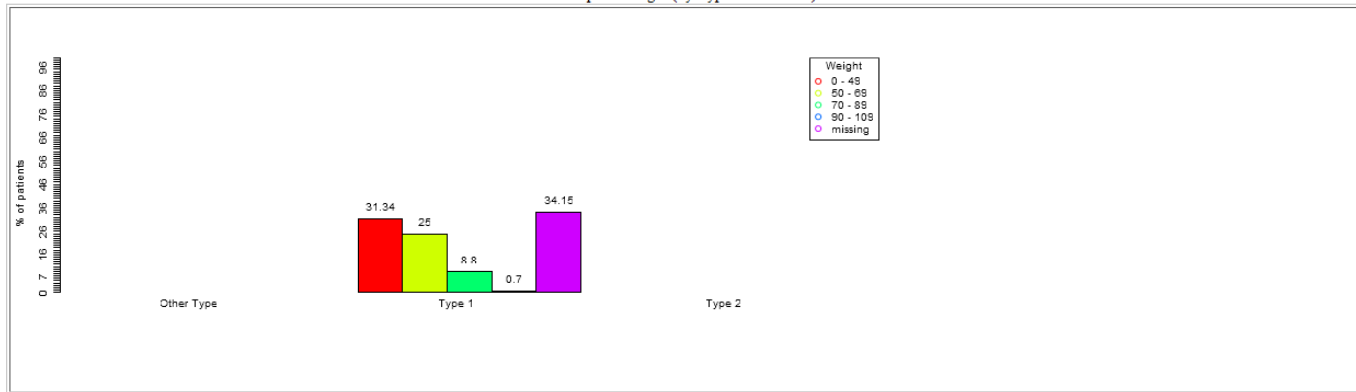


Upper Silesia, Poland

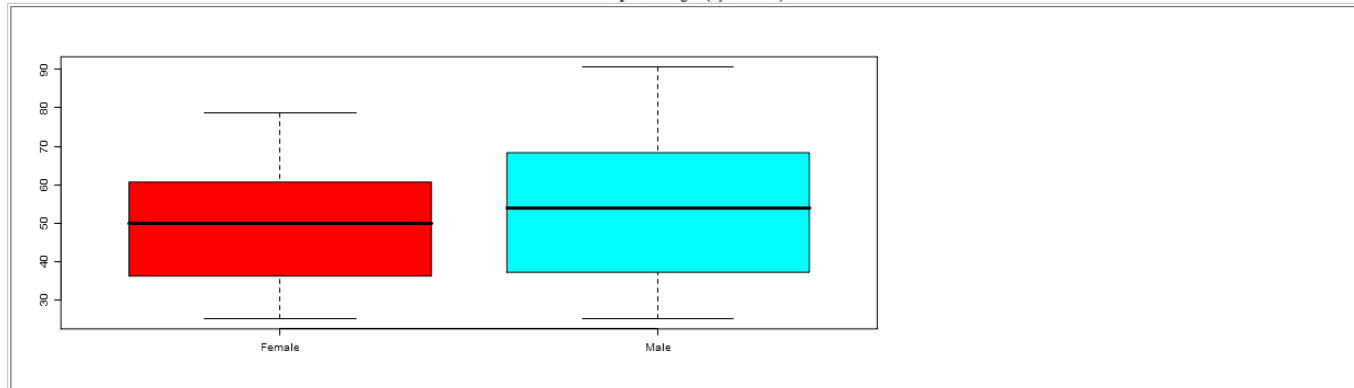
Statistical Report: General Characteristics (Figures)



Barplot: Weight (by Type of Diabetes)



Boxplot: Weight (by Gender)

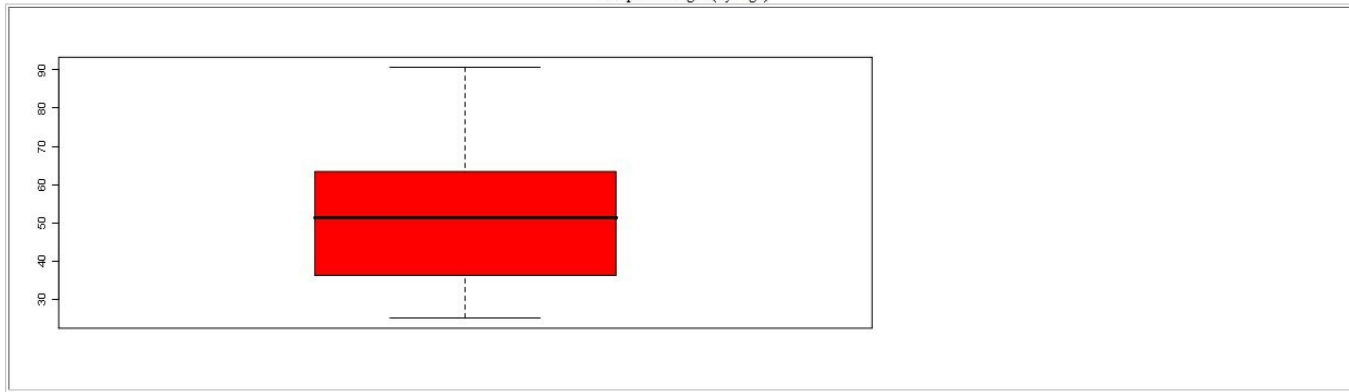


Upper Silesia, Poland

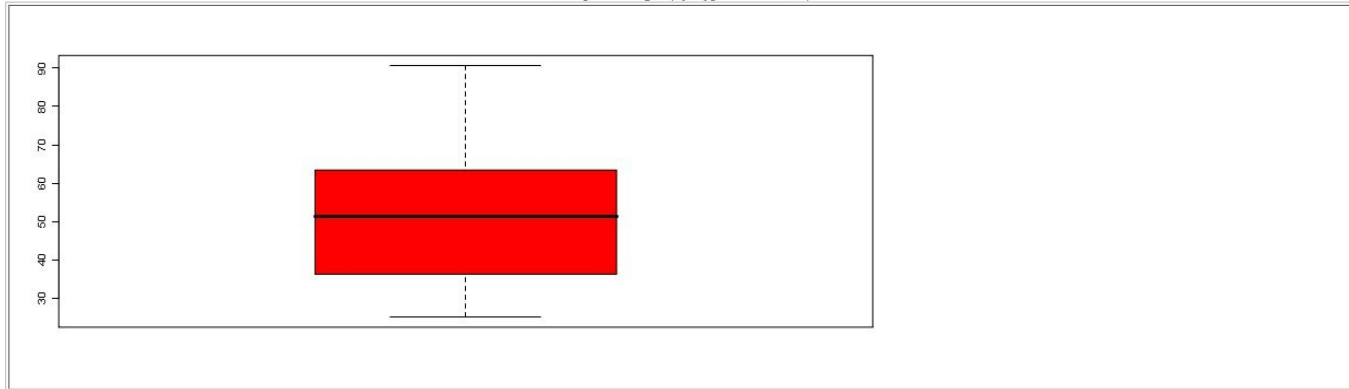
Statistical Report: General Characteristics (Figures)



Boxplot: Weight (by Age)



Boxplot: Weight (by Type of Diabetes)

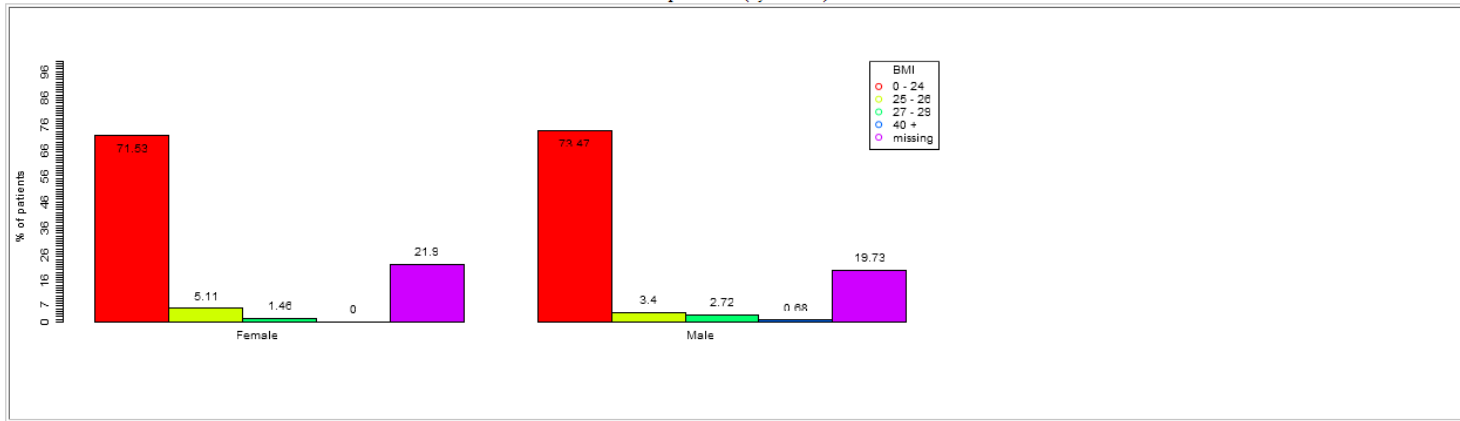


Upper Silesia, Poland

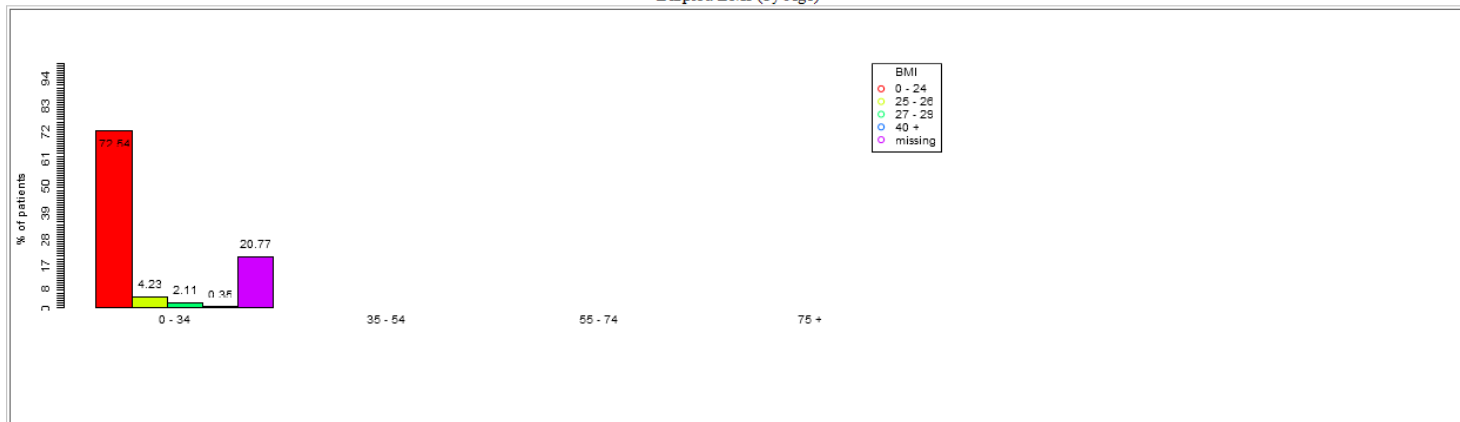
Statistical Report: General Characteristics (Figures)



Barplot BMI (by Gender)



Barplot BMI (by Age)

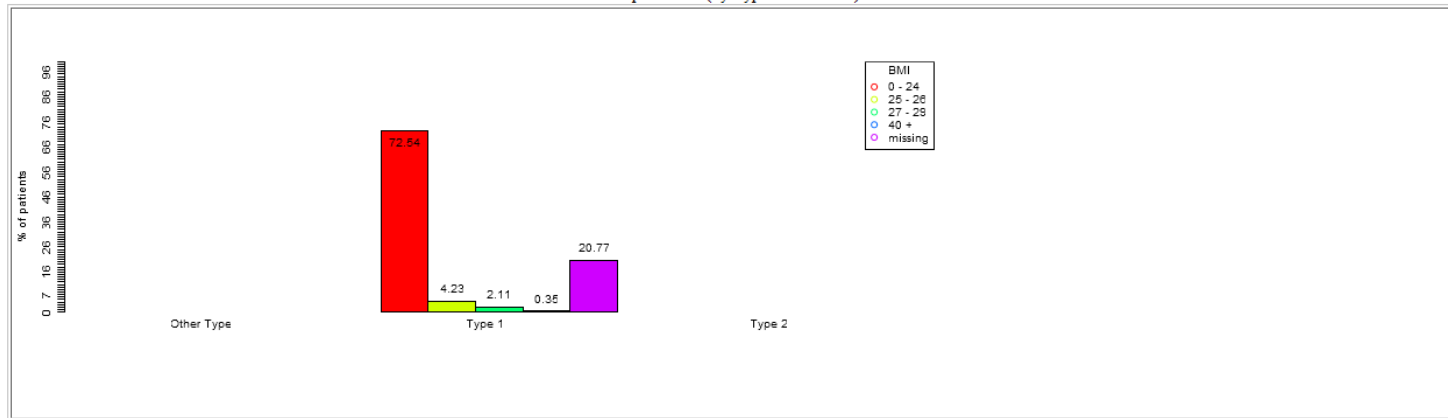


Upper Silesia, Poland

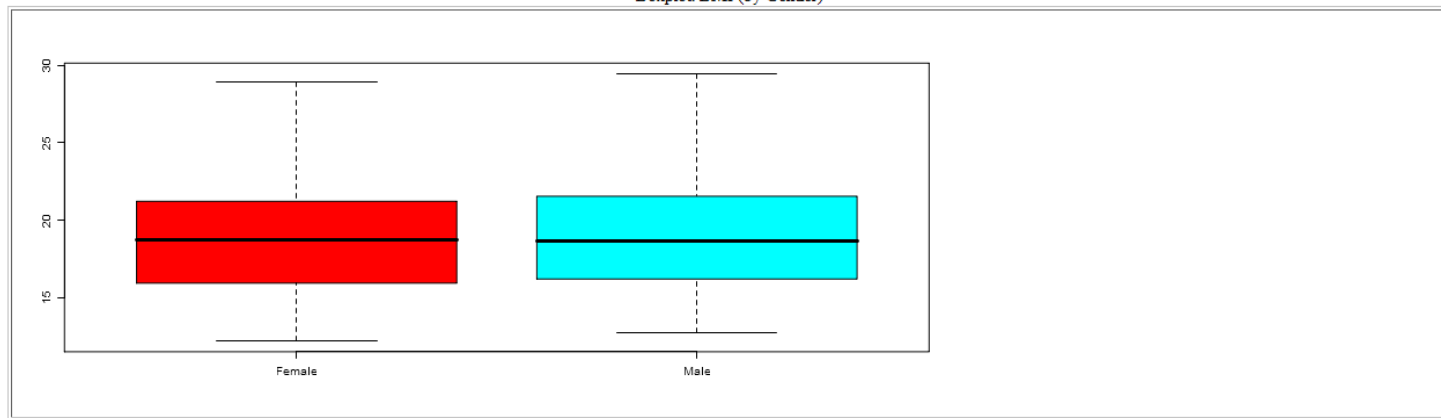
Statistical Report: General Characteristics (Figures)



Barplot: BMI (by Type of Diabetes)



Boxplot: BMI (by Gender)

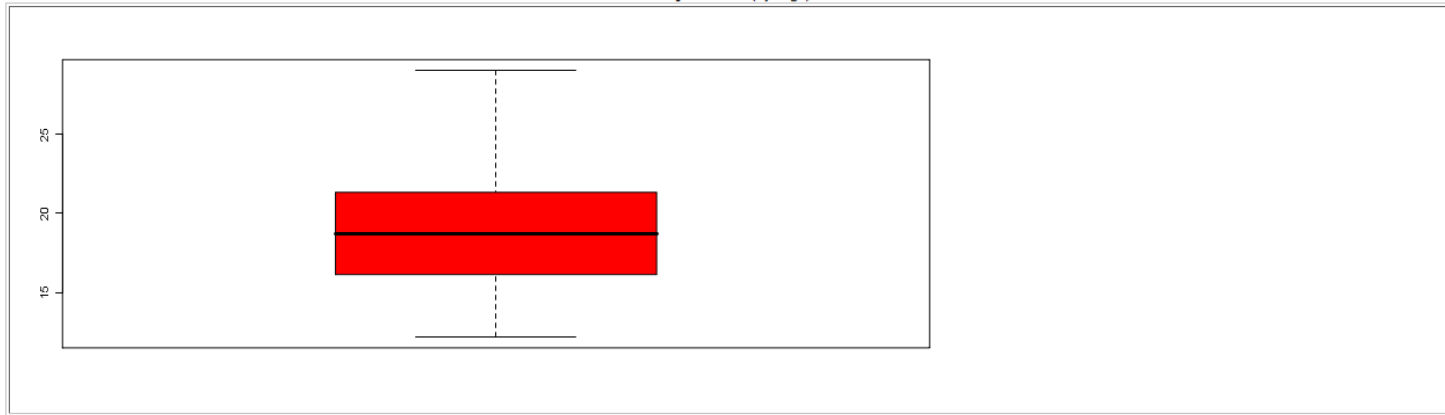


Upper Silesia, Poland

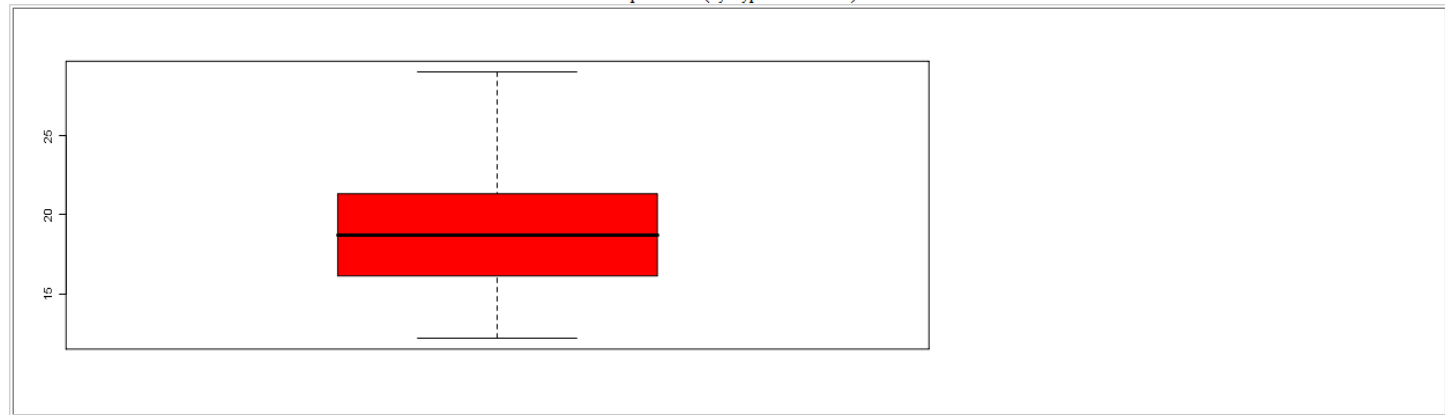
Statistical Report: General Characteristics (Figures)



Boxplot: BMI (by Age)



Boxplot: BMI (by Type of Diabetes)

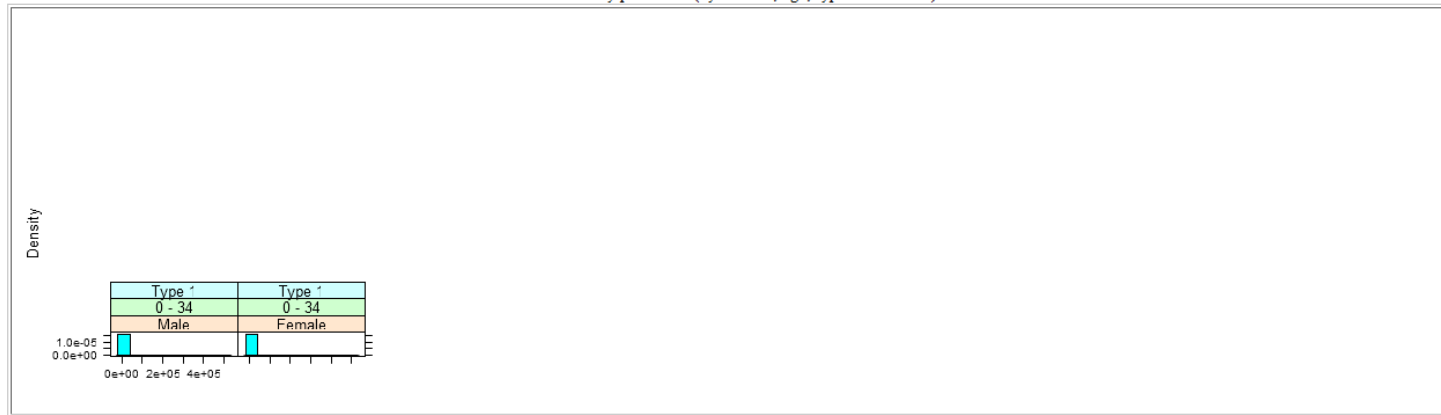


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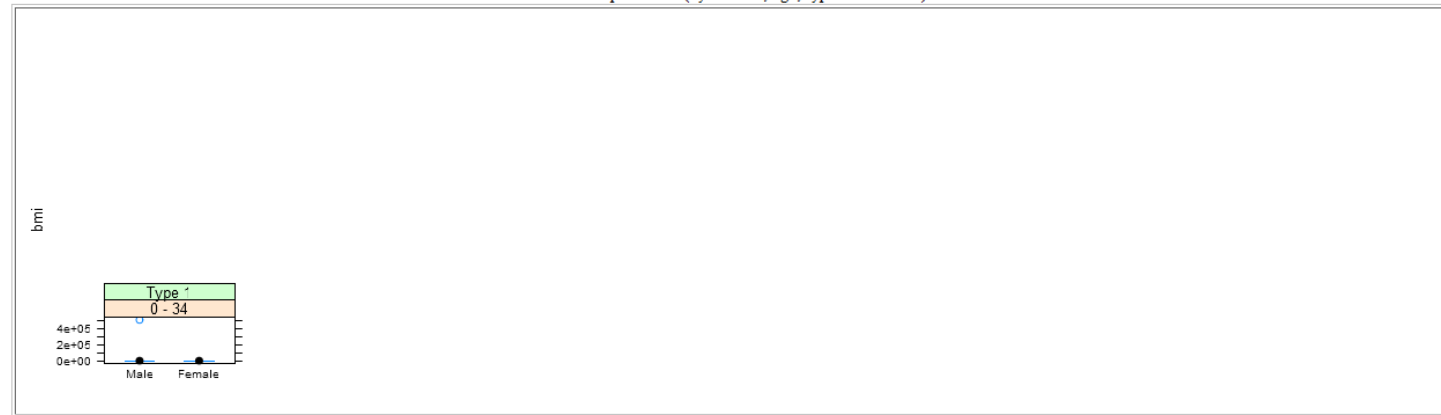
Statistical Report: General Characteristics (Figures)



Trellis density plot: BMI (by Gender, Age, Type of Diabetes)



Trellis boxplot: BMI (by Gender, Age, Type of Diabetes)

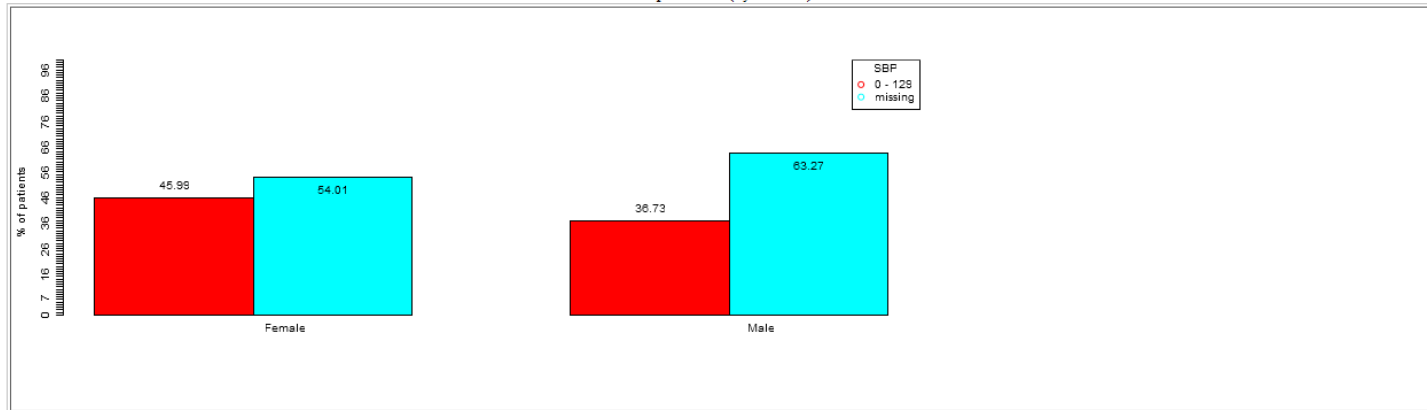


Upper Silesia, Poland

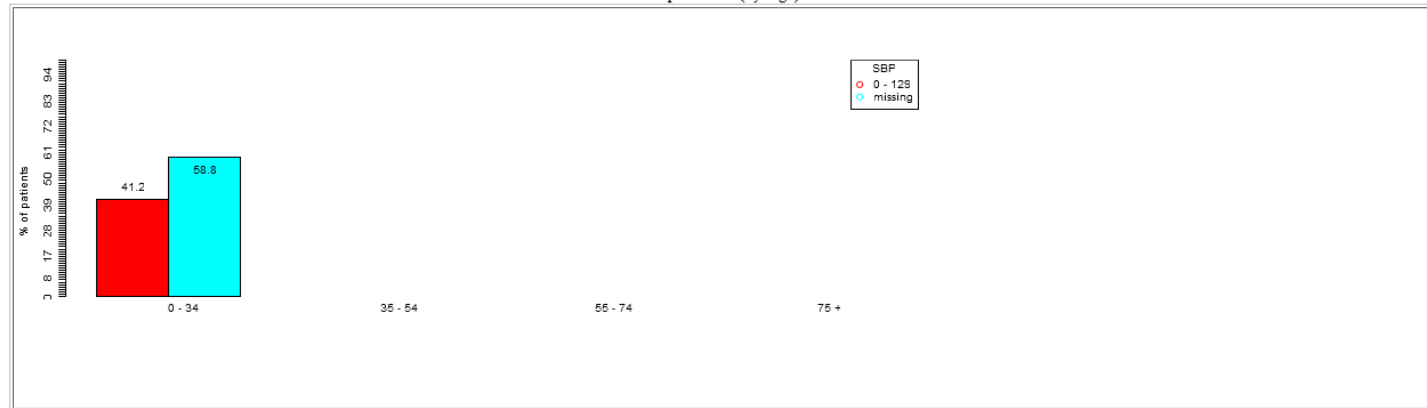
Statistical Report: General Characteristics (Figures)



Barplot: SBP (by Gender)



Barplot: SBP (by Age)

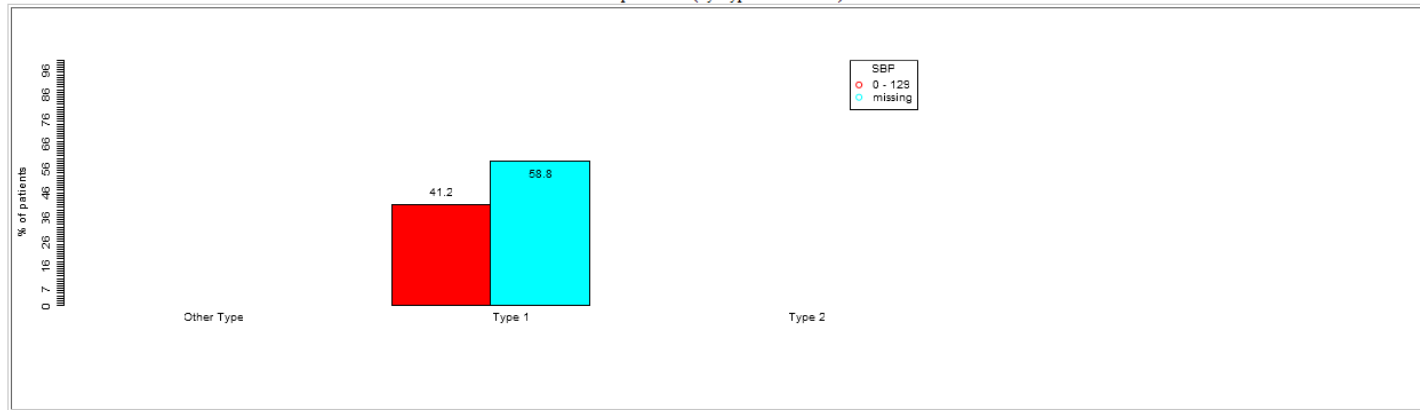


Upper Silesia, Poland

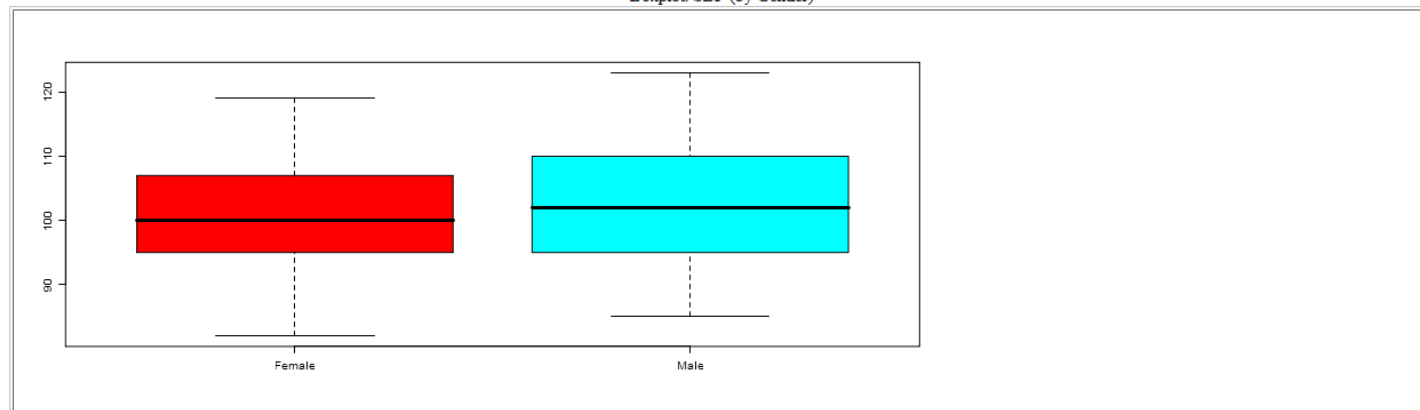
Statistical Report: General Characteristics (Figures)



Barplot: SBP (by Type of Diabetes)



Boxplot: SBP (by Gender)

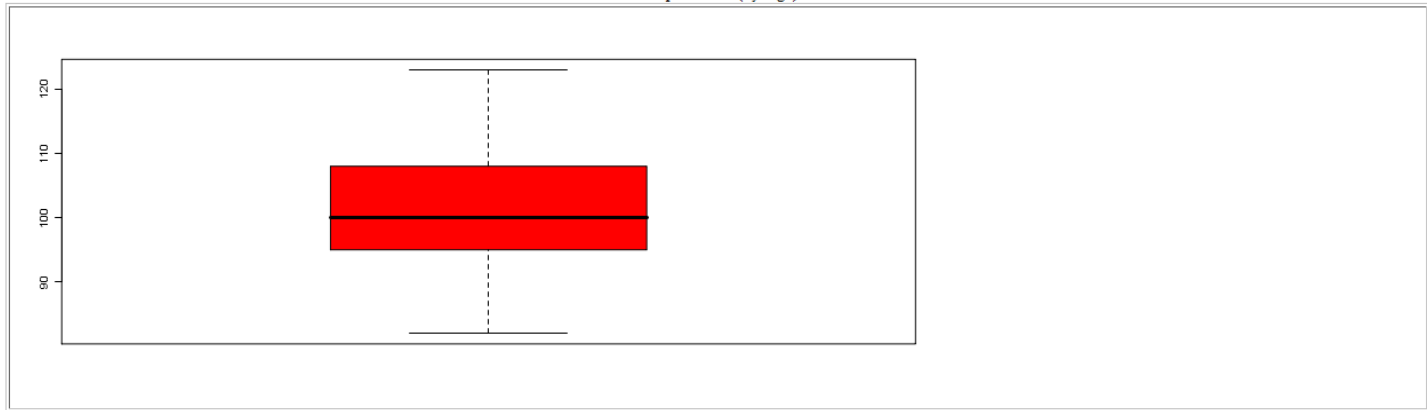


Upper Silesia, Poland

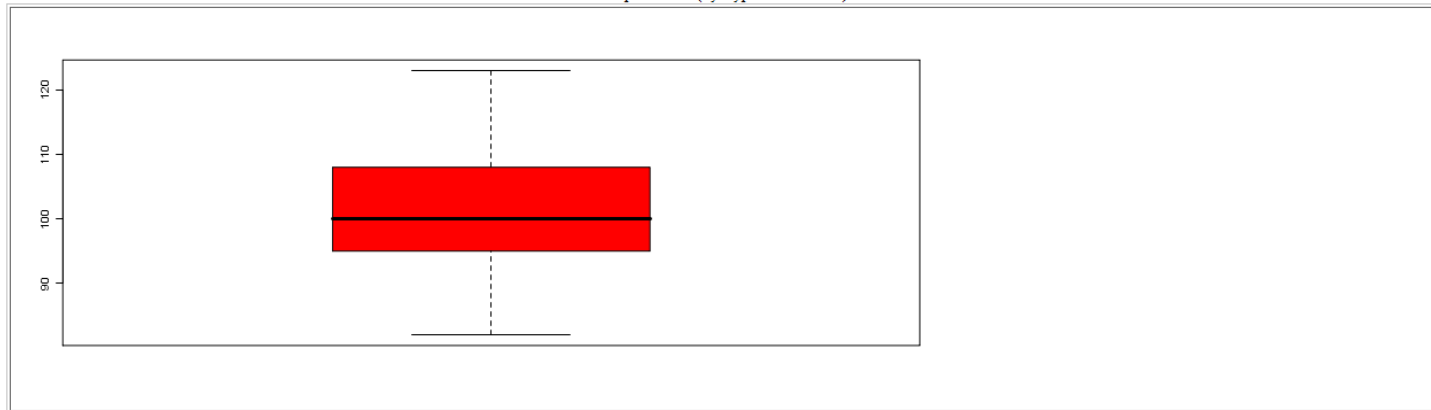
Statistical Report: General Characteristics (Figures)



Boxplot: SBP (by Age)



Boxplot: SBP (by Type of Diabetes)

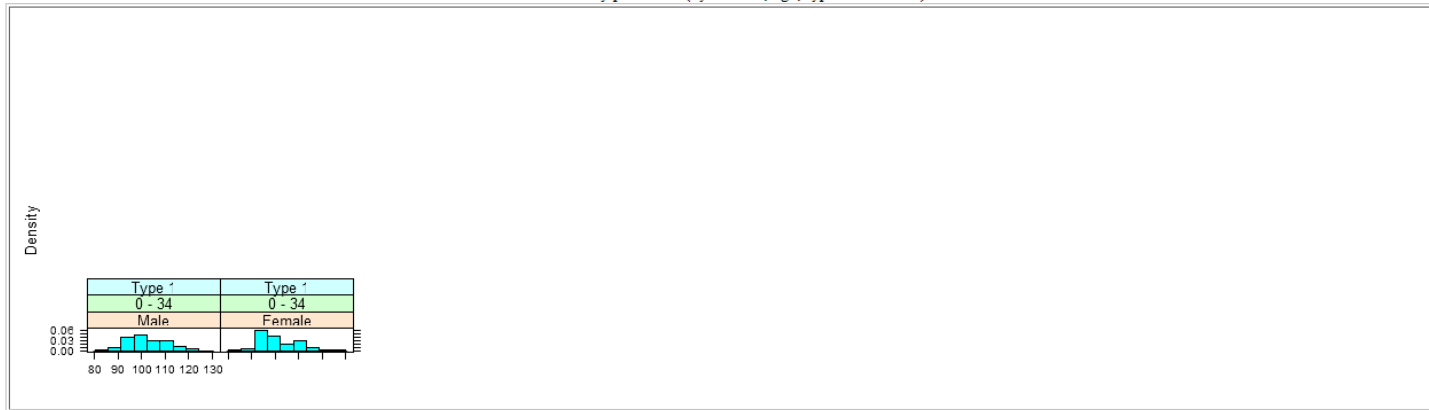


Upper Silesia, Poland

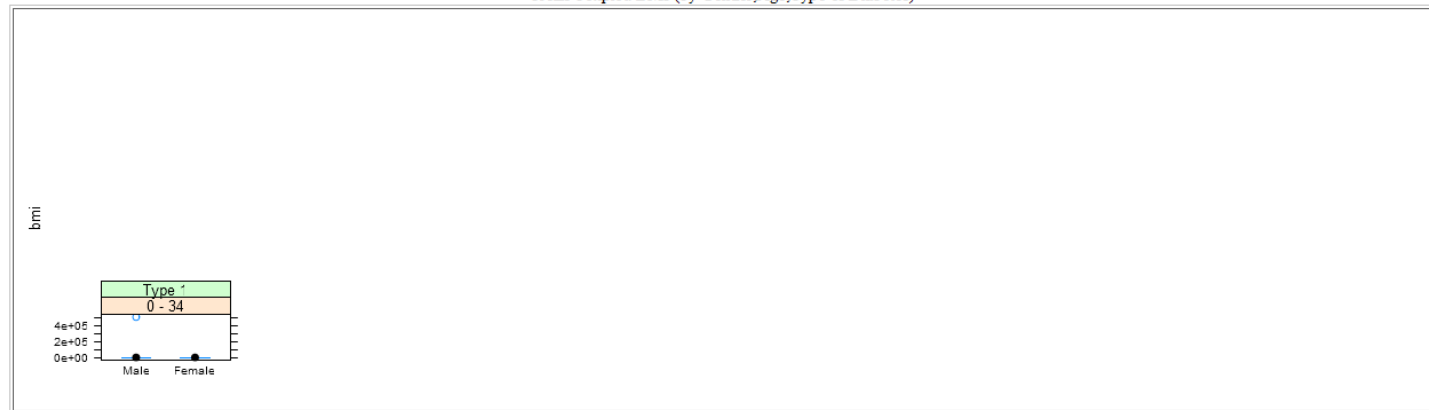
Statistical Report: General Characteristics (Figures)



Trellis density plot: SBP (by Gender, Age, Type of Diabetes)



Trellis boxplot: BMI (by Gender, Age, Type of Diabetes)

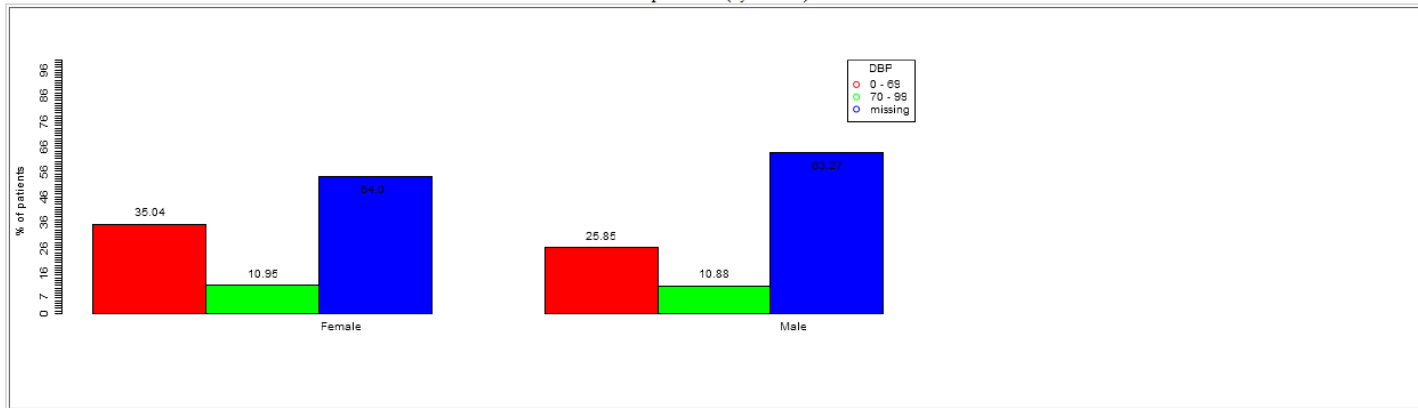


Upper Silesia, Poland

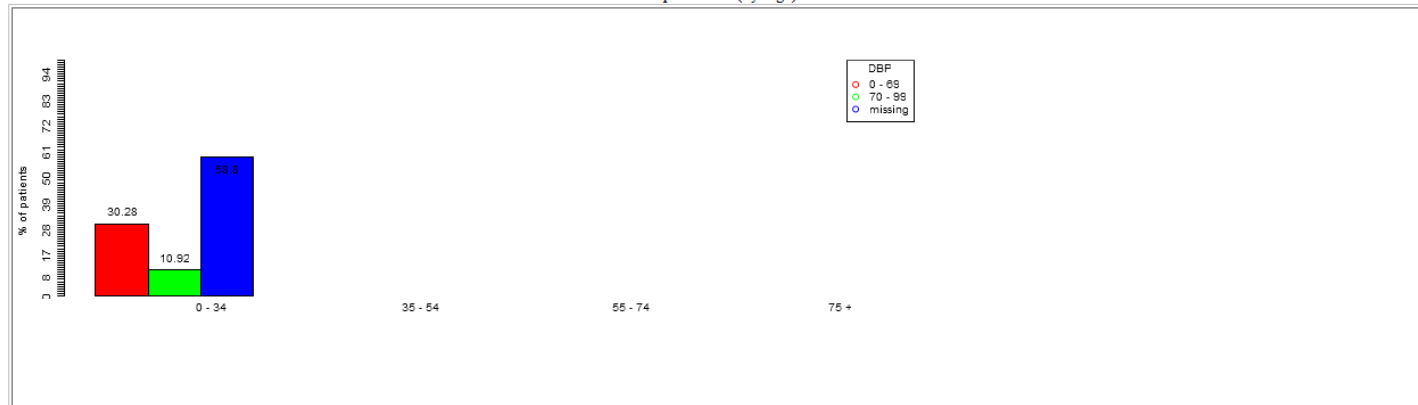
Statistical Report: General Characteristics (Figures)



Barplot: DBP (by Gender)



Barplot: DBP (by Age)

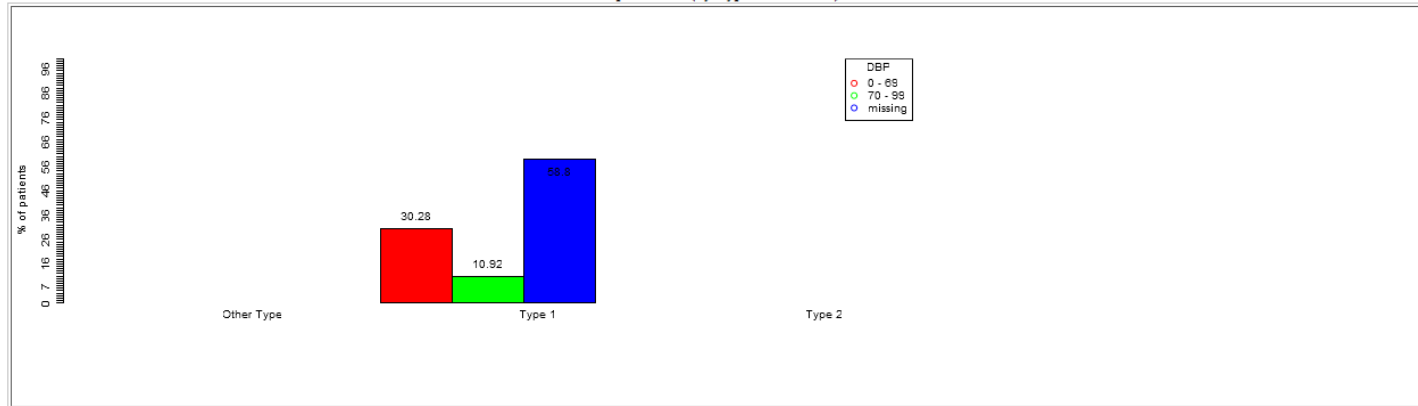


Upper Silesia, Poland

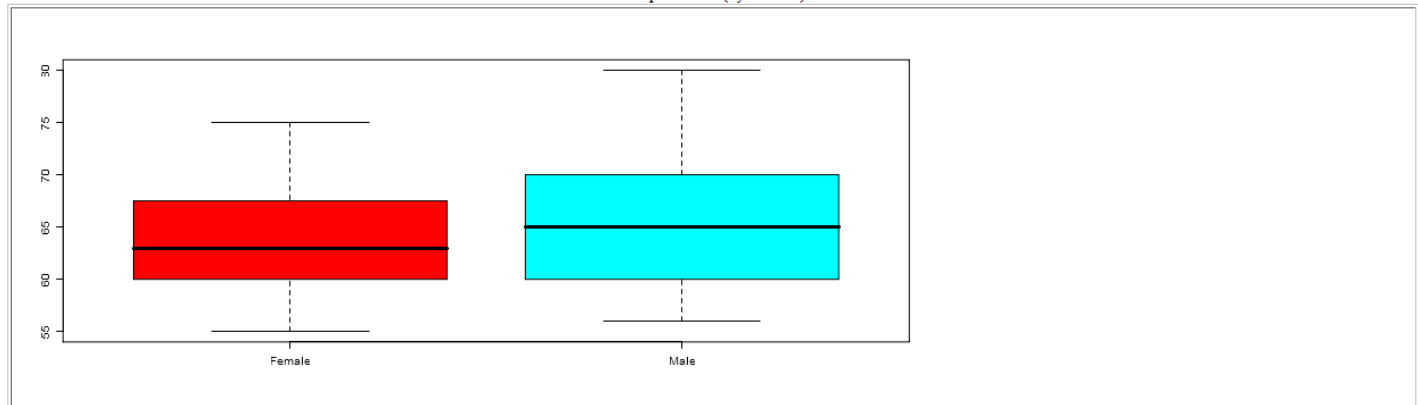
Statistical Report: General Characteristics (Figures)



Barplot: DBP (by Type of Diabetes)



Boxplot: DBP (by Gender)

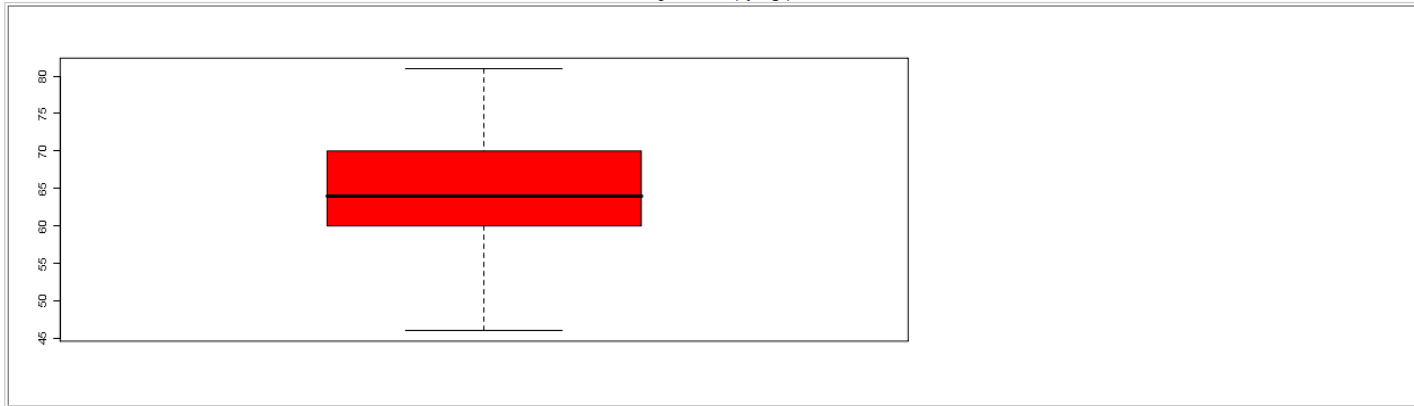


Upper Silesia, Poland

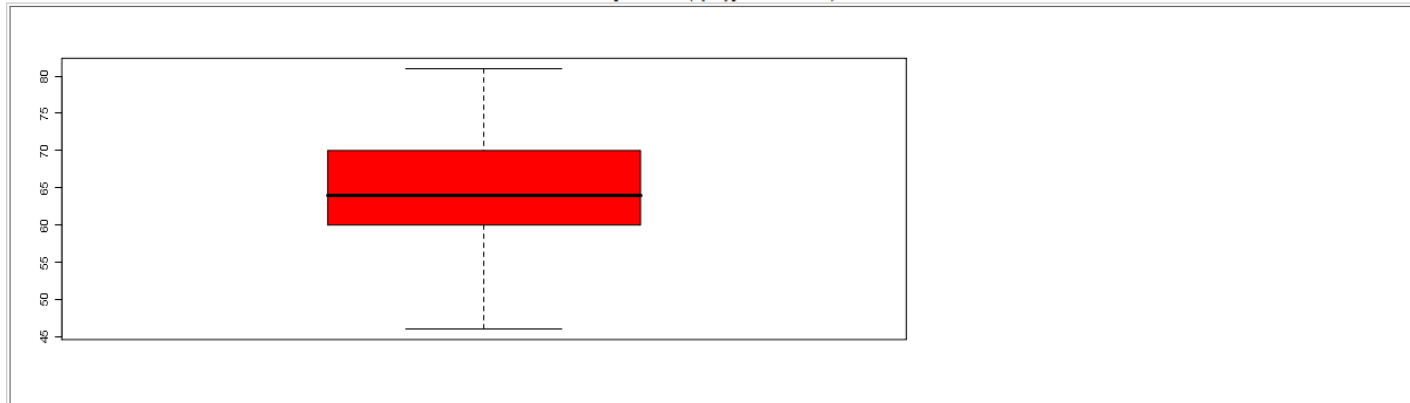
Statistical Report: General Characteristics (Figures)



Boxplot: DBP (by Age)



Boxplot: DBP (by Type of Diabetes)



Upper Silesia, Poland

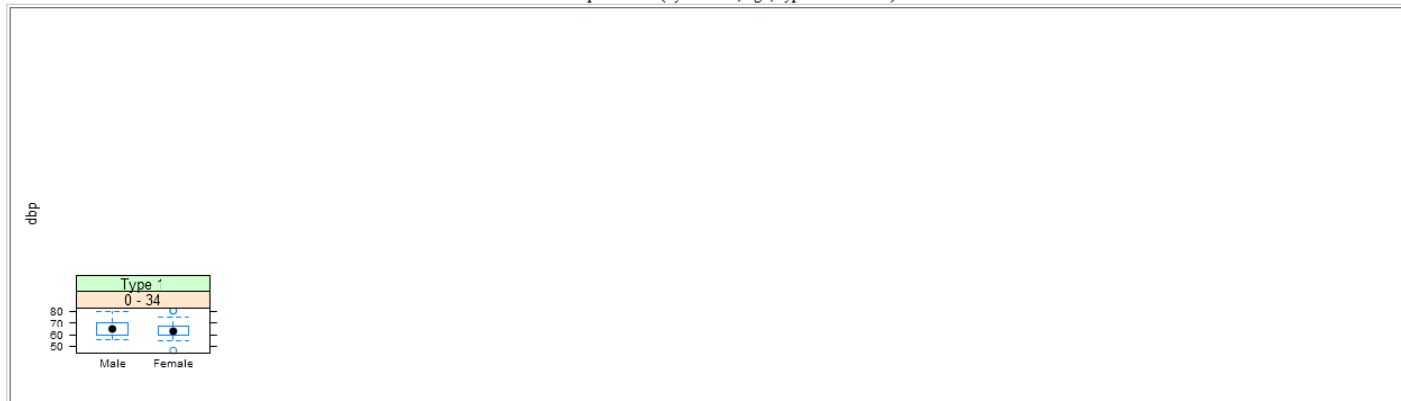
Statistical Report: General Characteristics (Figures)



Trellis density plot: DBP (by Gender, Age, Type of Diabetes)



Trellis boxplot: DBP (by Gender, Age, Type of Diabetes)

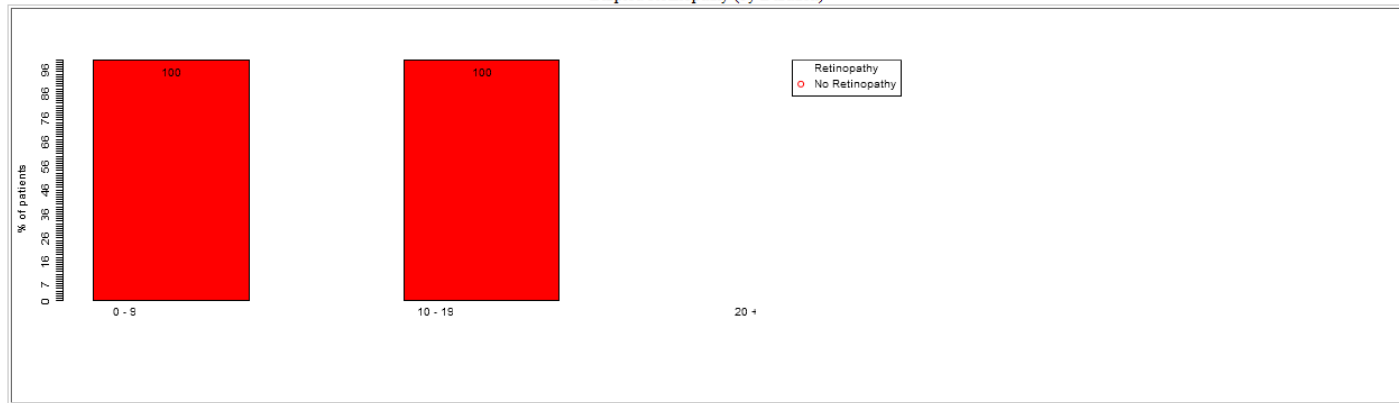


Upper Silesia, Poland

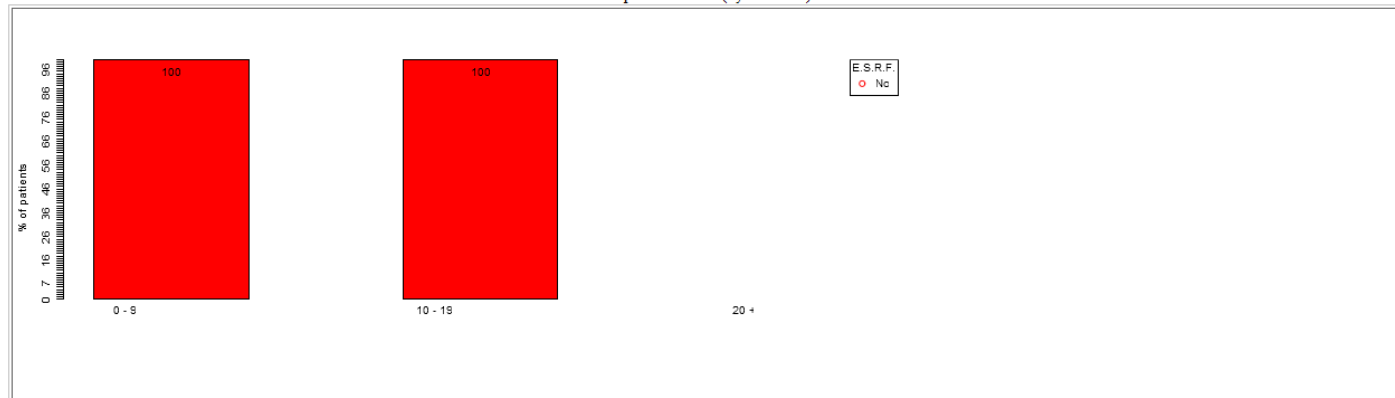
Statistical Report: General Characteristics (Figures)



Barplot: Retinopathy (by Duration)



Barplot: E.S.R.F. (by Duration)

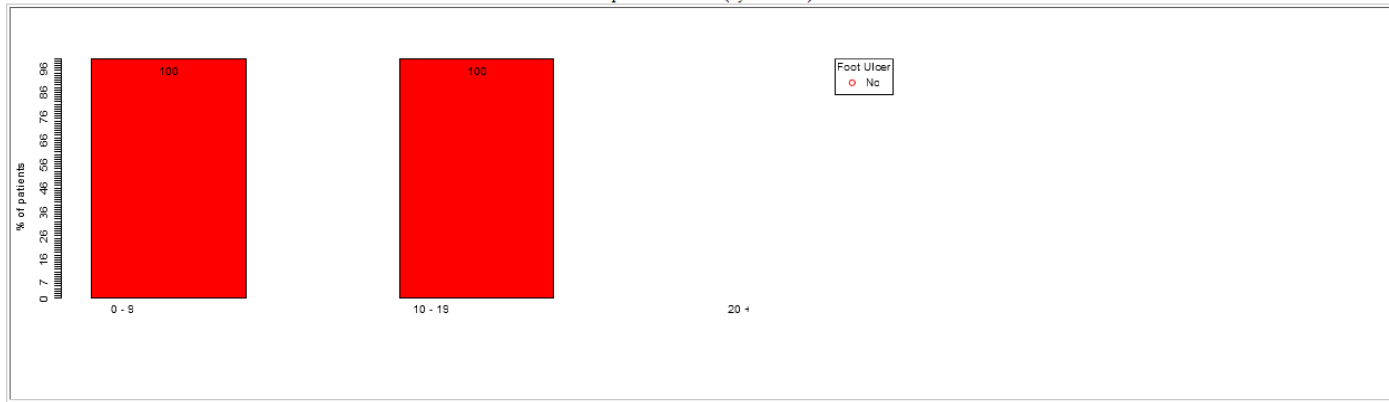


Upper Silesia, Poland

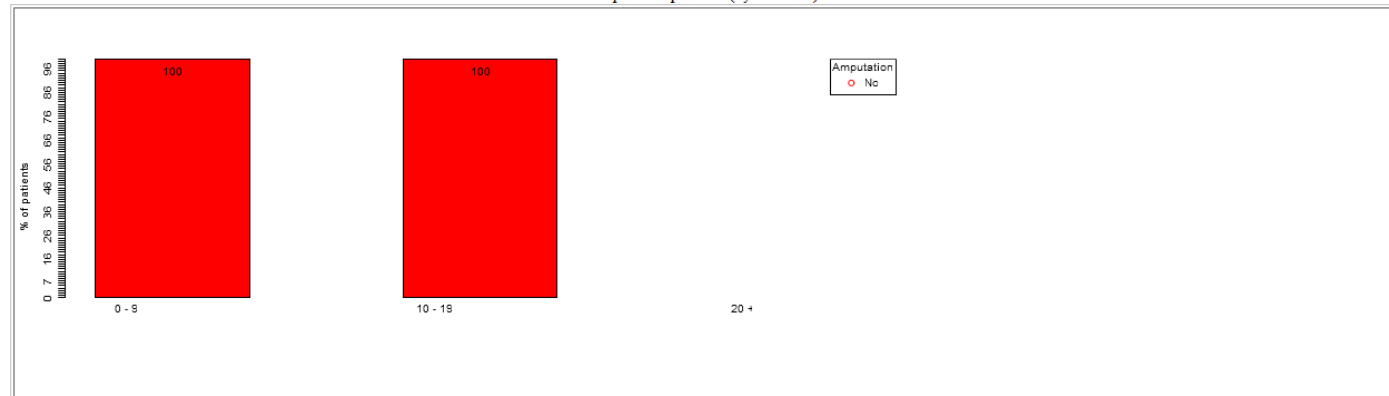
Statistical Report: General Characteristics (Figures)



Barplot: Foot Ulcer (by Duration)



Barplot: Amputation (by Duration)

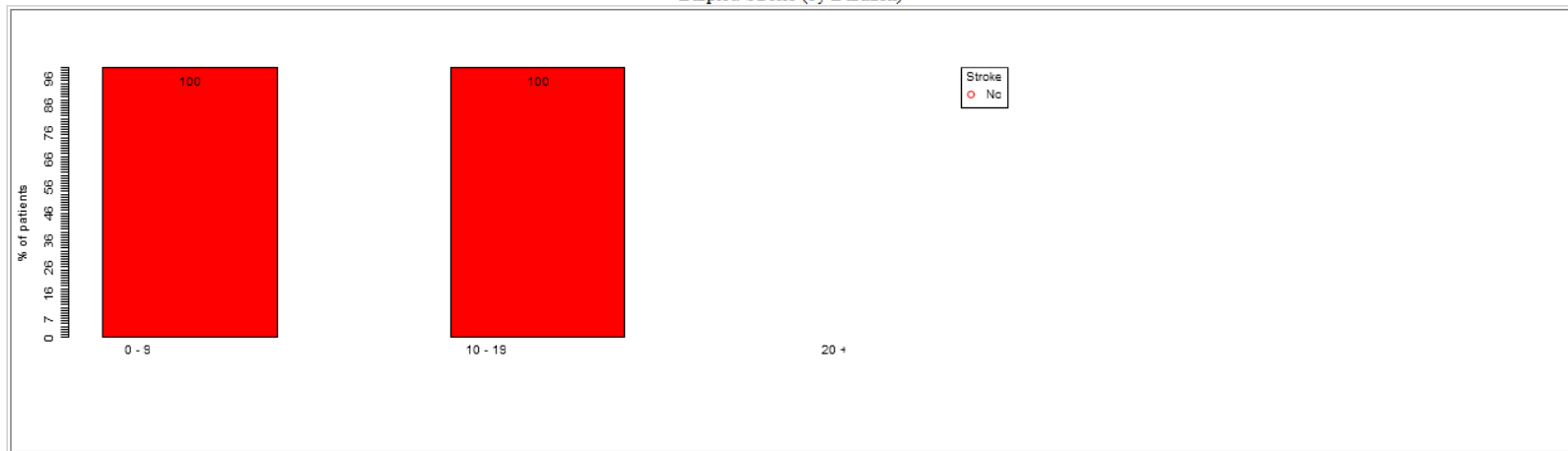


Upper Silesia, Poland

Statistical Report: General Characteristics (Figures)



Barplot: Stroke (by Duration)



Upper Silesia, Poland

Statistical Report: Health System



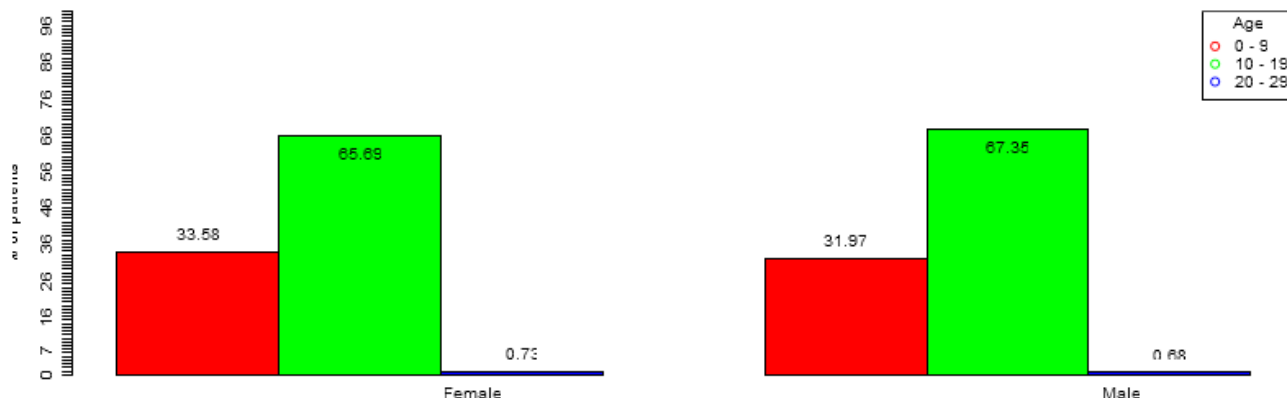
Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 3.1.2 Average diabetes population

Age	Type 1		
	Male	Female	
0 - 9	47 (31.97 %)	46 (33.58 %)	93 (32.75 %)
10 - 19	99 (67.35 %)	90 (65.69 %)	189 (66.55 %)
20 - 29	1 (0.68 %)	1 (0.73 %)	2 (0.7 %)
	147 (51.76 %)	137 (48.24 %)	284 (100 %)



Upper Silesia, Poland

Statistical Report: Health System



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 3.3.5.2 Visit Frequency

Visit Frequency	Type 1				
	0 - 34	35 - 54	55 - 74	75 +	
Only one	262 (92.25 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	262 (92.25 %)
More than one	22 (7.75 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	22 (7.75 %)
	284 (100 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)



Upper Silesia, Poland

Statistical Report: Health System



Best Information through Regional Outcomes

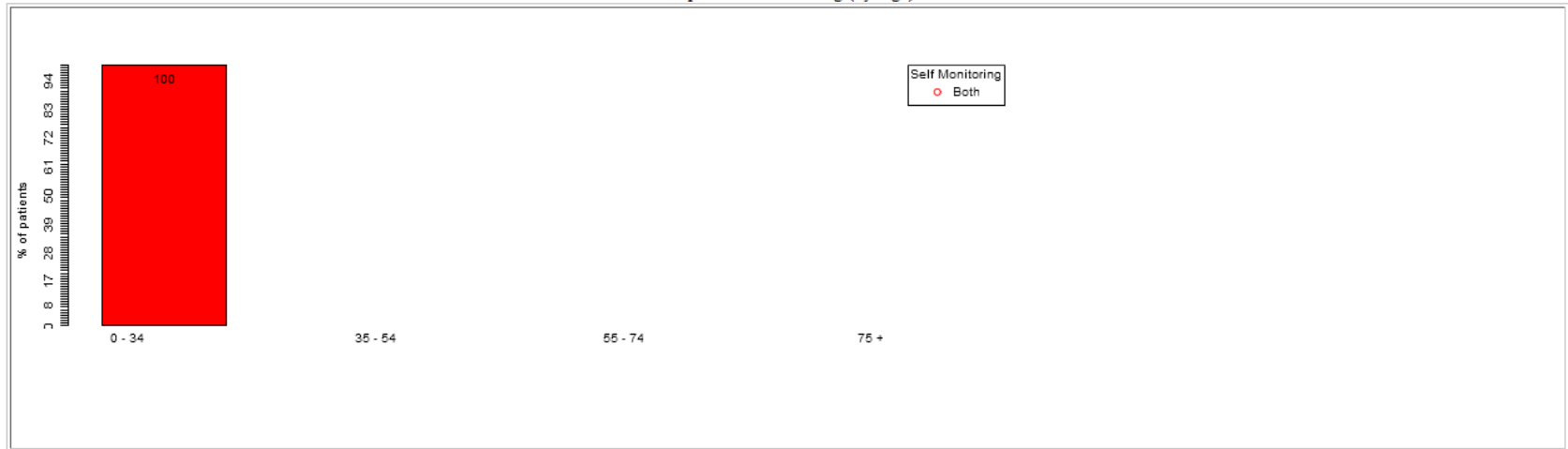
BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 3.3.5.1 Self monitoring

Self Monitoring	Type 1				
	0 - 34	35 - 54	55 - 74	75 +	
Both	284 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	284 (100 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Barplot: Self Monitoring (by Age)



Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.1.1 Prevalence of diabetes mellitus per 1,000

Obs	Denom	typedm	Ratex1000
284	649030	Type 1	0.44
0	0	Type 2	NaN



Best Information through Regional Outcomes

[BIRO Report](#) site: 17 , 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.1.2. Age at diagnosis by 10 year age bands (incidence)

Age	Type 1	Type 2	
0 - 9	20 (7.04 %)	0 (0.00 %)	20 (7.04 %)
10 - 19	19 (6.69 %)	0 (0.00 %)	19 (6.69 %)
20 - 29	1 (0.35 %)	0 (0.00 %)	1 (0.35 %)
missing	244 (85.92 %)	0 (0.00 %)	244 (85.92 %)
	284 (100 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.2.7 Percentage of patients with diabetes and one or more blood pressure measurements within the last 12 months

N	Obs	Percentage
284	117	41.2

Type of Diabetes 1

BP measurements	Type 1								
	Male				Female				
	0 - 34	35 - 54	55 - 74	75 +	0 - 34	35 - 54	55 - 74	75 +	
Yes	54 (36.73 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	63 (45.99 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	117 (41.2 %)
No	93 (63.27 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	74 (54.01 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	167 (58.8 %)
	147 (51.76 %)	0 (0 %)	0 (0 %)	0 (0 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.2.14 Portion of diabetes patients with lipid lowering treatment

N	Obs	Percentage
284	0	0

Type of Diabetes 1

Lipid lowering treatment	Type 1								
	Male				Female				
	0 - 34	35 - 54	55 - 74	75 +	0 - 34	35 - 54	55 - 74	75 +	
No	147 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	147 (51.76 %)	0 (0 %)	0 (0 %)	0 (0 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.2.15 Portion of diabetes patients with ASA treatment

N	Obs	Percentage
284	0	0

Type of Diabetes 1

ASA treatment	Type 1								
	Male				Female				
	0 - 34	35 - 54	55 - 74	75 +	0 - 34	35 - 54	55 - 74	75 +	
No	147 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	147 (51.76 %)	0 (0 %)	0 (0 %)	0 (0 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.2.16 Percent of patients with diabetes performing selfmonitoring of blood glucose/ urine testing

N	Obs	Percentage
284	0	0

Type of Diabetes 1

selfmon. blood glucose/ urine	Type 1								
	Male				Female				
	0 - 34	35 - 54	55 - 74	75 +	0 - 34	35 - 54	55 - 74	75 +	
Urine	147 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
Blood Glucose	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0 %)
Both	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0 %)
	147 (51.76 %)	0 (0 %)	0 (0 %)	0 (0 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.3.3 Percentage of patients with most recent blood pressure less than 140/90 mmHg

N	Obs	Percentage
284	117	41.2

Type of Diabetes 1

sbp less than 140/90 mmHg	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
0 - 140]	54 (36.73 %)	63 (45.99 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	117 (41.2 %)
missing	93 (63.27 %)	74 (54.01 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	167 (58.8 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.3.4 Percentage of patients with BMI greater than 30

N	Obs	Percentage
284	1	0.35

Type of Diabetes 1

BMI greater than 30	Type 1									
	0 - 34		35 - 54		55 - 74		75 +			
	Male	Female	Male	Female	Male	Female	Male	Female		
30 +	1 (0.68 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	1 (0.35 %)
0 - 30]	117 (79.59 %)	107 (78.10 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	224 (78.87 %)
missing	29 (19.73 %)	30 (21.90 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	59 (20.77 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Results: BIRO Indicators (Tables)



Best Information through Regional Outcomes

[BIRO Report](#) site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.3.7 Former or current foot ulceration

N	Obs	Percentage
284	0	0

Type of Diabetes 1

foot ulceration	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
No	147 (100.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.4.1 Annual incidence of dialysis and/or transplantation (renal replacement therapy in patients with diabetes

N	Obs	Rate x 100000
284	0	0

Type of Diabetes 1

dialysis and/or transplantation	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
No	147 (100.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Best Information through Regional Outcomes

BIRO Report site: 17, 03 czerwiec 2010

Reference date: 31/12/08

Parameter: 5.4.2 ESRF in Persons with Diabetes

N	Obs	Rate x 100000
284	0	0

Type of Diabetes 1

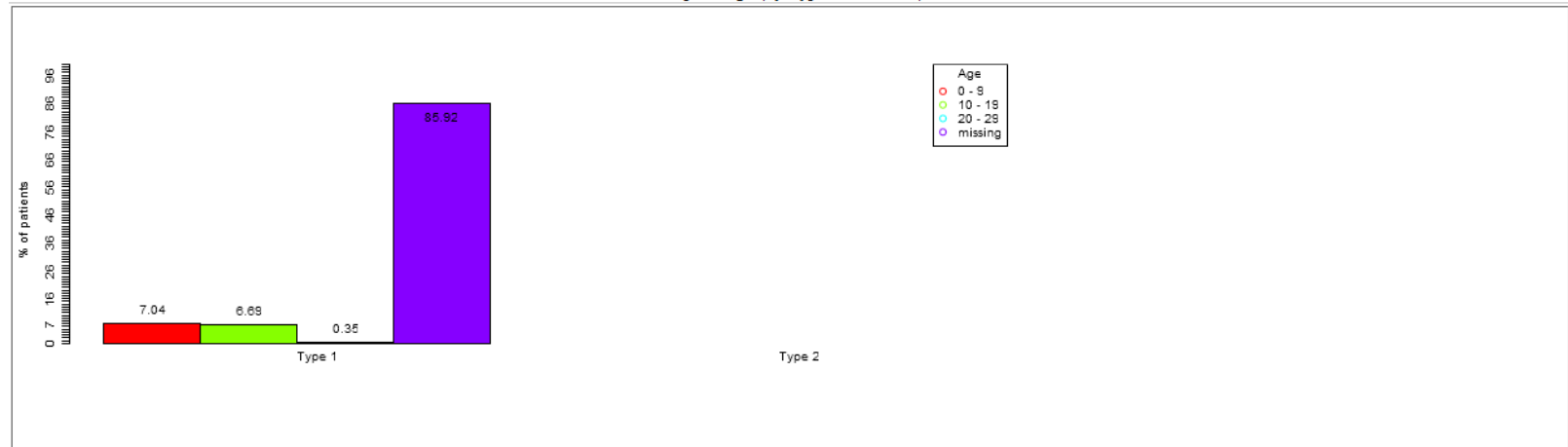
esrf	Type 1								
	0 - 34		35 - 54		55 - 74		75 +		
	Male	Female	Male	Female	Male	Female	Male	Female	
No	147 (100.00 %)	137 (100.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	0 (0.00 %)	284 (100 %)
	147 (51.76 %)	137 (48.24 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	284 (100 %)

Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Barplot: Age (by Type of Diabetes)

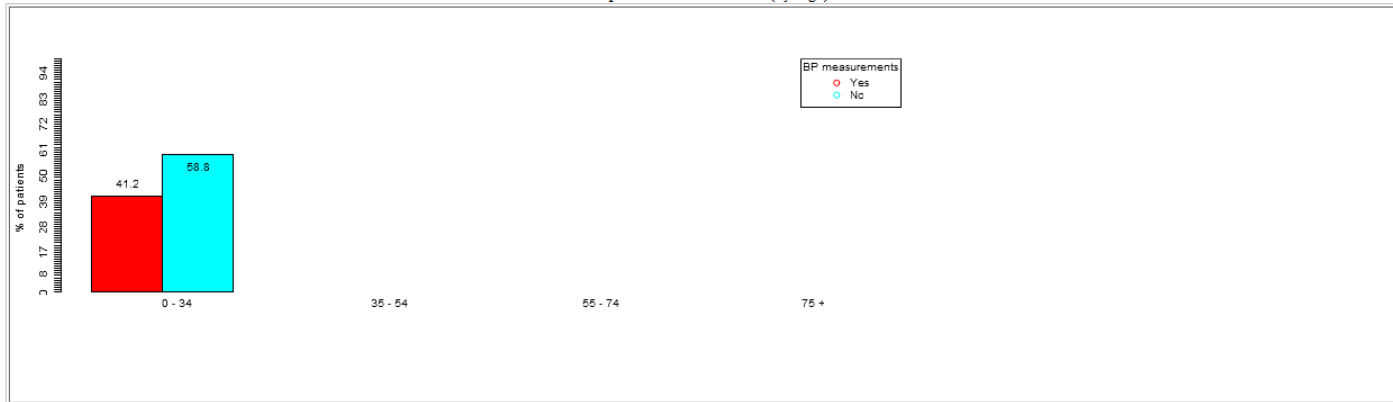


Upper Silesia, Poland

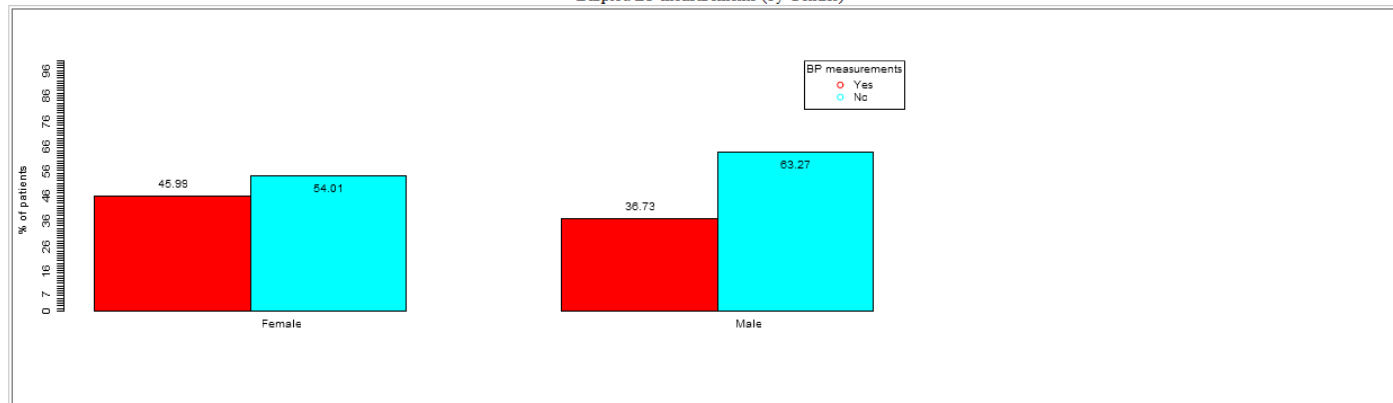
Statistical Report: BIRO Indicators (Figures)



Barplot BP measurements (by Age)



Barplot BP measurements (by Gender)

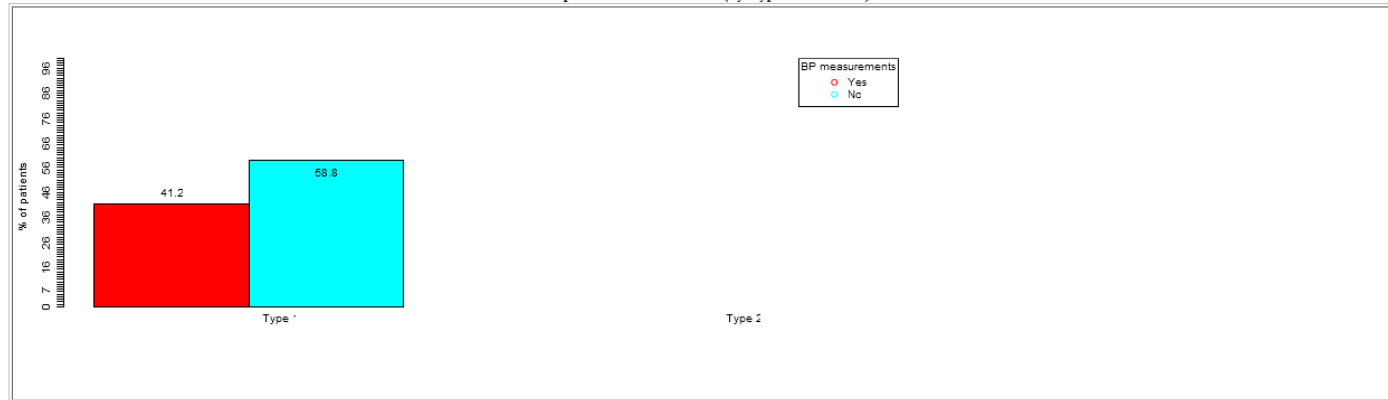


Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Barplot BP measurements (by Type of Diabetes)

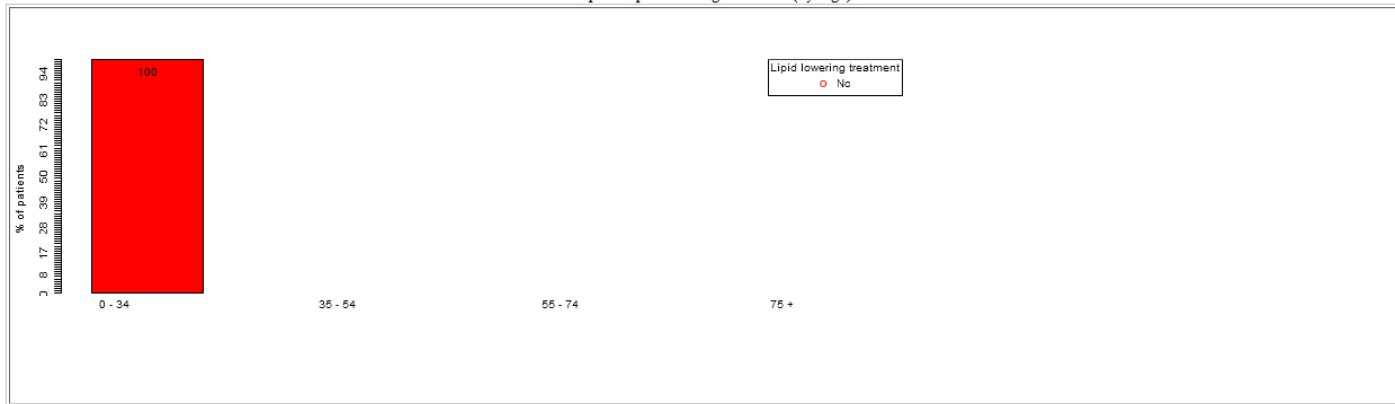


Upper Silesia, Poland

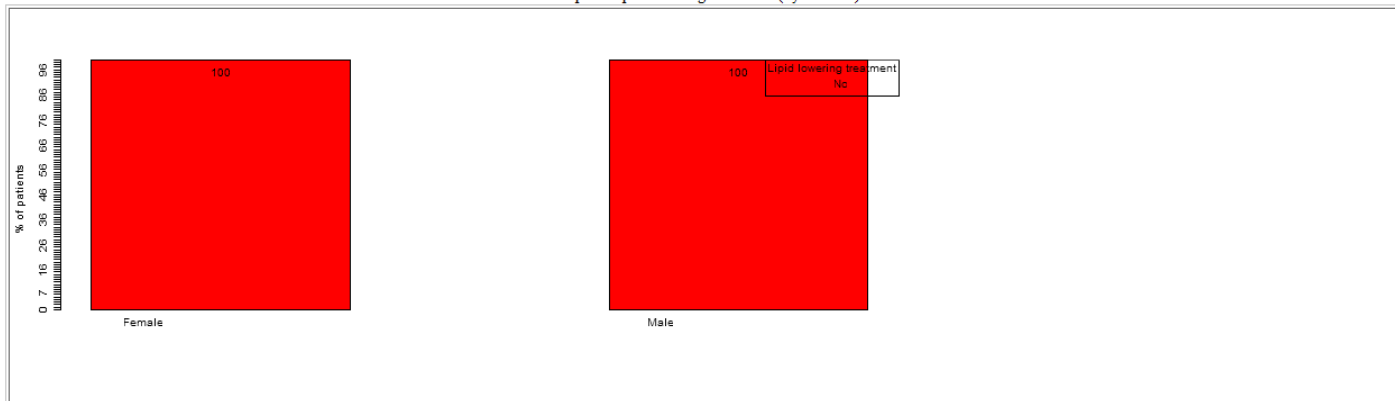
Statistical Report: BIRO Indicators (Figures)



Barplot: Lipid lowering treatment (by Age)



Barplot: Lipid lowering treatment (by Gender)



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Statistical Report: BIRO Indicators (Figures)



Barplot: Lipid lowering treatment (by Type of Diabetes)

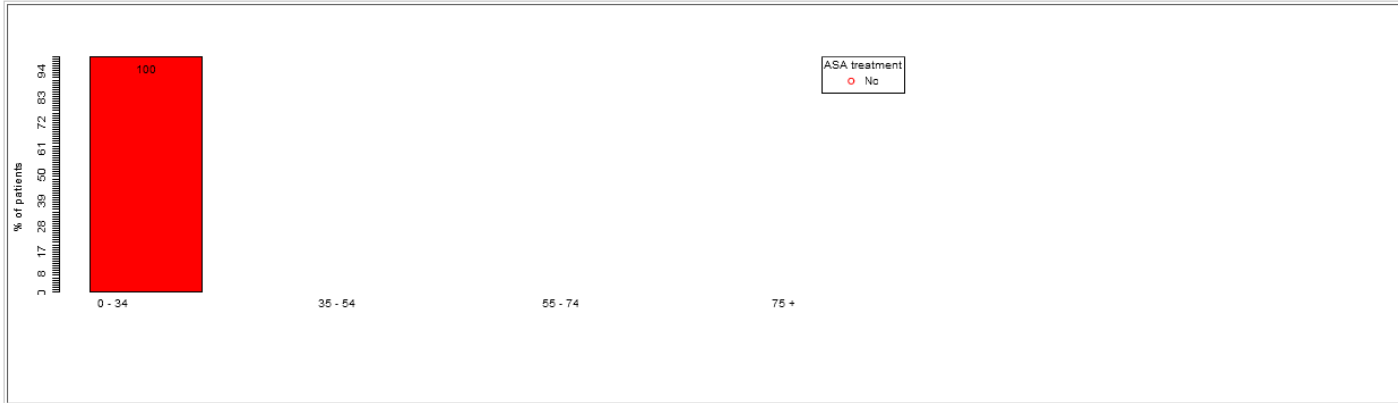


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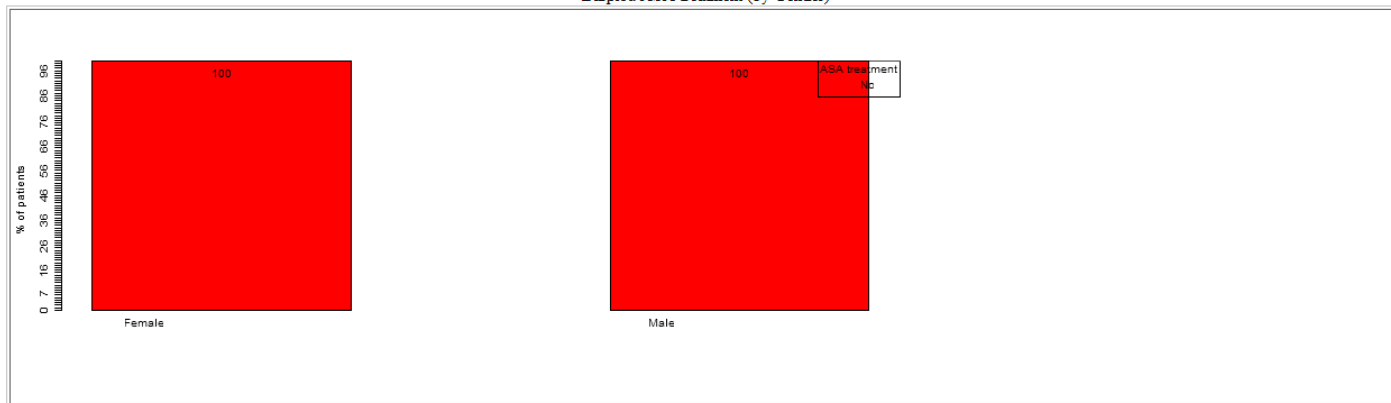
Statistical Report: BIRO Indicators (Figures)



Barplot: ASA treatment (by Age)



Barplot: ASA treatment (by Gender)

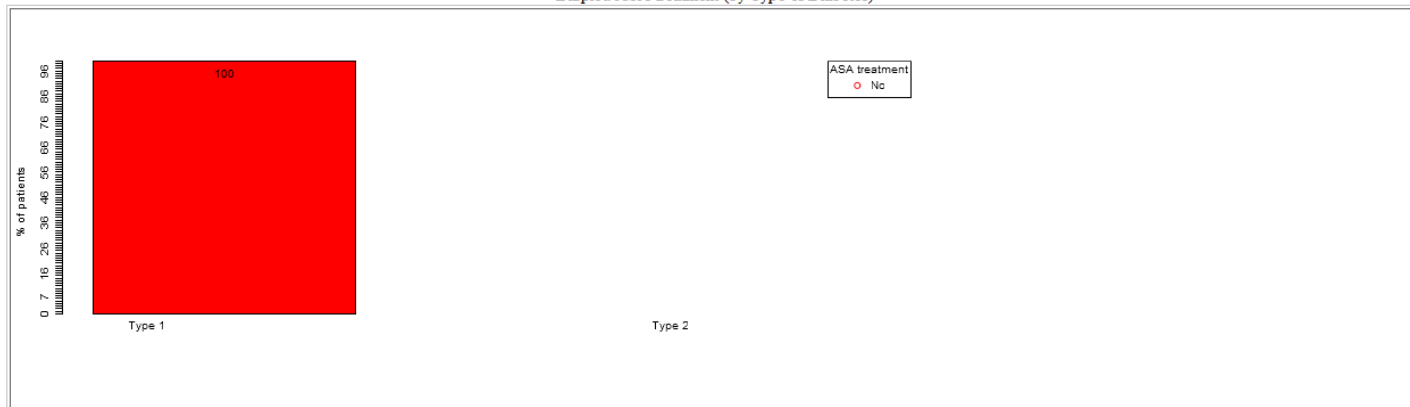


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Statistical Report: BIRO Indicators (Figures)



Barplot: ASA treatment (by Type of Diabetes)



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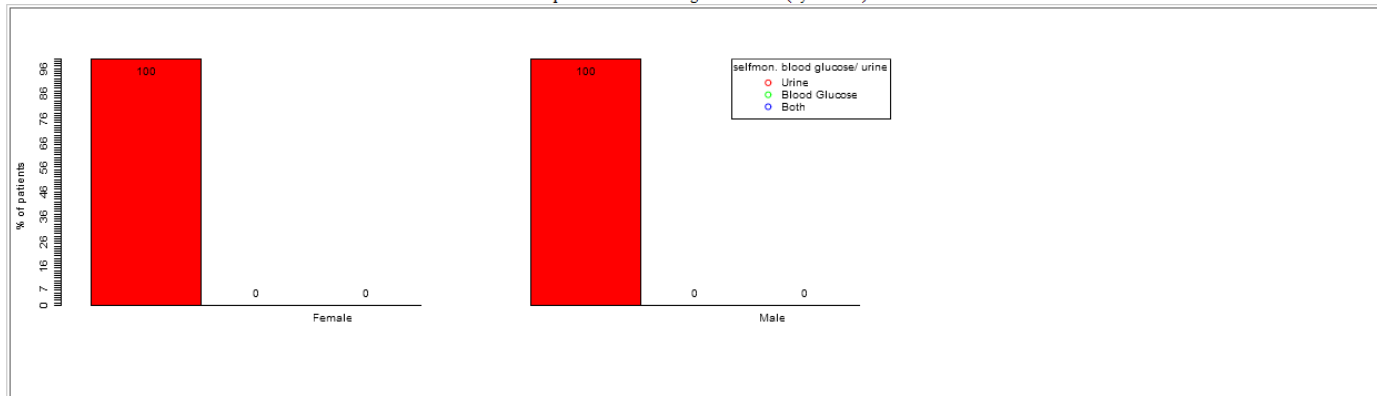
Statistical Report: BIRO Indicators (Figures)



Barplot: selfmon. blood glucose/ urine (by Age)



Barplot: selfmon. blood glucose/ urine (by Gender)

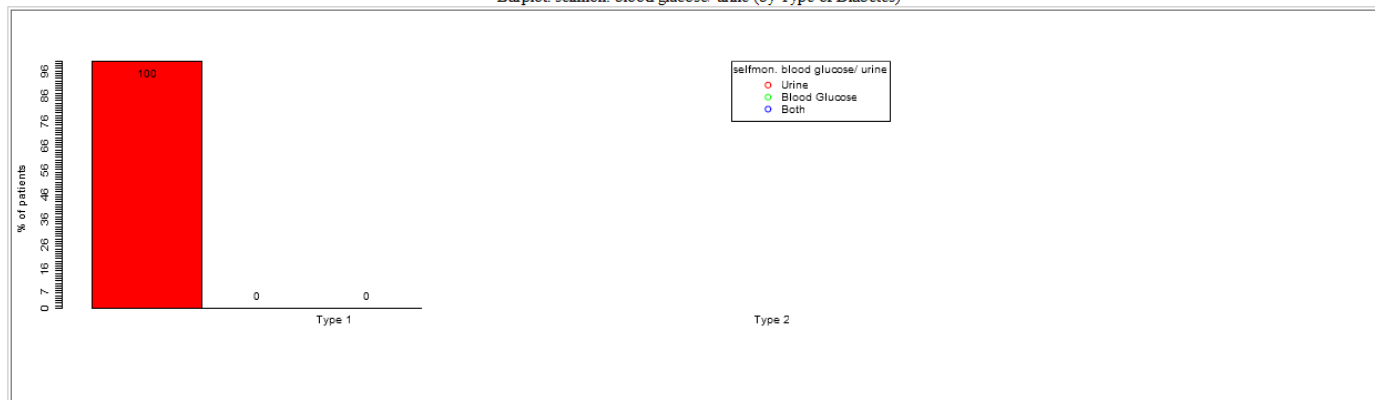


Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Barplot: selfmon. blood glucose/ urine (by Type of Diabetes)

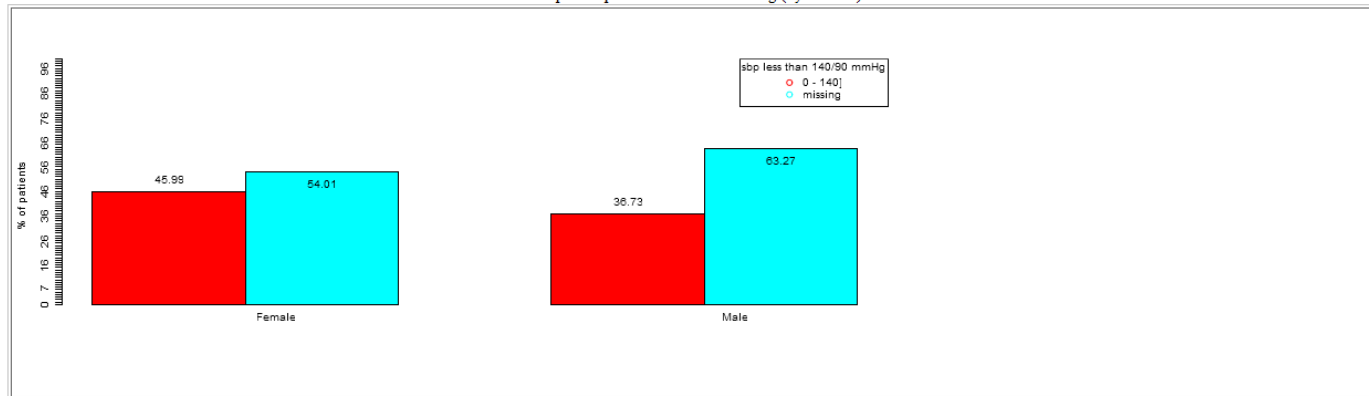


Upper Silesia, Poland

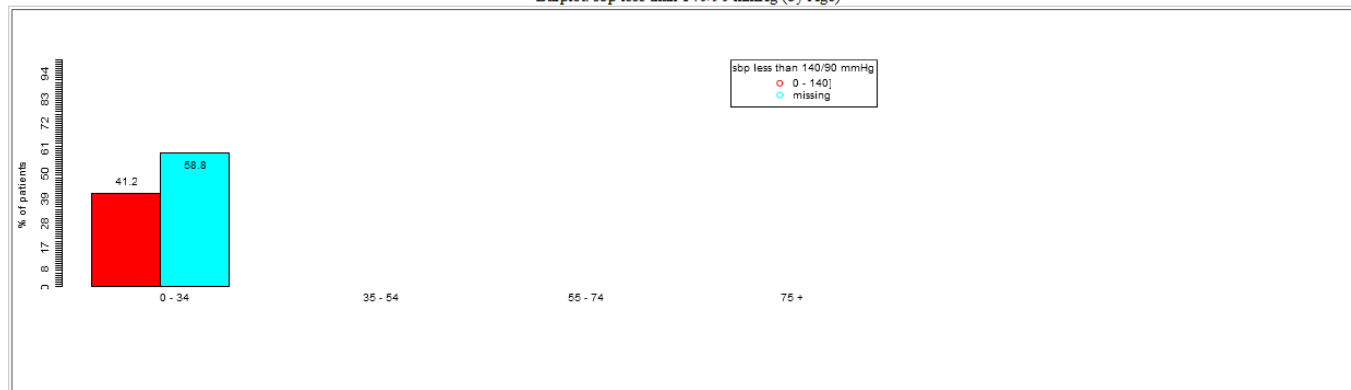
Statistical Report: BIRO Indicators (Figures)



Barplot: sbp less than 140/90 mmHg (by Gender)



Barplot: sbp less than 140/90 mmHg (by Age)

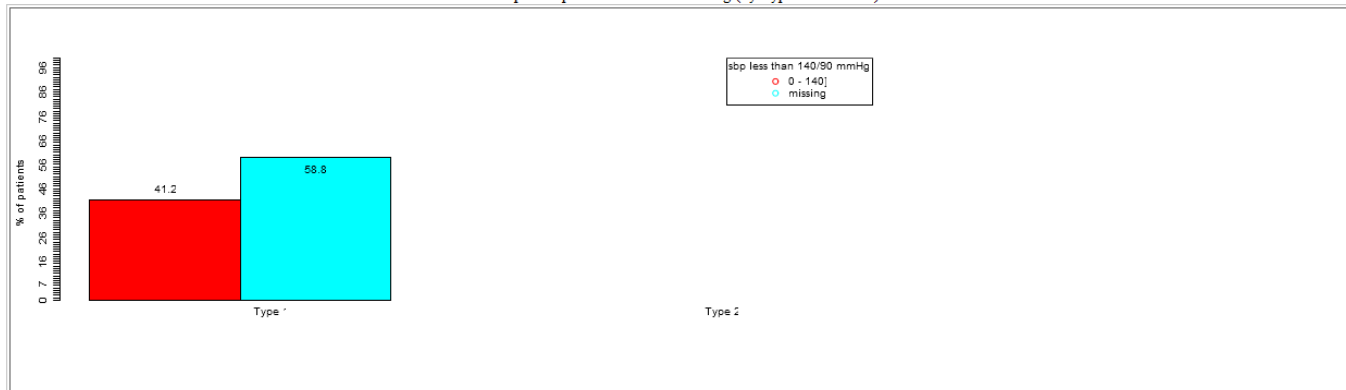


Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Barplot: sbp less than 140/90 mmHg (by Type of Diabetes)

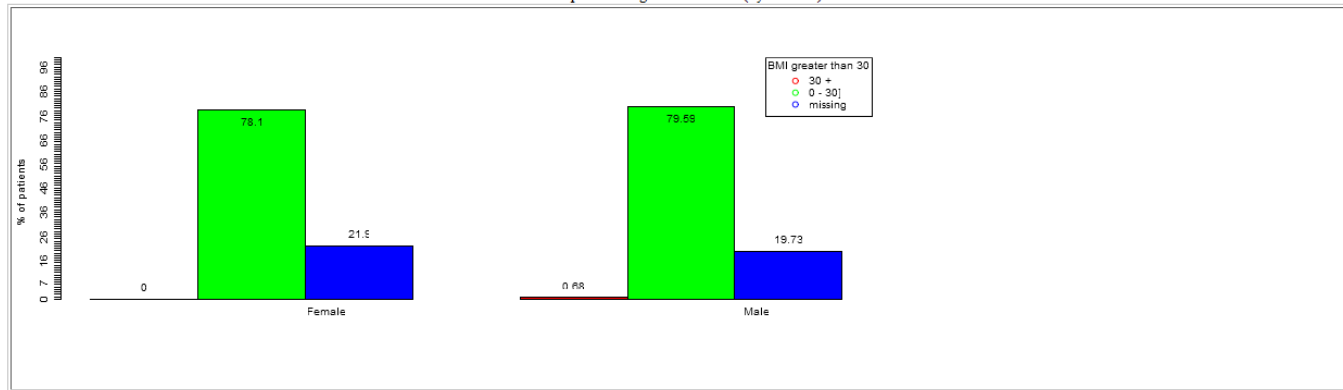


Upper Silesia, Poland

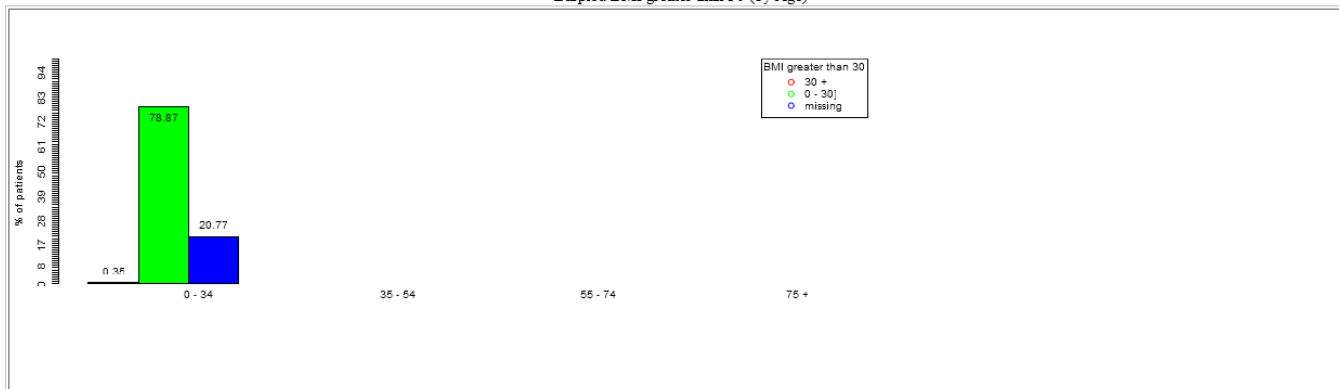
Statistical Report: BIRO Indicators (Figures)



Barplot: BMI greater than 30 (by Gender)



Barplot: BMI greater than 30 (by Age)

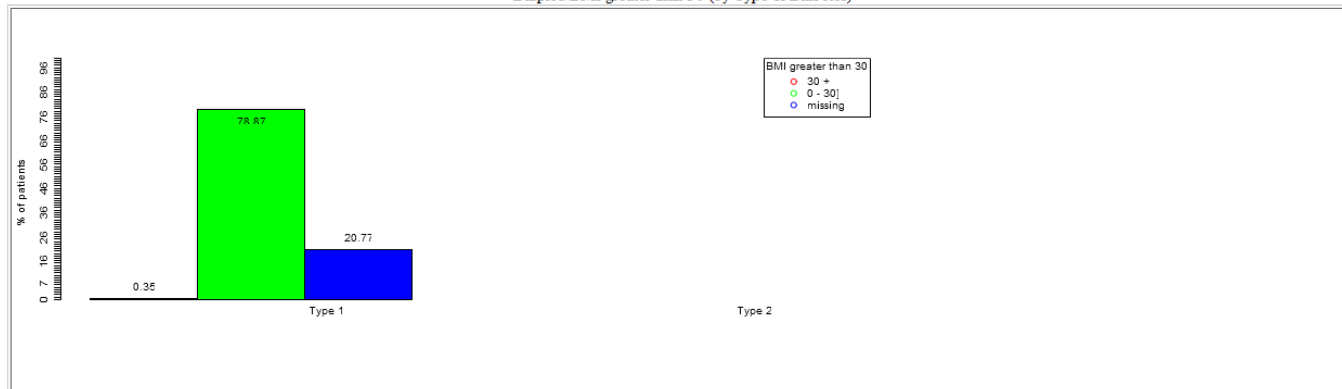


Upper Silesia, Poland

Statistical Report: BIRO Indicators (Figures)



Barplot BMI greater than 30 (by Type of Diabetes)

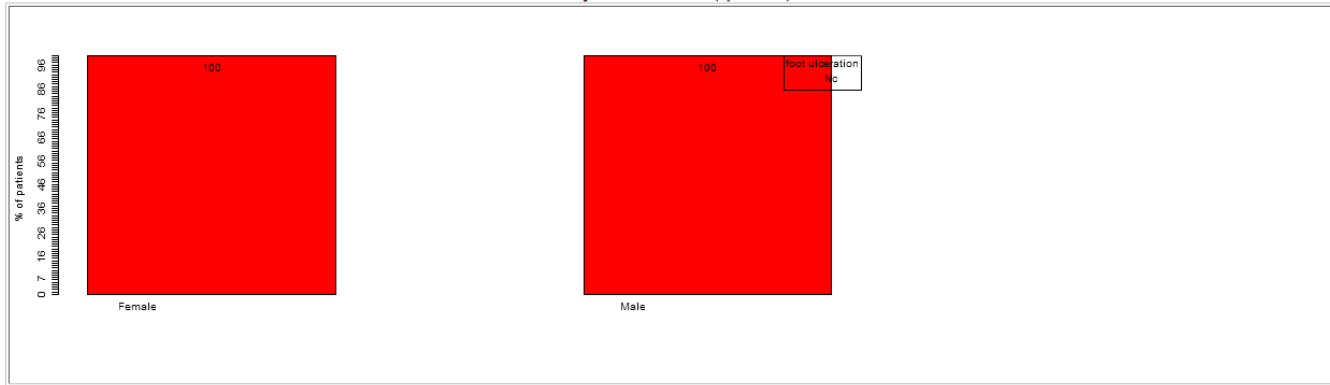


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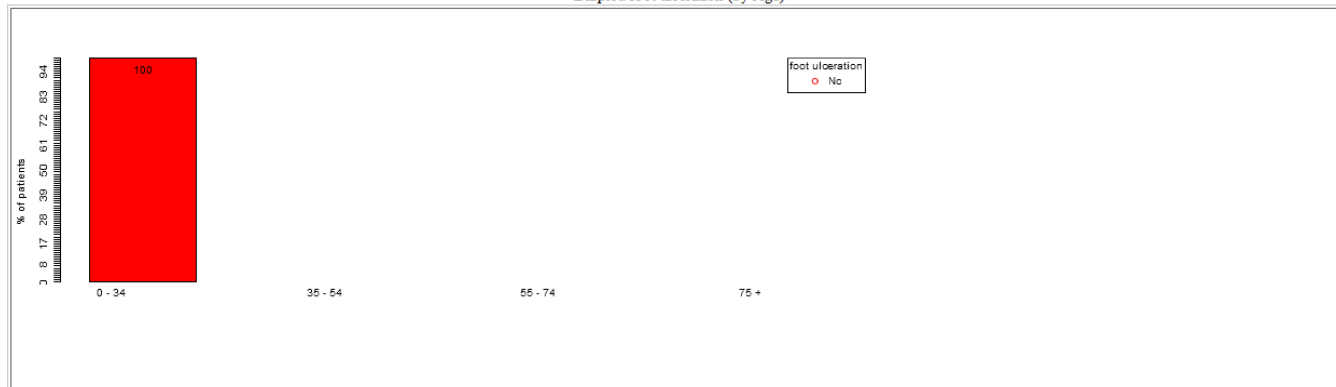
Statistical Report: BIRO Indicators (Figures)



Barplot: foot ulceration (by Gender)



Barplot: foot ulceration (by Age)

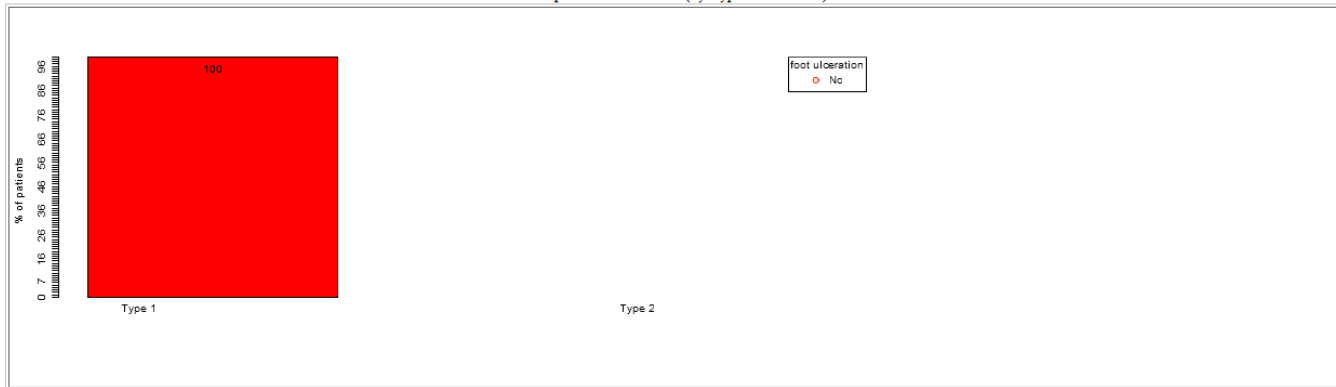


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Statistical Report: BIRO Indicators (Figures)



Barplot: foot ulceration (by Type of Diabetes)

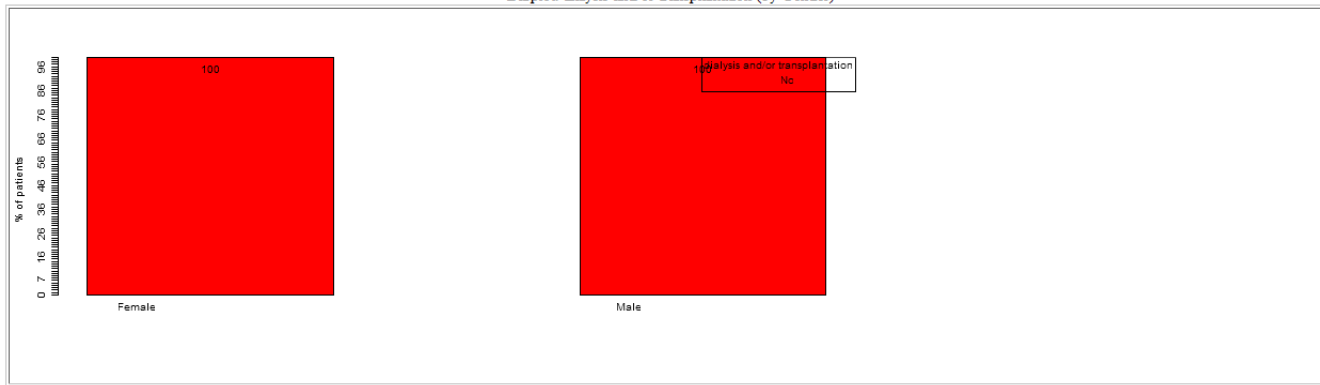


Upper Silesia, Poland

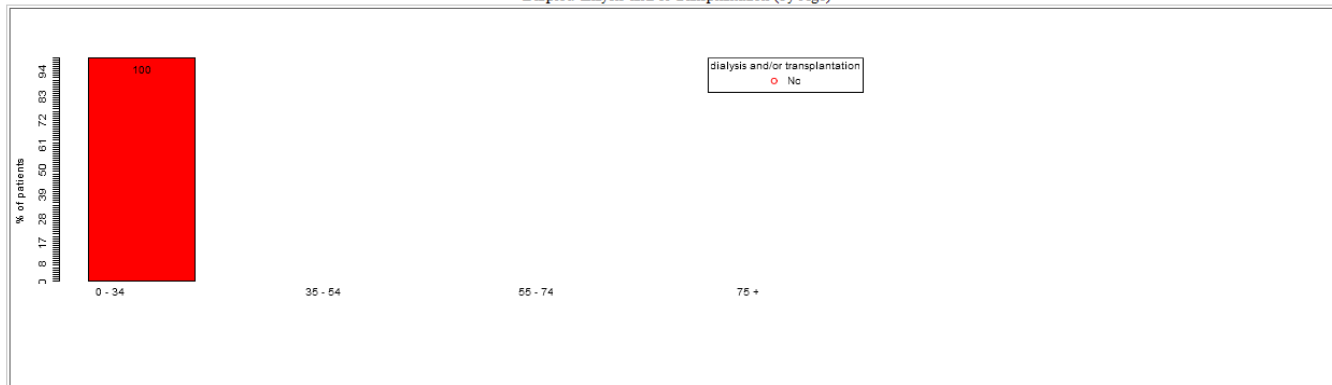
Statistical Report: BIRO Indicators (Figures)



Barplot: dialysis and/or transplantation (by Gender)



Barplot: dialysis and/or transplantation (by Age)

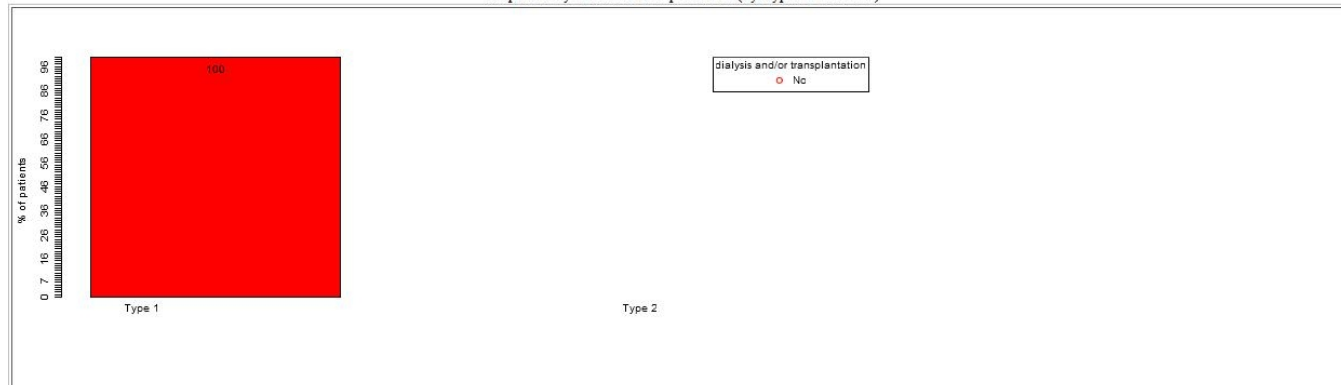


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Statistical Report: BIRO Indicators (Figures)



Barplot: dialysis and/or transplantation (by Type of Diabetes)

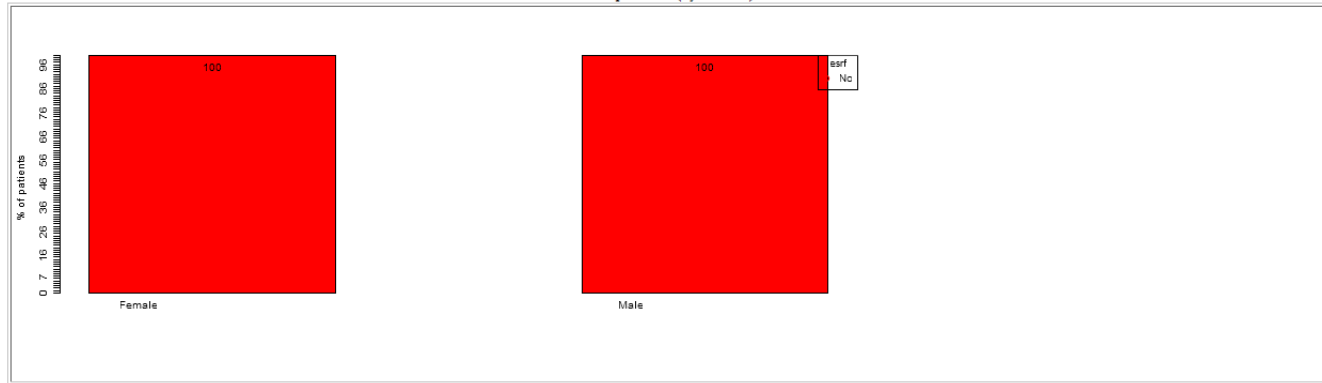


Upper Silesia, Poland

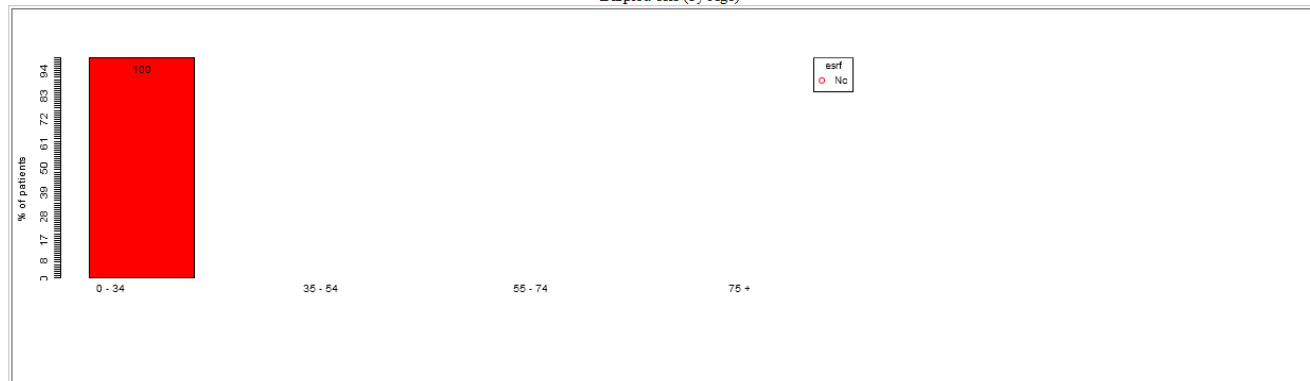
Statistical Report: BIRO Indicators (Figures)



Barplot: esrf (by Gender)



Barplot: esrf (by Age)

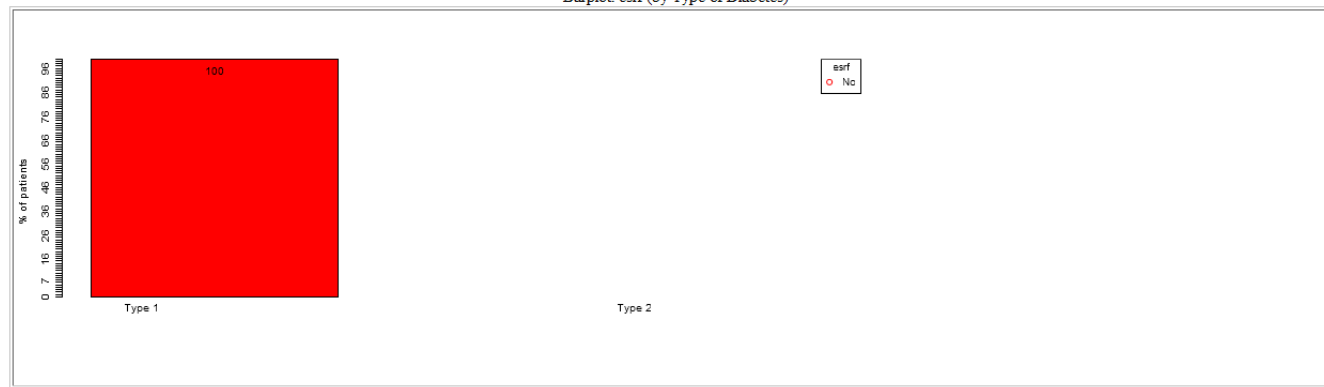


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Statistical Report: BIRO Indicators (Figures)



Barplot: esrf (by Type of Diabetes)



Conclusions (1): Statistical Results



- Reports do not include some indicators that are important for paediatric treatment
- Important indicators Creatinine, cholesterol and triglicerydes were rejected by statistical engine as „Out of Range Values”
- Our Merge Table didn't contain HBA1C's which are still in paper registers
- It's interesting to see the BMI distribution

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Conclusions (2): Diabetes Care



- It's hard to conclude on results taken from BIRO reports because most of the parameters are not well suited for our type of patients – children type 1 diabetes

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Conclusions (3): BIRO usage

- The BIRO system is a promising instrument in comparative study between Diabetic Centers
- There should be a more friendly interface
- It should gather more parameters
- It's very unfortunate that privacy policy in many countries forces the system to aggregate data

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Future LOCAL Perspectives



- Gather historical informations
- Transfer paper data to Local Register
- Force personel to more accurate acqusition of data
- Invite other Health Centers into the project

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Future BIRO Perspectives



- Add some more parameters into BIRO system which are already included in our Local Register – have a bigger focus on Children
- Divide Age band 0-14
- Improve the prior data analysis in BIROBOX which would allow Centers to correct/adjust their data if there is such a need – and so avoid rejecting them in statistical analysis

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fot. Arek Ławrywaniec

Thanks for the attention!