

# Dataset Integrity Check for the Longitudinal Assessment of Bariatric Surgery (LABS-1) Data Files

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## **1 Standard Disclaimer**

The intent of this DSIC is to provide confidence that the data distributed by the NIDDK repository is a true copy of the study data. Our intent is not to assess the integrity of the statistical analyses reported by study investigators. As with all statistical analyses of complex datasets, complete replication of a set of statistical results should not be expected in secondary analysis. This occurs for a number of reasons including differences in the handling of missing data, restrictions on cases included in samples for a particular analysis, software coding used to define complex variables, etc. Experience suggests that most discrepancies can ordinarily be resolved by consultation with the study data coordinating center (DCC), however this process is labor-intensive for both DCC and Repository staff. It is thus not our policy to resolve every discrepancy that is observed in an integrity check. Specifically, we do not attempt to resolve minor or inconsequential discrepancies with published results or discrepancies that involve complex analyses, unless NIDDK Repository staff suspect that the observed discrepancy suggests that the dataset may have been corrupted in storage, transmission, or processing by repository staff. We do, however, document in footnotes to the integrity check those instances in which our secondary analyses produced results that were not fully consistent with those reported in the target publication.

## **2 Study Background**

The Longitudinal Assessment of Bariatric Surgery (LABS) was a multi-institutional study conducted at university hospitals throughout the United States. The goals were to compare the morbidity and mortality between primary and revisional bariatric surgery and to identify the clinical predictors of adverse outcomes. LABS-1 was a 30-day safety study of consecutive participants over the age of 18 who had undergone bariatric surgical procedures from March 11, 2005 to December 31, 2007. Those who had laparoscopic adjustable gastric banding procedures were removed from this analysis cohort. A total of 3,802 LABS-1 patients are included, which includes 3,577 patients who underwent primary surgery and 225 who underwent revisional surgery. The demographic, clinical, operative, and 30-day outcome data were compared between the two groups. In conclusion, revisional surgery was performed without substantial mortality but with a greater incidence of adverse outcomes than was primary bariatric surgery.

## **3 Archived Datasets**

All SAS data files, as provided by the Data Coordinating Center (DCC), are located in the data package. For this replication, variables were taken from the various form datasets.

## **4 Statistical Methods**

Analyses were performed to duplicate results for the data published by Inabnet et al. [1] in *Surgery for Obesity and Related Diseases* in 2010.

To verify the integrity of the SAS datasets, descriptive statistics were computed.

## 5 Results

Note that the manuscript used a later cut-off date than the data available in the data package. As a result, some discrepancies are expected as some patients enrolled after the cut-off date for the data package and are not included.

For Table 1 in the publication [1], Patient characteristics, Table A lists the variables that were used in the replication and Table B compares the results calculated from the archived data files to the results published in Table 1. The results of the replication are within expected results given the missing subjects.

For Table 2 in the publication [1], Patient health status, Table C lists the variables that were used in the replication and Table D compares the results calculated from the archived data files to the results published in Table 2. The results of the replication are within expected results given the missing subjects.

For Table 3 in the publication [1], Pre- and intraoperative characteristics, Table E lists the variables that were used in the replication and Table F compares the results calculated from the archived data files to the results published in Table 3. The results of the replication are within expected results given the missing subjects.

For Table 4 in the publication [1], Adverse outcomes, Table G lists the variables that were used in the replication and Table H compares the results calculated from the archived data files to the results published in Table 4. The results of the replication are almost an exact match.

For Table 5 in the publication [1], Composite events by patient characteristics, Table I lists the variables that were used in the replication and Table J compares the results calculated from the archived data files to the results published in Table 5. The results of the replication are almost an exact match.

## 6 Conclusion

The NIDDK repository is confident that the LABS-1 data files to be distributed are a true copy of the study data.

## 7 References

[1] Inabnet, W. B., Belle, S. H., Bessler, M., Courcoulas, A., Dellinger, P. Garcia, L., Mitchell, J., Oelschlager, B., O'Rourke, R., Pender, J., Pomp, A., Pories, W., Ramanathan, R., Wahed, A., Wolfe, B. Comparison of 30-day outcomes after non-LapBand primary and revisional bariatric surgical procedures form the Longitudinal Assessment of Bariatric Surgery study. *Surgery for Obesity and Related Diseases*. 6 (2010) 22-30.

**Table A:** Variables used to replicate Table 1: Patient Characteristics

<b>Characteristic</b>	<b>dataset.variable</b>
Revisions/reversals	po1.rever, po1.revis, op1.op_revis, op1.op_rever
Patient age (yr)	age_at_surgery.age_s
BMI (kg/m <sup>2</sup> )	po1.hgtin, po1.hgtft, po1.wgt, po2.wgt, pu1.wgt
Men (n)	po1.sex
White	po1.racew
Hispanic	po1.ethn
Smoker within past year (n)	po1.smoke, po1.cigquit, po1.age_c, po2.cig

**Table B:** Comparison of values computed in integrity check to reference article Table 1 values

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Patient age (yr)						
Mean	44.22	44.23	0.01	43.98	44.0	0.02
Median	44	44	0	44	44	0
Age group (n)						
<30 yr	390 (10.3)	390 (10.3)	0 (0)	380 (10.6)	380 (10.6)	0 (0)
30-39 yr	990 (26)	988 (26)	2 (0)	952 (26.6)	949 (26.5)	3 (0.1)
40-49 yr	1108 (29.1)	1108 (29.2)	0 (0.1)	1043 (29.2)	1044 (29.2)	1 (0)
50-59 yr	991 (26.1)	991 (26.1)	0 (0)	899 (25.1)	900 (25.2)	1 (0)
60-64 yr	238 (6.3)	238 (6.3)	0 (0)	225 (6.3)	225 (6.3)	0 (0)
≥65 yr	85 (2.2)	85 (2.2)	0 (0)	78 (2.2)	78 (2.2)	0 (0)
BMI (kg/m <sup>2</sup> )						
Mean	48.51	48.5	0.01	48.98	48.98	0
Median	47	47	0	47.3	47.3	0
BMI group (n)						
<35 kg/m <sup>2</sup>	89 (2.3)	89 (2.3)	0 (0)	25 (0.7)	22 (0.6)	3 (0.1)
35-<40 kg/m <sup>2</sup>	391 (10.3)	399 (10.5)	8 (0.2)	353 (9.9)	363 (10.2)	10 (0.3)
40-<50 kg/m <sup>2</sup>	1919 (50.5)	1923 (50.6)	4 (0.1)	1844 (51.6)	1844 (51.6)	0 (0)
50-<60 kg/m <sup>2</sup>	1019 (26.8)	1006 (26.5)	13 (0.3)	983 (27.5)	975 (27.3)	8 (0.2)
≥60 kg/m <sup>2</sup>	383 (10.1)	383 (10.1)	0 (0)	372 (10.4)	372 (10.4)	0 (0)
Men (n)	761 (20)	761 (20)	0 (0)	732 (20.5)	731 (20.4)	1 (0.1)
Patient race (n)						
White	3365 (89.3)	3366 (88.9)	1 (0.4)	3159 (89.1)	3163 (88.5)	4 (0.6)
Data missing	34	35	1	32	33	1
Hispanic	240 (6.3)	239 (6.3)	1 (0)	227 (6.3)	227 (6.4)	0 (0.1)
Data missing	1	1	0	1	1	0
Smoker within past year (n)	584 (15.4)	583 (15.3)	1 (0.1)	555 (15.5)	554 (15.5)	1 (0.1)
Data missing	1	1	0	1	1	0

Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
Patient age (yr)			
Mean	47.95	47.94	0.01
Median	49	49	0
Age group (n)			
<30 yr	10 (4.4)	10 (4.5)	0 (0.1)
30-39 yr	38 (16.9)	39 (17.4)	1 (0.5)
40-49 yr	65 (28.9)	64 (28.6)	1 (0.3)
50-59 yr	92 (40.9)	91 (40.6)	1 (0.3)
60-64 yr	13 (5.8)	13 (5.8)	0 (0)
≥65 yr	7 (3.1)	7 (3.1)	0 (0)
BMI (kg/m <sup>2</sup> )			
Mean	40.95	40.76	0.19
Median	41.2	41.1	0.1
BMI group (n)			
<35 kg/m <sup>2</sup>	64 (28.6)	67 (29.9)	3 (1.3)
35-<40 kg/m <sup>2</sup>	38 (17)	36 (16.1)	2 (0.9)
40-<50 kg/m <sup>2</sup>	75 (33.5)	79 (35.3)	4 (1.8)
50-<60 kg/m <sup>2</sup>	36 (16.1)	31 (13.8)	5 (2.3)
≥60 kg/m <sup>2</sup>	11 (4.9)	11 (4.9)	0 (0)
Men (n)	29 (12.9)	30 (13.4)	1 (0.5)
Patient race (n)			
White	206 (92.4)	203 (90.6)	3 (1.8)
Data missing	2	2	0
Hispanic	13 (5.8)	12 (5.4)	1 (0.4)
Data missing	0	0	0
Smoker within past year (n)	29 (12.9)	29 (13.0)	0 (0.1)
Data missing	0	0	0



**Table C:** Variables used to replicate Table 2: Patient health status

<b>Characteristic</b>	<b>dataset.variable</b>
Hypertension (n)	po1.htn, po2.htn
Medication	po1.htns, pu1.htns
Diabetes (n)	po1.dm, po2.dm, pu1.dm
Medication	po1.dms, pu1.dms, po2.dminsu
Congestive heart failure (n)	po1.chf, po2.chf
Asthma (n)	po1.asth, po2.asthma
Inability to walk 200 ft. (n)	po1.fs, po2.fs, pu1.fs
History of DVT or PE (n)	po1.dvt, po2.clotdvt, po2.clotpe
Sleep apnea (n)	po1.slpa, po2.apnea, pu1.slpa
CPAP	po1.cpap, po2.cpap, pu1.cpap
Supplemental oxygen dependent	po1.oxydep, po2.supoxy, pu1.oxydep
Ischemic heart disease	po1.hd, pu1.hd
Pulmonary hypertension	po1.pulhyp, po2.pul, pu1.pulhyp
Venous edema with ulcerations	po1.hxve, po1.vedema, pu1.hxve, pu1.vedema, po2.leg
Co-morbidities (n)	po1.htn, po2.htn, po1.dm, po2.dm, pu1.dm, po1.chf, po2.chf, po1.asth, po2.asthma, po1.fs, po2.fs, pu1.fs, po1.dvt, po2.clotdvt, po2.clotpe, po1.slpa, po2.apnea, pu1.slpa, po1.hd, pu1.hd, po1.pulhyp, po2.pul, pu1.pulhyp, po1.hxve, po1.vedema, pu1.hxve, pu1.vedema, po2.leg
Beta-blocker (n)	po1.betab, pu1.betab
Statin/lipid-lowering agent (n)	po1.statin, pu1.statin
Therapeutic anticoagulation (n)	po1.antic, pu1.antic
Narcotic use (n)	po1.narc, pu1.narc
Antidepressant use (n)	po1.adeprs, pu1.adeprs

**Table D:** Comparison of values computed in integrity check to reference article Table 2 values

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Hypertension (n)	2104 (55.3)	2101 (55.3)	3 (0)	2001 (55.9)	1997 (55.8)	4 (0.1)
Medication						
None	246 (11.9)	247 (11.9)	1 (0)	232 (11.8)	233 (11.9)	1 (0.1)
Single	897 (43.3)	897 (43.3)	0 (0)	851 (43.2)	848 (43.1)	3 (0.1)
Multiple	929 (44.8)	926 (44.7)	3 (0.1)	886 (45)	885 (45)	1 (0)
Diabetes (n)	1323 (34.8)	1322 (34.8)	1 (0)	1278 (35.7)	1274 (35.6)	4 (0.1)
Medication						
None	203 (15.4)	199 (15.1)	4 (0.3)	192 (15)	186 (14.6)	4 (0.4)
Single, oral	395 (29.9)	397 (30)	2 (0.1)	382 (29.9)	385 (30.2)	3 (0.3)
Multiple, oral	324 (24.5)	328 (24.8)	4 (0.3)	319 (25)	322 (25.3)	3 (0.3)
Insulin	399 (30.2)	398 (30.1)	1 (0.1)	383 (30)	381 (29.9)	2 (0.1)
Congestive heart failure (n)	76 (2)	75 (2)	1 (0)	69 (1.9)	68 (1.9)	1 (0)
Data missing	2	0	2	0	0	0
Asthma (n)	911 (24)	911 (24)	0 (0)	853 (23.8)	852 (23.8)	1 (0)
Data missing	1	0	1	0	0	0
Inability to walk 200 ft. (n)	67 (1.8)	70 (1.8)	3 (0)	61 (1.7)	63 (1.8)	2 (0.1)
Data missing	1	1	0	1	1	0
History of DVT or PE (n)	149 (3.9)	148 (3.9)	1 (0)	131 (3.7)	130 (3.6)	1 (0.1)
Data missing	1	0	1	0	0	0
Sleep apnea (n)	1860 (48.9)	1862 (49)	2 (0.1)	1799 (50.3)	1799 (50.3)	0 (0)
Data missing	1	0	1	0	0	0
CPAP	1504 (80.9)	1503 (80.7)	1 (0.2)	1467 (81.5)	1466 (81.5)	1 (0)
Supplemental oxygen dependent	74 (4)	75 (4)	1 (0)	67 (3.7)	67 (3.7)	0 (0)
Ischemic heart disease	153 (4)	154 (4)	1 (0)	138 (3.9)	139 (3.9)	1 (0)
Data missing	2	0	2	0	0	0
Pulmonary hypertension	45 (1.2)	45 (1.2)	0 (0)	40 (1.1)	39 (1.1)	1 (0)
Venous edema with ulcerations	163 (4.6)	162 (4.6)	1 (0)	155 (4.7)	156 (4.7)	1 (0)
Data missing	287	286	1	273	272	1
Co-morbidities (n)						
Mean	1.8	1.8	0	1.82	1.82	0
Median	2	2	0	2	2	0

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Co-morbidity group (n)						
≥1	3149 (82.9)	3150 (82.9)	1 (0)	2998 (83.8)	2993 (83.7)	5 (0.1)
≥2	2101 (55.3)	2102 (55.3)	1 (0)	2014 (56.3)	2012 (56.3)	2 (0)
≥3	1038 (27.3)	1044 (27.5)	6 (0.2)	998 (27.9)	1002 (28)	4 (0.1)
≥4	394 (10.4)	396 (10.4)	2 (0)	374 (10.5)	372 (10.4)	2 (0.1)
Data missing	4	0	4	1	0	1
Beta-blocker (n)	687 (18.4)	688 (18.4)	1 (0)	642 (18.3)	641 (17.2)	1 (0.1)
Data missing	64	62	2	61	61	0
Statin/lipid-lowering agent (n)	1008 (26.5)	1006 (26.5)	2 (0)	969 (27.1)	965 (27)	4 (0.1)
Data missing	1	0	1	0	0	0
Therapeutic anticoagulation (n)	174 (4.6)	175 (4.6)	1 (0)	164 (4.6)	164 (4.6)	0 (0)
Data missing	1	0	1	0	0	0
Narcotic use (n)	657 (17.3)	657 (17.3)	0 (0)	594 (16.6)	594 (16.6)	0 (0)
Data missing	1	0	1	0	0	0
Antidepressant use (n)	1558 (41.7)	1556 (41.6)	2 (0.1)	1450 (41.2)	1446 (41.1)	4 (0.1)
Data missing	63	62	1	61	61	0

Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
Hypertension (n)	103 (45.8)	104 (46.4)	1 (0.6)
Medication			
None	14 (13.6)	14 (13.5)	0 (0.1)
Single	46 (44.7)	49 (47.1)	3 (2.4)
Multiple	43 (41.7)	41 (39.4)	2 (2.3)
Diabetes (n)	46 (20)	48 (21.4)	2 (1.4)
Medication			
None	11 (24.4)	13 (27.1)	2 (2.7)
Single, oral	13 (28.9)	12 (25)	1 (3.9)
Multiple, oral	6 (11.1)	6 (12.5)	0 (1.4)
Insulin	16 (35.6)	17 (35.4)	1 (0.2)
Congestive heart failure (n)	7 (3.1)	7 (3.1)	0 (0)
Data missing	2	0	2
Asthma (n)	58 (25.9)	59 (26.3)	1 (0.4)
Data missing	1	0	1
Inability to walk 200 ft. (n)	6 (2.7)	7 (3.1)	1 (0.4)
Data missing	0	0	0
History of DVT or PE (n)	18 (8)	18 (8)	0 (0)
Data missing	1	0	1
Sleep apnea (n)	61 (27.2)	63 (28.1)	2 (0.9)
Data missing	1	0	1
CPAP	37 (60.7)	37 (58.7)	0 (2)
Supplemental oxygen dependent	7 (11.5)	8 (12.7)	1 (1.2)
Ischemic heart disease	15 (6.7)	15 (6.7)	0 (0)
Data missing	2	0	2
Pulmonary hypertension	5 (2.2)	6 (2.7)	1 (0.5)
Venous edema with ulcerations	8 (3.8)	6 (2.9)	2 (0.9)
Data missing	14	14	0
Co-morbidities (n)			
Mean	1.43	1.49	0.06
Median	1	1	0
Co-morbidity group (n)			
≥1	151 (68)	157 (70.1)	6 (2.1)

Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
≥2	87 (39.2)	90 (40.2)	3 (1)
≥3	40 (18)	42 (18.8)	2 (0.8)
≥4	20 (9)	24 (10.7)	4 (1.7)
Data missing	3	0	3
Beta-blocker (n)	45 (20.3)	47 (21.1)	2 (0.8)
Data missing	3	1	2
Statin/lipid-lowering agent (n)	39 (17.4)	41 (18.3)	2 (0.9)
Data missing	1	0	1
Therapeutic anticoagulation (n)	10 (4.5)	11 (4.9)	1 (0.4)
Data missing	1	0	1
Narcotic use (n)	63 (28.1)	63 (28.1)	0 (0)
Data missing	1	0	1
Antidepressant use (n)	108 (48.4)	110 (49.3)	2 (0.9)
Data missing	2	1	1

**Table E:** Variables used to replicate Table 3: Pre- and intraoperative characteristics

<b>Characteristic</b>	<b>dataset.variable</b>
Previous obesity or foregut surgery	po1.osurg
Gastric Bypass	po1.gb
Biliopancreatic diversion	po1.bpd
Biliopancreatic diversion switch	po1.bpds
Adjustable gastric band	po1.agb
Vertical banded gastroplasty	po1.vbg
Sleeve gastrectomy	po1.sg
Previous foregut	po1.pf
Other previous obesity surgery	po1.osurgo
Surgery performed	sq.surg, op1.surgperf
Operative time (min)	sq.openh sq.openm, sq.closeh, sq.closem, op1.openh, op1.openm, op1.closeh, op1.closem
Crystalloid fluids (mL)	sq.cryfluml, op1.cryfluml
Colloid fluids $\geq$ 500 mL (n)	sq.colfluml, op1.colfluml
Median blood loss (mL)	sq.blosscc, op1.blosscc

**Table F:** Comparison of values computed in integrity check to reference article Table 3 values

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Previous obesity or foregut surgery	292 (7.6)	289 (7.6)	3 (0)	67 (1.9)	68 (1.9)	1 (0)
Data missing	1	0	1	1	0	1
Gastric Bypass	84 (29.2)	85 (29.4)	1 (0.2)	0 (0)	0 (0)	0 (0)
Biliopancreatic diversion	1 (0.3)	1 (0.4)	0 (0.1)	0 (0)	0 (0)	0 (0)
Biliopancreatic diversion switch	11 (3.8)	11 (3.8)	0 (0)	0 (0)	0 (0)	0 (0)
Adjustable gastric band	42 (14.6)	42 (14.5)	0 (0.1)	0 (0)	0 (0)	0 (0)
Vertical banded gastroplasty	47 (16.3)	47 (16.3)	0 (0)	0 (0)	0 (0)	0 (0)
Sleeve gastrectomy	4 (1.4)	4 (1.4)	0 (0)	0 (0)	0 (0)	0 (0)
Previous foregut	84 (29.2)	84 (29.1)	0 (0.1)	67 (100)	68 (100)	1 (0)
Other previous obesity surgery	49 (17)	50 (17.3)	1 (0.3)	0 (0)	0 (0)	0 (0)
Surgery performed						
RYGB	3557 (93.6)	3557 (93.6)	0 (0)	3411 (95.4)	3408 (95.3)	3 (0)
Biliopancreatic diversion	4 (0.1)	3 (0.1)	1 (0)	2 (0.1)	2 (0.1)	0 (0)
Biliopancreatic diversion switch	53 (1.4)	53 (1.4)	0 (0)	45 (1.3)	45 (1.3)	0 (0)
Sleeve gastrectomy	136 (3.6)	136 (3.6)	0 (0)	117 (3.3)	119 (3.3)	2 (0)
Vertical banded gastroplasty	1 (0)	1 (0)	0 (0)	1 (0)	1 (0)	0 (0)
Other	49 (1.3)	48 (1.3)	1 (0)	1 (0)	1 (0)	0 (0)
Banded RYGB	2 (0.1)	2 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)
Operative time (min)						
Mean	146.3	146.3	0	143.9	144	0.1
Median	137	137	0	135	135	0
Data missing (n)	7	6	1	6	6	0
Crystalloid fluids (mL)						
Mean	2878.2	2874.4	3.8	2845.1	2842.2	2.9
Median	2800	2800	0	2700	2700	0
Data missing (n)	42	43	1	40	42	2
Colloid fluids ≥ 500 mL (n)	258 (6.9)	258 (6.9)	0 (0)	233 (6.6)	233 (6.6)	0 (0)

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Data missing	46	44	2	44	43	1
Median blood loss (mL)	0 (0, 75)	0 (0, 75)	0	0 (0, 60)	0 (0, 60)	0
Data missing (n)	39	39	0	38	39	1

Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
Previous obesity or foregut surgery	225 (100)	221 (98.7)	4 (1.3)
Data missing	0	0	0
Gastric Bypass	84 (38)	85 (38.5)	1 (0.5)
Biliopancreatic diversion	1 (0.5)	1 (0.5)	0 (0)
Biliopancreatic diversion switch	11 (5)	11 (5.0)	0 (0)
Adjustable gastric band	42 (19)	42 (19)	0 (0)
Vertical banded gastroplasty	47 (21.3)	47 (21.3)	0 (0)
Sleeve gastrectomy	4 (1.8)	4 (1.8)	0 (0)
Previous foregut	17 (7.7)	16 (7.2)	1 (0.5)
Other previous obesity surgery	49 (22.2)	50 (22.6)	1 (0.4)
Surgery performed			
RYGB	146 (64.9)	149 (66.5)	3 (1.6)
Biliopancreatic diversion	2 (0.9)	1 (0.5)	1 (0.4)
Biliopancreatic diversion switch	8 (3.6)	8 (3.6)	0 (0)
Sleeve gastrectomy	19 (8.4)	17 (7.6)	2 (0.8)
Vertical banded gastroplasty	0 (0)	0 (0)	0 (0)
Other	48 (21.1)	47 (21.0)	1 (0.1)
Banded RYGB	2 (0.9)	2 (0.9)	0 (0)
Operative time (min)			
Mean	183	182.5	0.5
Median	180.5	179	1.5



Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
Data missing (n)	1	0	1
Crystalloid fluids (mL)			
Mean	3403	3396.4	6.6
Median	3300	3300	0
Data missing (n)	2	1	1
Colloid fluids ≥ 500 mL (n)	25 (11.2)	25 (11.2)	0 (0)
Data missing	2	1	1
Median blood loss (mL)	100 (0, 200)	100 (0, 200)	0
Data missing (n)	1	0	1

**Table G:** Variables used to replicate Table 4: Adverse outcomes

<b>Characteristic</b>	<b>dataset.variable</b>
Death	post1.postdie, post2.postdie
DVT or PE	post1.dvtthera, post1.pethera, post2.dvtthera, post2.pethera
Tracheal reintubation	post1.trachea, post2.trachea
Endoscopy	post1.endos, post2.endos
Tracheostomy	post1.tracheo, post2.tracheo
Percutaneous drain placement	post1.pdrain, post2.pdrain
Abdominal reoperation	post1.reopabd, post2.reopabd
Not discharged by day 30	post1.disloc = 5, post2.disloc = 5
Composite event	post1.postdie, post2.postdie, post1.dvtthera, post1.pethera, post2.dvtthera, post2.pethera, post1.trachea, post2.trachea, post1.endos, post2.endos, post1.tracheo, post2.tracheo, post1.pdrain, post2.pdrain, post1.reopabd, post2.reopabd, post1.disloc, post2.disloc

**Table H:** Comparison of values computed in integrity check to reference article Table 4 values

Characteristic	Total (n=3802) Manuscript	Total (n=3800) DSIC	Diff. (n=2)	Primary participants (n=3577) Manuscript	Primary participants (n=3576) DSIC	Diff. (n=1)
Death	17 (0.4)	17 (0.5)	0 (0.1)	16 (0.4)	16 (0.5)	0 (0.1)
DVT or PE	22 (0.6)	21 (0.6)	1 (0)	18 (0.5)	17 (0.5)	1 (0)
Tracheal reintubation	25 (0.7)	25 (0.7)	0 (0)	20 (0.6)	20 (0.6)	0 (0)
Endoscopy	63 (1.7)	63 (1.7)	0 (0)	53 (1.5)	53 (1.5)	0 (0)
Procedure						
Tracheostomy	12 (0.3)	12 (0.3)	0 (0)	12 (0.3)	12 (0.3)	0 (0)
Percutaneous drain placement	20 (0.5)	20 (0.5)	0 (0)	17 (0.5)	17 (0.5)	0 (0)
Abdominal reoperation	134 (3.5)	134 (3.5)	0 (0)	116 (3.2)	115 (3.2)	1 (0)
Not discharged by day 30	25 (0.7)	25 (0.7)	0 (0)	23 (0.6)	23 (0.6)	0 (0)
Composite event	224 (5.9)	224 (5.9)	0 (0)	190 (5.3)	189 (5.3)	1 (0)

Characteristic	Revisional participants (n=225) Manuscript	Revisional participants (n=224) DSIC	Diff. (n=1)
Death	1 (0.4)	1 (0.5)	0 (0.1)
DVT or PE	4 (1.8)	4 (1.8)	0 (0)
Tracheal reintubation	5 (2.2)	5 (2.2)	0 (0)
Endoscopy	10 (4.4)	10 (4.5)	0 (0.1)
Procedure			
Tracheostomy	0 (0)	0 (0)	0 (0)
Percutaneous drain placement	3 (1.3)	3 (1.3)	0 (0)
Abdominal reoperation	18 (8)	19 (8.5)	1 (0.5)
Not discharged by day 30	2 (0.9)	2 (0.9)	0 (0)
Composite event	34 (15.1)	35 (15.6)	1 (0.5)

**Table I:** Variables used to replicate Table 5: Adverse outcomes

Characteristic	dataset.variable
Composite event	post1.postdie, post2.postdie, post1.dvtthera, post1.pethera, post2.dvtthera, post2.pethera, post1.trachea, post2.trachea, post1.endos, post2.endos, post1.tracheo, post2.tracheo, post1.pdrain, post2.pdrain, post1.reopabd, post2.reopabd, post1.disloc, post2.disloc
Revision/reversal	po1.rever, po1.revis, op1.op_revis, op1.op_rever
Previous foregut surgery	po1.pf
Operative time (min)	sq.openh sq.openm, sq.closeh, sq.closem, op1.openh, op1.openm, op1.closeh, op1.closem
Crystalloid fluids (mL)	sq.cryfluml, op1.cryfluml
Colloid fluids (mL)	sq.colfluml, op1.colfluml
Blood loss (mL)	sq.blosscc, op1.blosscc
Age (yr)	age_at_surgery.age_s
BMI (kg/m <sup>2</sup> ) category	po1.hgtin, po1.hgtft, po1.wgt, po2.wgt, pu1.wgt
Hypertension	po1.htn, po2.htn
Diabetes	po1.dm, po2.dm, pu1.dm
Congestive heart failure	po1.chf, po2.chf
Asthma	po1.asth, po2.asthma
Functional status	po1.fs, po2.fs, pu1.fs
DVT	po1.dvt, po2.clotdvt, po2.clotpe
Obstructive sleep apnea	po1.slpa, po2.apnea, pu1.slpa
Ischemic heart disease	po1.hd, pu1.hd
Pulmonary hypertension	po1.pulhyp, po2.pul, pu1.pulhyp
Venous edema with ulcerations	po1.hxve, po1.vedema, pu1.hxve, pu1.vedema, po2.leg
Co-morbidities (n)	po1.htn, po2.htn, po1.dm, po2.dm, pu1.dm, po1.chf, po2.chf, po1.asth, po2.asthma, po1.fs, po2.fs, pu1.fs, po1.dvt, po2.clotdvt, po2.clotpe, po1.slpa, po2.apnea, pu1.slpa, po1.hd, pu1.hd, po1.pulhyp, po2.pul, pu1.pulhyp, po1.hxve, po1.vedema, pu1.hxve, pu1.vedema, po2.leg
Surgical procedure	op1.surgproc, sq.surgproc, op1.surgperf, sq.surg

**Table J:** Comparison of values computed in integrity check to reference article Table 5 values

Characteristic	Total (n) Manuscript	Total (n) DSIC	Diff.	n (%) Manuscript	n (%) DSIC	Diff.
Pre- and intraoperative Procedure						
Primary	3577	3576	1	190 (5.3)	189 (5.3)	1 (0)
Revision/reversal	225	224	1	34 (15.1)	35 (15.6)	1 (0.5)
Previous foregut surgery						
No	3718	3716	2	220 (5.9)	220 (5.9)	0 (0)
Yes	84	84	0	4 (4.8)	4 (4.8)	0 (0)
Operative time (min)						
≤ 107	910	907	3	32 (3.5)	31 (3.4)	1 (0.1)
108-136	970	970	0	41 (4.2)	41 (4.2)	0 (0)
137-171	958	958	0	63 (6.6)	63 (6.6)	0 (0)
≥ 172	957	958	1	88 (9.2)	88 (9.2)	0 (0)
Crystalloid fluids (mL)						
< 2000	714	713	1	30 (4.2)	31 (4.4)	1 (0.2)
2000-1799	1205	1208	3	61 (5.1)	62 (5.1)	1 (0)
2800-3499	848	846	2	48 (5.7)	46 (5.4)	2 (0.3)
≥ 3500	1035	1033	2	85 (8.2)	85 (8.2)	0 (0)
Colloid fluids (mL)						
< 500	3498	3498	0	197 (5.6)	196 (5.6)	1 (0)
≥ 500	258	258	0	24 (9.3)	24 (9.3)	0 (0)
Blood loss (mL)						
< 75	2748	2745	3	120 (4.4)	119 (4.3)	1 (0.1)
≥ 75	1015	1016	1	102 (10)	102 (10)	0 (0)
Demographics						
Age (yr)						
< 30	390	390	0	16 (4.1)	16 (4.1)	0 (0)
30-39	990	988	2	53 (5.4)	51 (5.2)	2 (0.2)
40-49	1108	1108	0	66 (6)	67 (6.1)	1 (0.1)
50-59	991	991	0	65 (6.6)	65 (6.6)	0 (0)
60-64	238	238	0	17 (7.1)	18 (7.6)	1 (0.5)
≥ 65	85	85	0	7 (8.2)	7 (8.2)	0 (0)

Characteristic	Total (n) Manuscript	Total (n) DSIC	Diff.	n (%) Manuscript	n (%) DSIC	Diff.
BMI (kg/m <sup>2</sup> ) category						
< 40	480	488	8	40 (8.3)	44 (9)	4 (0.7)
40-<50	1919	1923	4	85 (4.4)	86 (4.5)	1 (0.1)
50-<60	1019	1006	13	63 (6.2)	58 (5.8)	5 (0.4)
≥ 60	383	383	0	36 (9.4)	36 (9.4)	0 (0)
Co-morbidities						
Hypertension						
No	1698	1699	1	97 (5.7)	97 (5.7)	0 (0)
Yes	2104	2101	3	127 (6)	127 (6)	0 (0)
Diabetes						
No	2479	2478	1	132 (5.3)	134 (5.4)	2 (0.1)
Yes	1323	1322	1	92 (7)	90 (6.8)	2 (0.2)
Congestive heart failure						
No	3724	3725	1	214 (5.7)	214 (5.7)	0 (0)
Yes	76	75	1	10 (13.2)	10 (13.3)	0 (0.1)
Asthma						
No	2890	1889	1	166 (5.7)	166 (5.8)	0 (0.1)
Yes	911	911	0	58 (6.4)	58 (6.4)	0 (0)
Functional status						
Able to walk 200 ft.	3734	3729	5	210 (5.6)	210 (5.6)	0 (0)
Unable to walk 200 ft.	67	70	3	14 (20.9)	14 (20)	0 (0.9)
DVT						
No	3652	3652	0	200 (5.5)	200 (5.5)	0 (0)
Yes	149	148	1	24 (16.1)	24 (16.2)	0 (0.1)
Obstructive sleep apnea						
No	1941	1938	3	97 (5)	97 (5)	0 (0)
Yes	1860	1862	2	127 (6.8)	127 (6.8)	0 (0)
Ischemic heart disease						
No	3647	3646	1	211 (5.8)	210 (5.8)	1 (0)
Yes	153	154	1	13 (8.5)	14 (9.1)	1 (0.6)
Pulmonary hypertension						

Characteristic	Total (n) Manuscript	Total (n) DSIC	Diff.	n (%) Manuscript	n (%) DSIC	Diff.
No	3757	3755	2	218 (5.8)	218 (5.8)	0 (0)
Yes	45	45	0	6 (13.3)	6 (13.3)	0 (0)
Venous edema with ulcerations						
No	3639	3638	1	206 (5.7)	206 (5.7)	0 (0)
Yes	163	162	1	18 (11)	18 (11.1)	0 (0.1)
Co-morbidities (n)						
None	649	650	1	25 (3.9)	26 (4)	1 (0.1)
1-2	2111	2106	5	120 (5.7)	120 (5.7)	0 (0)
≥ 3	1038	1044	6	79 (7.6)	78 (7.5)	1 (0.1)
Surgical procedure						
LRYGB	3024	3022	2	150 (5)	148 (4.9)	2 (0.1)
ORYGB	534	535	1	48 (9)	50 (9.4)	2 (0.4)
Other	244	243	1	26 (10.7)	26 (10.7)	0 (0)

## Attachment A: SAS Code

```

/*****
** Programmer: Allyson Mateja                               **/
** Date:      March 2, 2016                                 **/
** Modified:  August 12, 2016                              **/
** Identify cohort for LABS-1 paper                        **/
*****/
title1 "%sysfunc(getoption(syn))";
title2 " ";

proc format;

    value ethnf 0      = 'Hispanic'
              1      = 'Non-Hispanic'
             -1, -4  = 'Missing'
              -2     = 'N/A'
              -3     = 'Unknown';

    value agegrp 0 - 29 = '<30 yr'
              30 - 39 = '30-39 yr'
              40 - 49 = '40-49 yr'
              50 - 59 = '50-59 yr'
              60 - 64 = '60-64 yr'
              65 - HIGH = '>65 yr';

    value bmigrf 0 <- 35 = '<35 kg/m^2'
              35 <- 40 = '35-<40 kg/m^2'
              40 <- 50 = '40-<50 kg/m^2'
              50 <- 60 = '50-<60 kg/m^2'
              60 - HIGH = '>=60 kg/m^2';

    value sexf 1 = 'Male'
             2 = 'Female';

    value racef 1 = 'White'
              -3 = 'Missing'
             -4,0 = 'Other';

libname labs1 "/prj/niddk/ims_analysis/LABS/private_orig_data/LABS-1/Longitudinal Assessment of Bariatric Surgery (LABS-1)/SAS Database";
libname labslupd "/prj/niddk/ims_analysis/LABS/private_orig_data/LABS-1_20160226/";
libname labslpt2 "/prj/niddk/ims_analysis/LABS/private_orig_data/LABS-1_20151222/SAS Database/";
libname labslpt3 "/prj/niddk/ims_analysis/LABS/private_orig_data/LABS-1_20160812/";

```



```

options nofmterr;

data opl;
  set labs1.opl;

data pol;
  set labs1pt2.pol;

data sq;
  set labs1pt3.sq;

data pul;
  set labs1.pul;

data pu2;
  set labs1.pu2;

data post1;
  set labs1.post1;

data post2;
  set labs1.post2;

data po_updates;
  set pul;

data po2;
  set labs1.po2;

data age_at_surgery;
  set labs1pt3.age_at_surgery;

proc sort data = po_updates;
  by id puldat;

data po_updates second_update;
  set po_updates;
  by id;
  if first.id then output po_updates;
  else output second_update;

proc sort data = second_update;
  by id;

data second_update;
  set second_update;
  by id;

```

```

        if last.id then output;
proc contents data=opl;
proc contents data = sq;

proc sort data = opl;
    by id;

proc sort data = sq;
    by id;

data surgeries;
    merge sq (keep = id surgno s2proc sga surg cryfluml colfluml blosscc openh openm closeh closen formv surgproc)
        opl;
    by id;

proc freq data = surgeries;
    tables surgperf surgno surgperf*surgno /list missing;

data surgeries;
    set surgeries;
    if surgperf not in (1, 5) and surgno ne 1 and s2proc ne 1 and sga not in (1, 2, 3) and surg ne 4 then output;

data surgeries;
    set surgeries;
    if id not in (89234, 82480, 15493, 88957, 11569, 55259, 72181);

proc print data = surgeries;
    where id = 55848;

data surgeries;
    set surgeries;
    by id;
    if id = 55848 and last.id then output;
    else if id ne 55848 then output;

proc sort data = pol;
    by id poldat;

data pol;
    set pol;
    by id;
    if last.id then output pol;

proc sort data = po2 nodupkey;
    by id;

proc sort data = surgeries;

```

```

        by id surgdat;

data age_at_surgery;
    set age_at_surgery;
    if canceled = 0;

proc sort data = age_at_surgery;
    by id surgdate;

data age_at_surgery;
    set age_at_surgery;
    by id;
    if first.id then output;

data surgeries;
    length hypertension_meds $10.
           surgery_performed $50.
           diabetes_meds $20.;;
    merge surgeries (in=val1 keep = id op_rever op_revis surgdat surg surgperf CRYFLUML colfluml blosscc openh openm closeh closem
surgproc)
           po1 (in=val2)
           po2 (in=val3 keep = id physdat cig htn dm wgt chf asthma fs clotpe clotdvt apnea cpap supoxy pul leg dmoral dminsu
dmnoni rename = (htn = htn_update dm = dm_update wgt = wgt_update
                chf = chf_update fs = fs_update cpap=cpap_update))
           po_updates (in=val4 keep = id puldat betab narc statin adeprs antic slpa cpap oxydep htns proc dm dms fs wgt hxve vedema
hd pulhyp
                rename = ( hd = hd_upd vedema = vedema_upd hxve=hxve_upd dms = dms_upd wgt = wgt_upd fs = fs_upd dm =
dm_upd betab = betab_upd pulhyp = pulhyp_upd
                narc = narc_upd statin = statin_upd adeprs = adeprs_upd antic = antic_upd slpa=slpa_upd
cpap=cpap_upd oxydep = oxydep_upd htns = htns_upd proc = proc_upd))
           second_update (in=val5 keep=id wgt rename = (wgt = update_wgt_again))
           age_at_surgery;
    by id;
    if not val3 then form_time = surgdat - poldat;
    else form_time = .;
    pu_time = surgdat - puldat;
    if form_time >= 90 and not val3 then form_group = 3;
    else if 30 <= form_time < 90 and not val3 then form_group = 2;
    else if 0 <= form_time < 30 and not val3 then form_group = 1;
    else form_group = .;
    if val1 then update = 1;
    if cryfluml < 0 then cryfluml = .;
    if colfluml < 0 then colfluml = .;
    if blosscc < 0 then blosscc = .;
    quit_time = (age_c - cigquit);
    height = 0.0254*(hgtin + (12*hgtft));
    if val3 and wgt_update > 0 then wgt = wgt_update;
    if form_group = 2 and (0 <= pu_time < 30) and wgt_upd > 0 then wgt = wgt_upd;

```

```

if form_group = 3 and update_wgt_again > 0 then wgt = update_wgt_again;
weight = 0.453592*wgt;
bmi = weight/(height*height);
if ((smoke = 2 and cig ne 1) or (smoke = 3 and quit_time <= 1)) then smoker_within_one_yr = 1;
else if smoke = -4 then smoker_within_one_yr = .;
else smoker_within_one_yr = 0;
if htn = 1 or htn_update = 1 then hypertension = 1;
else if htn = 0 or htn_update = 0 then hypertension = 0;
if htns = 1 then hypertension_meds = 'None';
if htns = 2 then hypertension_meds = 'Single';
if htns = -2 and htns_upd = . then hypertension_meds = '';
if htns = 3 or (htns = 1 and htns_upd in (2,3)) then hypertension_meds = 'Multiple';
if dm = 1 or dm_update = 1 or dm_upd=1 then diabetes = 1;
else if dm < 0 then diabetes = .;
else diabetes = 0;
if dms = 1 or (dms_upd = 1 and form_group = 3) then diabetes_meds = 'None';
if dms = 2 or (dms_upd = 2 and form_group = 3) then diabetes_meds = 'Single, oral';
if dms = 3 or (dms_upd = 3 and form_group = 3) then diabetes_meds = 'Multiple, oral';
if dms in (4,5) or (dms_upd in (4,5) and form_group = 3) or dminsu = 1 then diabetes_meds = 'Insulin';
if diabetes_meds = '' then diabetes_meds = 'None';
if chf = 1 or chf_update = 1 then congestive_heart_failure = 1;
else if chf < 0 then congestive_heart_failure = .;
else congestive_heart_failure = 0;
if asth = 1 or asthma = 1 then asthma = 1;
else if asth < 0 then asthma = .;
else asthma = 0;
if fs = 3 or fs_update = 3 or (fs_upd=3 and form_group = 3) then unable_to_walk_200ft = 1;
else if fs < 0 then unable_to_walk_200ft = .;
else unable_to_walk_200ft = 0;
if dvt = 1 or clotdvt = 1 or clotpe=1 then history_dvt_pe =1;
else if dvt < 0 then history_dvt_pe = .;
else history_dvt_pe = 0;
if slpa = 1 or apnea = 1 or (slpa_upd = 1 and form_group = 3) then sleep_apnea = 1;
else if slpa < 0 then sleep_apnea = .;
else sleep_apnea = 0;
if cpap=1 or cpap_update = 1 or (cpap_upd =1 and form_group = 3) then cpap_apnea = 1;
else cpap_apnea = 0;
if oxydep = 1 and oxydep_upd = 0 then oxygen_dependent = 0;
else if oxydep =1 or supoxy = 1 or (oxydep_upd=1 and form_group = 3) then oxygen_dependent = 1;
else oxygen_dependent = 0;
if pul = 1 or pulhyp = 1 or pulhyp_upd = 1 then pulmonary_hypertension = 1;
else pulmonary_hypertension = 0;
if hd = 1 or hd_upd = 1 then heart_disease = 1;
else heart_disease = 0;
if leg = 0 and hxve = 1 then venous_edema = 0;
else if hxve = 1 or hxve_upd = 1 or vedema = 1 or vedema_upd = 1 or leg = 1 then venous_edema = 1;
else if hxve = -2 and (hxve_upd in (-2, .) and vedema = -2 and vedema_upd in (-2, .)) then venous_edema = .;
else venous_edema = 0;

```

```

if hypertension = 1 then comorbidities = 1;
else comorbidities = 0;
if diabetes = 1 then comorbidities = comorbidities+1;
if congestive_heart_failure = 1 then comorbidities = comorbidities+1;
if asthma = 1 then comorbidities = comorbidities+1;
if history_dvt_pe = 1 then comorbidities = comorbidities+1;
if sleep_apnea = 1 then comorbidities = comorbidities+1;
if heart_disease = 1 then comorbidities = comorbidities+1;
if pulmonary_hypertension = 1 then comorbidities = comorbidities+1;
if venous_edema = 1 then comorbidities = comorbidities+1;
if unable_to_walk_200ft = 1 then comorbidities = comorbidities+1;
if hypertension = . and diabetes = . and congestive_heart_failure = . and asthma = . and history_dvt_pe = . and sleep_apnea = .
and heart_disease = . and pulmonary_hypertension = . and venous_edema = . and unable_to_walk_200ft = . then do;
    comorbidity_group = .;
    comorbidities = .;
end;
if comorbidities >= 1 then comorbidity_group = 1;
if comorbidities >= 2 then comorbidity_group = 2;
if comorbidities >= 3 then comorbidity_group = 3;
if comorbidities >= 4 then comorbidity_group = 4;
if comorbidities = 0 then comorbidity_group = 0;
if betab = 1 or (betab_upd = 1 and betab = 0) then beta_blockers = 1;
else if (betab = -2 and betab_upd = -2) or (betab = -2 and betab_upd = .) then beta_blockers = .;
else beta_blockers = 0;
if (statin = 1 and statin_upd = 0 and form_group = 3) then statins = 0;
else if statin = 1 or (statin_upd = 1 and statin = 0 and form_group = 3) then statins = 1;
else if (statin = -2 and statin_upd = -2) or (statin = -2 and statin_upd = .) then statins = .;
else statins = 0;
if (narc = 1 and narc_upd = 0 and form_group = 3) then narcotics = 0;
else if (narc = 1) or (narc_upd = 1 and narc = 0 and form_group = 3) then narcotics = 1;
else if (narc = -2 and narc_upd = -2) or (narc = -2 and narc_upd = .) then narcotics = .;
else narcotics = 0;
if adeprs = 1 or (adeprs_upd = 1 and adeprs = 0) then antidepressants = 1;
else if (adeprs = -2 and adeprs_upd = -2) or (adeprs = -2 and adeprs_upd = .) then antidepressants = .;
else antidepressants = 0;
if (antic = 1 and antic_upd = 0 and form_group = 3) then anticoagulation = 0;
else if antic = 1 or (antic_upd = 1 and antic = 0) then anticoagulation = 1;
else if (antic = -2 and antic_upd = -2) or (antic = -2 and antic_upd = .) then anticoagulation = .;
else anticoagulation = 0;
if surg in (1,8) or surgperf = 2 then surgery_performed = 'RYGB';
else if surg = 2 or surgperf = 3 then surgery_performed = 'Biliopancreatic diversion';
else if surg = 3 or surgperf = 4 then surgery_performed = 'Biliopancreatic diversion switch';
else if surg = 5 or surgperf = 6 then surgery_performed = 'Sleeve gastrectomy';
else if surg = 9 or surgperf = 8 then surgery_performed = 'Vertical banded gastroplasty';
else if surgperf = 9 then surgery_performed = 'Other';
else if surgperf = 10 then surgery_performed = 'Banded RYGB';
else surgery_performed = 'Other';
if colfluml >= 500 then colloid_flu = 1;

```

```

else if colfluml = . then colloid_flu = .;
else colloid_flu = 0;
if openh < 0 or openm < 0 or closeh < 0 or closem < 0 then operative_time = .;
else do;
    openh = openh*60;
    closeh = closeh*60;
    in_time = openh+openm;
    out_time = closeh+closem;
    operative_time = out_time - in_time;
end;
if vall then output surgeries;

proc contents data = surgeries;

proc freq data = surgeries;
    tables op_rever*op_revis*rever*revis /list missing;

data revisions_reversals primary_surgeries;
    set surgeries;
    if op_rever = 1 or op_revis = 1 or rever=1 or revis = 1 then output revisions_reversals;
    else output primary_surgeries;

proc freq data = surgeries;
    tables form_time form_group*update /list;

proc means data = surgeries n mean median;
    var age_s;
    title3 'Table 1 - All Surgeries, Patient Age';

proc means data = primary_surgeries n mean median;
    var age_s;
    title3 'Table 1 - Primary Surgeries, Patient Age';

proc means data = revisions_reversals n mean median;
    var age_s;
    title3 'Table 1 - Revisions/Reversals, Patient Age';

proc freq data = surgeries;
    tables age_s /list missing;
    format age_s agegrp.;
    title3 'Table 1 - All Surgeries, Age Group';

proc freq data = primary_surgeries;
    tables age_s /list missing;
    format age_s agegrp.;
    title3 'Table 1 - Primary Surgeries, Age Group';

proc freq data = revisions_reversals;

```

```

tables age_s /list missing;
format age_s agegrp.f.;
title3 'Table 1 - Revisions/Reversals, Age Group';

proc means data = surgeries n mean median;
var bmi;
title3 'Table 1 - All Surgeries, BMI';

proc means data = primary_surgeries n mean median;
var bmi;
title3 'Table 1 - Primary Surgeries, BMI';

proc means data = revisions_reversals n mean median;
var bmi;
title3 'Table 1 - Revisions/Reversals, BMI';

proc freq data = surgeries;
tables bmi /list missing;
format bmi bmigrf.;
title3 'Table 1 - All Surgeries, BMI Group';

proc freq data = primary_surgeries;
tables bmi /list missing;
format bmi bmigrf.;
title3 'Table 1 - Primary Surgeries, BMI Group';

proc freq data = revisions_reversals;
tables bmi /list missing;
format bmi bmigrf.;
title3 'Table 1 - Revisions/Reversals, BMI Group';

proc freq data = surgeries;
tables sex /list missing;
format sex sexf.;
title3 'Table 1 - All Surgeries, Sex';

proc freq data = primary_surgeries;
tables sex /list missing;
format sex sexf.;
title3 'Table 1 - Primary Surgeries, Sex';

proc freq data = revisions_reversals;
tables sex /list missing;
format sex sexf.;
title3 'Table 1 - Revisions/Reversals, Sex';

proc freq data = surgeries;
tables racew ethn /list missing;

```

```

format ethn ethnf. racew racef.;
title3 'Table 1 - All Surgeries, Race';

proc freq data = primary_surgeries;
tables racew ethn /list missing;
format ethn ethnf. racew racef.;
title3 'Table 1 - Primary Surgeries, Race';

proc freq data = revisions_reversals;
tables racew ethn /list missing;
format ethn ethnf. racew racef.;
title3 'Table 1 - Revisions/Reversals, Race';

proc freq data = surgeries;
tables smoker_within_one_yr /list missing;
title3 'Table 1 - All surgeries, Smoker within past year';

proc freq data = primary_surgeries;
tables smoker_within_one_yr /list missing;
title3 'Table 1 - Primary surgeries, Smoker within past year';

proc freq data = revisions_reversals;
tables smoker_within_one_yr /list missing;
title3 'Table 1 - Revisions/reversals, Smoker within past year';

proc freq data = surgeries;
tables hypertension /list missing;
title3 'Table 2 - All Surgeries, Hypertension';

proc freq data = primary_surgeries;
tables hypertension /list missing;
title3 'Table 2 - Primary Surgeries, Hypertension';

proc freq data = revisions_reversals;
tables hypertension /list missing;
title3 'Table 2 - Revisions/Reversals, Hypertension';

proc freq data = surgeries;
tables hypertension_meds /list ;
where hypertension = 1;
title3 'Table 2 - All Surgeries, Hypertension Medication';

proc freq data = primary_surgeries;
tables hypertension_meds /list ;
where hypertension = 1;
title3 'Table 2 - Primary Surgeries, Hypertension Medication';

proc freq data = revisions_reversals;

```



```

tables hypertension_meds /list ;
where hypertension = 1;
title3 'Table 2 - Revisions/Reversals, Hypertension Medication';

proc freq data = surgeries;
tables diabetes /list missing;
title3 'Table 2 - All Surgeries, Diabetes';

proc freq data = primary_surgeries;
tables diabetes /list missing;
title3 'Table 2 - Primary Surgeries, Diabetes';

proc freq data = revisions_reversals;
tables diabetes /list missing;
title3 'Table 2 - Revisions/Reversals, Diabetes';

proc freq data = surgeries;
tables diabetes_meds /list missing;
where diabetes = 1;
title3 'Table 2 - All Surgeries, Diabetes Medication';

proc freq data = primary_surgeries;
tables diabetes_meds /list missing;
where diabetes = 1;
title3 'Table 2 - Primary Surgeries, Diabetes Medication';

proc freq data = revisions_reversals;
tables diabetes_meds /list missing;
where diabetes = 1;
title3 'Table 2 - Revisions/Reversals, Diabetes Medication';

proc freq data = surgeries;
tables congestive_heart_failure /list missing;
title3 'Table 2 - All Surgeries, Congestive Heart Failure';

proc freq data = primary_surgeries;
tables congestive_heart_failure /list missing;
title3 'Table 2 - Primary Surgeries, Congestive Heart Failure';

proc freq data = revisions_reversals;
tables congestive_heart_failure /list missing;
title3 'Table 2 - Revisions/Reversals, Congestive Heart Failure';

proc freq data = surgeries;
tables asthma /list missing;
title3 'Table 2 - All Surgeries, Asthma';

proc freq data = primary_surgeries;

```

```

        tables asthma /list missing;
        title3 'Table 2 - Primary Surgeries, Asthma';

proc freq data = revisions_reversals;
    tables asthma /list missing;
    title3 'Table 2 - Revisions/Reversals, Asthma';

proc freq data = surgeries;
    tables unable_to_walk_200ft /list missing;
    title3 'Table 2 - All Surgeries, Inability to walk 200 ft.';

proc freq data = primary_surgeries;
    tables unable_to_walk_200ft /list missing;
    title3 'Table 2 - Primary Surgeries, Inability to walk 200 ft.';

proc freq data = revisions_reversals;
    tables unable_to_walk_200ft /list missing;
    title3 'Table 2 - Revisions/Reversals, Inability to walk 200 ft.';

proc freq data = surgeries;
    tables history_dvt_pe /list missing;
    title3 'Table 2 - All Surgeries, History of DVT or PE';

proc freq data = primary_surgeries;
    tables history_dvt_pe /list missing;
    title3 'Table 2 - Primary Surgeries, History of DVT or PE';

proc freq data = revisions_reversals;
    tables history_dvt_pe /list missing;
    title3 'Table 2 - Revisions/Reversals, History of DVT or PE';

proc freq data = surgeries;
    tables sleep_apnea /list;
    title3 'Table 2 - All Surgeries, Sleep apnea';

proc freq data = primary_surgeries;
    tables sleep_apnea /list;
    title3 'Table 2 - Primary Surgeries, Sleep apnea';

proc freq data = revisions_reversals;
    tables sleep_apnea /list;
    title3 'Table 2 - Revisions/Reversals, Sleep apnea';

proc freq data = surgeries;
    tables cpap_apnea /list missing;
    where sleep_apnea = 1;
    title3 'Table 2 - All Surgeries, CPAP';

```

```

proc freq data = primary_surgeries;
  tables cpap_apnea /list missing;
  where sleep_apnea = 1;
  title3 'Table 2 - Primary Surgeries, CPAP';

proc freq data = revisions_reversals;
  tables cpap_apnea /list missing;
  where sleep_apnea = 1;
  title3 'Table 2 - Revisions/Reversals, CPAP';

proc freq data = surgeries;
  tables oxygen_dependent /list missing;
  where sleep_apnea = 1;
  title3 'Table 2 - All Surgeries, Supplemental oxygen dependent';

proc freq data = primary_surgeries;
  tables oxygen_dependent /list missing;
  where sleep_apnea = 1;
  title3 'Table 2 - Primary Surgeries, Supplemental oxygen dependent';

proc freq data = revisions_reversals;
  tables oxygen_dependent /list missing;
  where sleep_apnea = 1;
  title3 'Table 2 - Revisions/Reversals, Supplemental oxygen dependent';

proc freq data = surgeries;
  tables heart_disease /list missing;
  title3 'Table 2 - All Surgeries, Ischemic heart disease';

proc freq data = primary_surgeries;
  tables heart_disease /list missing;
  title3 'Table 2 - Primary Surgeries, Ischemic heart disease';

proc freq data = revisions_reversals;
  tables heart_disease /list missing;
  title3 'Table 2 - Revisions/Reversals, Ischemic heart disease';

proc freq data = surgeries;
  tables pulmonary_hypertension /list missing;
  title3 'Table 2 - All Surgeries, Pulmonary hypertension';

proc freq data = primary_surgeries;
  tables pulmonary_hypertension /list missing;
  title3 'Table 2 - Primary Surgeries, Pulmonary hypertension';

proc freq data = revisions_reversals;
  tables pulmonary_hypertension /list missing;
  title3 'Table 2 - Revisions/Reversals, Pulmonary hypertension';

```

```

proc freq data = surgeries;
  tables venous_edema /list ;
  title3 'Table 2 - All Surgeries, Venous edema with ulcerations';

proc freq data = primary_surgeries;
  tables venous_edema /list;
  title3 'Table 2 - Primary Surgeries, Venous edema with ulcerations';

proc freq data = revisions_reversals;
  tables venous_edema /list;
  title3 'Table 2 - Revisions/Reversals, Venous edema with ulcerations';

proc means data = surgeries n mean median;
  var comorbidities;
  title3 'Table 2 - All surgeries, co-morbidities';

proc means data = primary_surgeries n mean median;
  var comorbidities;
  title3 'Table 2 - Primary surgeries, co-morbidities';

proc means data = revisions_reversals n mean median;
  var comorbidities;
  title3 'Table 2 - Revisions/reversals, co-morbidities';

proc freq data = surgeries;
  tables comorbidity_group;
  title3 'Table 2 - All surgeries, co-morbidity group';

proc freq data = primary_surgeries;
  tables comorbidity_group;
  title3 'Table 2 - Primary surgeries, co-morbidity group';

proc freq data = revisions_reversals;
  tables comorbidity_group;
  title3 'Table 2 - Revisions/reversals, co-morbidity group';

proc freq data = surgeries;
  tables beta_blockers /list;
  title3 'Table 2 - All Surgeries, Beta-blocker';

proc freq data = primary_surgeries;
  tables beta_blockers /list;
  title3 'Table 2 - Primary Surgeries, Beta-blocker';

proc freq data = revisions_reversals;
  tables beta_blockers /list;
  title3 'Table 2 - Revisions/Reversals, Beta-blocker';

```

```

proc freq data = surgeries;
  tables statins /list missing;
  title3 'Table 2 - All Surgeries, Statin';

proc freq data = primary_surgeries;
  tables statins /list missing;
  title3 'Table 2 - Primary Surgeries, Statin';

proc freq data = revisions_reversals;
  tables statins /list missing;
  title3 'Table 2 - Revisions/Reversals, Statin';

proc freq data = surgeries;
  tables anticoagulation /list ;
  title3 'Table 2 - All Surgeries, Therapeutic anticoagulation';

proc freq data = primary_surgeries;
  tables anticoagulation /list ;
  title3 'Table 2 - Primary Surgeries, Therapeutic anticoagulation';

proc freq data = revisions_reversals;
  tables anticoagulation /list ;
  title3 'Table 2 - Revisions/Reversals, Therapeutic anticoagulation';

proc freq data = surgeries;
  tables narcotics /list ;
  title3 'Table 2 - All Surgeries, Narcotic use';

proc freq data = primary_surgeries;
  tables narcotics /list ;
  title3 'Table 2 - Primary Surgeries, Narcotic use';

proc freq data = revisions_reversals;
  tables narcotics /list ;
  title3 'Table 2 - Revisions/Reversals, Narcotic use';

proc freq data = surgeries;
  tables antidepressants /list ;
  title3 'Table 2 - All Surgeries, Antidepressants';

proc freq data = primary_surgeries;
  tables antidepressants /list ;
  title3 'Table 2 - Primary Surgeries, Antidepressants';

proc freq data = revisions_reversals;
  tables antidepressants /list ;
  title3 'Table 2 - Revisions/Reversals, Antidepressants';

```

```

data surgeries;
  set surgeries;
  if (docldat <= surgdatt or pf=1) then osurg_new = osurg;
  else osurg_new=0;

data primary_surgeries;
  set primary_surgeries;
  if (docldat <= surgdatt or pf=1) then osurg_new = osurg;
  else osurg_new=0;

data revisions_reversals;
  set revisions_reversals;
  if (docldat <= surgdatt or pf=1) then osurg_new = osurg;
  else osurg_new=0;

proc freq data = surgeries;
  tables osurg_new;
  title3 'Table 3 - Previous obesity or foregut surgery, All surgeries';

proc freq data = surgeries;
  tables gb bpd bpds agb vbg sg osurgo /list missing;
  where osurg_new = 1 and (docldat <= surgdatt or pf=1);

proc freq data = surgeries;
  tables pf /list missing;
  where osurg_new = 1 and (docldat <= surgdatt or pf = 1);

proc freq data = primary_surgeries;
  tables osurg_new;
  title3 'Table 3 - Previous obesity or foregut surgery, Primary surgeries';

proc freq data = primary_surgeries;
  tables gb bpd bpds agb vbg sg osurgo /list missing;
  where osurg_new = 1 and (docldat <= surgdatt or pf=1);

proc freq data = primary_surgeries;
  tables pf /list missing;
  where osurg_new = 1 and (docldat <= surgdatt or pf = 1);

proc freq data = revisions_reversals;
  tables osurg_new;
  title3 'Table 3 - Previous obesity or foregut surgery, Revisions/reversals';

proc freq data = revisions_reversals;
  tables gb bpd bpds agb vbg sg osurgo /list missing;
  where osurg_new = 1 and (docldat <= surgdatt or pf=1);

```

```

proc freq data = revisions_reversals;
  tables pf /list missing;
  where osurg_new = 1 and (docldat <= surgdat or pf = 1);

proc freq data = surgeries;
  tables surgery_performed;
  title3 'Table 3 - Surgery performed, All surgeries';

proc freq data = primary_surgeries;
  tables surgery_performed;
  title3 'Table 3 - Surgery performed, Primary surgeries';

proc freq data = revisions_reversals;
  tables surgery_performed;
  title3 'Table 3 - Surgery performed, Revisions/reversals';

proc means data = surgeries n mean median;
  var operative_time;
  title3 'Table 3 - Operative time, All surgeries';

proc means data = primary_surgeries n mean median;
  var operative_time;
  title3 'Table 3 - Operative time, Primary surgeries';

proc means data = revisions_reversals n mean median;
  var operative_time;
  title3 'Table 3 - Operative time, Revisions/reversals';

proc means data = surgeries n mean median;
  var CRYFLUML;
  where cryfluml > 0;
  title3 'Table 3 - Crystalloid fluids, All surgeries';

proc means data = primary_surgeries n mean median;
  var cryfluml;
  where cryfluml >0;
  title3 'Table 3 - Crystalloid fluids, Primary surgeries';

proc means data = revisions_reversals n mean median;
  var cryfluml;
  where cryfluml > 800;
  title3 'Table 3 - Crystalloid fluids, Revisions/reversals';

proc freq data = surgeries;
  tables colloid_flu;
  title3 'Table 3 - Colloid fluids >= 500, All surgeries';

proc freq data = primary_surgeries;

```

```

tables colloid_flu;
title3 'Table 3 - Colloid fluids >= 500, Primary surgeries';

proc freq data = revisions_reversals;
tables colloid_flu;
title3 'Table 3 - Colloid fluids >= 500, Revisions/reversals';

proc means data = surgeries n median p25 p75;
var blosscc;
title3 'Table 3 - Median blood loss, All surgeries';

proc means data = primary_surgeries n median p25 p75;
var blosscc;
title3 'Table 3 - Median blood loss, Primary surgeries';

proc means data = revisions_reversals n median p25 p75;
var blosscc;
title3 'Table 3 - Median blood loss, Revisions/reversals';

proc sort data = post1;
by id post1dat;

proc sort data = post2;
by id post2dat;

data post1;
set post1;
by id post1dat;
if last.id then output;

data post2;
set post2;
by id post2dat;
if last.id then output;

data post_operative;
set post1
post2;

proc sort data = post_operative nodupkey;
by id;

data post_operative;
merge post_operative (in=val1)
surgeries (in=val2 keep=id op_rever op_revis rever revis);
by id;
if dvtthera = 1 or pethera = 1 then dvt_pe = 1;
else dvt_pe = 0;

```



```

        if disloc = 5 then not_discharged = 1;
        else not_discharged = 0;
        if postdie = 1 or dvt_pe = 1 or not_discharged = 1 or trachea = 1 or endos = 1 or tracheo = 1 or pdrain = 1 or reopabd = 1 then
composite_outcome = 1;
        else composite_outcome = 0;
        if val1 and val2 then output;

data revisions_reversals primary_surgeries;
    set post_operative;
    if op_rever = 1 or op_revis = 1 or rever = 1 or revis = 1 then output revisions_reversals;
    else output primary_surgeries;

proc freq data = post_operative;
    tables postdie;
    title3 'Table 4 - Death, All Surgeries';

proc freq data = primary_surgeries;
    tables postdie;
    title3 'Table 4 - Death, Primary Surgeries';

proc freq data = revisions_reversals;
    tables postdie;
    title3 'Table 4 - Death, Revisions/Reversals';

proc freq data = post_operative;
    tables dvt_pe;
    title3 'Table 4 - DVT or PE, All Surgeries';

proc freq data = primary_surgeries;
    tables dvt_pe;
    title3 'Table 4 - DVT or PE, Primary Surgeries';

proc freq data = revisions_reversals;
    tables dvt_pe;
    title3 'Table 4 - DVT or PE, Revisions/Reversals';

proc freq data = post_operative;
    tables trachea;
    title3 'Table 4 - Tracheal Reintubation, All Surgeries';

proc freq data = primary_surgeries;
    tables trachea;
    title3 'Table 4 - Tracheal Reintubation, Primary Surgeries';

proc freq data = revisions_reversals;
    tables trachea;
    title3 'Table 4 - Tracheal Reintubation, Revisions/Reversals';

```

```

proc freq data = post_operative;
  tables endos;
  title3 'Table 4 - Endoscopy, All Surgeries';

proc freq data = primary_surgeries;
  tables endos;
  title3 'Table 4 - Endoscopy, Primary Surgeries';

proc freq data = revisions_reversals;
  tables endos;
  title3 'Table 4 - Endoscopy, Revisions/Reversals';

proc freq data = post_operative;
  tables tracheo;
  title3 'Table 4 - Tracheostomy, All Surgeries';

proc freq data = primary_surgeries;
  tables tracheo;
  title3 'Table 4 - Tracheostomy, Primary Surgeries';

proc freq data = revisions_reversals;
  tables tracheo;
  title3 'Table 4 - Tracheostomy, Revisions/Reversals';

proc freq data = post_operative;
  tables pdrain;
  title3 'Table 4 - Percutaneous drain placement, All Surgeries';

proc freq data = primary_surgeries;
  tables pdrain;
  title3 'Table 4 - Percutaneous drain placement, Primary Surgeries';

proc freq data = revisions_reversals;
  tables pdrain;
  title3 'Table 4 - Percutaneous drain placement, Revisions/Reversals';

proc freq data = post_operative;
  tables reopabd;
  title3 'Table 4 - Abdominal reoperation, All Surgeries';

proc freq data = primary_surgeries;
  tables reopabd;
  title3 'Table 4 - Abdominal reoperation, Primary Surgeries';

proc freq data = revisions_reversals;
  tables reopabd;
  title3 'Table 4 - Abdominal reoperation, Revisions/Reversals';

```

```

proc freq data = post_operative;
  tables not_discharged;
  title3 'Table 4 - Not discharged by day 30, All surgeries';

proc freq data = primary_surgeries;
  tables not_discharged;
  title3 'Table 4 - Not discharged by day 30, Primary surgeries';

proc freq data = revisions_reversals;
  tables not_discharged;
  title3 'Table 4 - Not discharged by day 30, Revisions/reversals';

proc freq data = post_operative;
  tables composite_outcome;
  title3 'Table 4 - Composite outcome, All surgeries';

proc freq data = primary_surgeries;
  tables composite_outcome;
  title3 'Table 4 - Composite outcome, Primary surgeries';

proc freq data = revisions_reversals;
  tables composite_outcome;
  title3 'Table 4 - Composite outcome, Revisions/reversals';

data composite_events;
  length procedure $30.
             surgical_procedure $10.;
  merge post_operative(in=vall keep=id composite_outcome)
        surgeries      (in=val2);
  by id;
  if op_rever = 1 or op_revis = 1 or rever =1 or revis = 1 then procedure = 'Revision/reversal';
  else procedure = 'Primary';
  if pf = 1 then prior_foregut = 1;
  else prior_foregut = 0;
  if venous_edema = . then venous_edema = 0;
  if 0 <= operative_time <= 107 then op_time_group = 1;
  else if 108 <= operative_time <= 136 then op_time_group = 2;
  else if 137 <= operative_time <= 171 then op_time_group = 3;
  else if operative_time >= 172 then op_time_group = 4;
  if cryfluml < 2000 then cry_flu_group = 1;
  else if 2000 <= cryfluml <= 2799 then cry_flu_group = 2;
  else if 2800 <= cryfluml <= 3499 then cry_flu_group = 3;
  else if cryfluml >= 3500 then cry_flu_group = 4;
  if 0 <= blosscc < 75 then blood_loss = 1;
  else if blosscc >= 75 then blood_loss = 0;
  if age_s < 30 then age_group = 1;
  if 30 <= age_s <= 39 then age_group = 2;
  if 40 <= age_s <= 49 then age_group = 3;

```

```

if 50 <= age_s <= 59 then age_group = 4;
if 60 <= age_s <= 64 then age_group = 5;
if age_s >= 65 then age_group = 6;
if bmi < 40 then bmgroupp = 1;
else if 40 <= bmi < 50 then bmgroupp = 2;
else if 50 <= bmi < 60 then bmgroupp = 3;
else if bmi >= 60 then bmgroupp = 4;
if comorbidities = 0 then comorbidity = 0;
if comorbidities in (1,2) then comorbidity = 1;
if comorbidities >= 3 then comorbidity = 2;
if surgproc = 1 and surgery_performed = 'RYGB' then surgical_procedure = 'LRYGB';
else if surgproc in (2,3) and surgery_performed = 'RYGB' then surgical_procedure = 'ORYGB';
else surgical_procedure = 'Other';
if vall and val2 then output;

proc sort data = composite_events;
  by procedure;

proc freq data = composite_events;
  tables procedure /list missing;
  title3 'Table 5 - Procedure';

proc freq data = composite_events;
  tables composite_outcome;
  by procedure;

proc sort data = composite_events;
  by prior_foregut;

proc freq data = composite_events;
  tables prior_foregut;
  title3 'Table 5 - Previous foregut surgery';

proc freq data = composite_events;
  tables composite_outcome;
  by prior_foregut;

proc sort data = composite_events;
  by op_time_group;

proc freq data = composite_events;
  tables op_time_group;
  title3 'Table 5 - Operative time';

proc freq data = composite_events;
  tables composite_outcome;
  by op_time_group;
  where op_time_group ne .;

```

```

proc sort data = composite_events;
  by cry_flu_group;

proc freq data = composite_events;
  tables cry_flu_group;
  title3 'Table 5 - Crystalloid fluids';

proc freq data = composite_events;
  tables composite_outcome;
  by cry_flu_group;
  where cry_flu_group ne .;

proc sort data = composite_events;
  by colloid_flu;

proc freq data = composite_events;
  tables colloid_flu;
  title3 'Table 5 - Colloid fluids';

proc freq data = composite_events;
  tables composite_outcome;
  by colloid_flu;
  where colloid_flu ne .;

proc sort data = composite_events;
  by blood_loss;

proc freq data = composite_events;
  tables blood_loss;
  title3 'Table 5 - Blood loss';

proc freq data = composite_events;
  tables composite_outcome;
  by blood_loss;
  where blood_loss ne .;

proc sort data = composite_events;
  by age_group;

proc freq data = composite_events;
  tables age_group;
  title3 'Table 5 - Age';

proc freq data = composite_events;
  tables composite_outcome;
  by age_group;

```

```

proc sort data = composite_events;
  by bmgrou;

proc freq data = composite_events;
  tables bmgrou;
  title3 'Table 5 - BMI group';

proc freq data = composite_events;
  tables composite_outcome;
  by bmgrou;

proc sort data = composite_events;
  by hypertension;

proc freq data = composite_events;
  tables hypertension;
  title3 'Table 5 - Hypertension';

proc freq data = composite_events;
  tables composite_outcome;
  by hypertension;
  where hypertension ne .;

proc sort data = composite_events;
  by diabetes;

proc freq data = composite_events;
  tables diabetes;
  title3 'Table 5 - Diabetes';

proc freq data = composite_events;
  tables composite_outcome;
  by diabetes;
  where diabetes ne .;

proc sort data = composite_events;
  by congestive_heart_failure;

proc freq data = composite_events;
  tables congestive_heart_failure;
  title3 'Table 5 - Congestive heart failure';

proc freq data = composite_events;
  tables composite_outcome;
  by congestive_heart_failure;
  where congestive_heart_failure ne .;

proc sort data = composite_events;

```

```

        by asthma;

proc freq data = composite_events;
    tables asthma;
    title3 'Table 5 - Asthma';

proc freq data = composite_events;
    tables composite_outcome;
    by asthma;
    where asthma ne .;

proc sort data = composite_events;
    by history_dvt_pe;

proc freq data = composite_events;
    tables history_dvt_pe;
    title3 'Table 5 - DVT/PE';

proc freq data = composite_events;
    tables composite_outcome;
    by history_dvt_pe;
    where history_dvt_pe ne .;

proc sort data = composite_events;
    by unable_to_walk_200ft;

proc freq data = composite_events;
    tables unable_to_walk_200ft;
    title3 'Table 5 - Functional Status';

proc freq data = composite_events;
    tables composite_outcome;
    by unable_to_walk_200ft;
    where unable_to_walk_200ft ne .;

proc sort data = composite_events;
    by sleep_apnea;

proc freq data = composite_events;
    tables sleep_apnea;
    title3 'Table 5 - Sleep apnea';

proc freq data = composite_events;
    tables composite_outcome;
    by sleep_apnea;
    where sleep_apnea ne .;

proc sort data = composite_events;

```

```

        by heart_disease;

proc freq data = composite_events;
    tables heart_disease;
    title3 'Table 5 - Ischemic heart disease';

proc freq data = composite_events;
    tables composite_outcome;
    by heart_disease;
    where heart_disease ne .;

proc sort data = composite_events;
    by pulmonary_hypertension;

proc freq data = composite_events;
    tables pulmonary_hypertension;
    title3 'Table 5 - Pulmonary hypertension';

proc freq data = composite_events;
    tables composite_outcome;
    by pulmonary_hypertension;
    where pulmonary_hypertension ne .;

proc sort data = composite_events;
    by venous_edema;

proc freq data = composite_events;
    tables venous_edema;
    title3 'Table 5 - Venous edema';

proc freq data = composite_events;
    tables composite_outcome;
    by venous_edema;
    where venous_edema ne .;

proc sort data = composite_events;
    by comorbidity;

proc freq data = composite_events;
    tables comorbidity;
    title3 'Table 5 - Comorbidities';

proc freq data = composite_events;
    tables composite_outcome;
    by comorbidity;
    where comorbidity ne .;

proc sort data = composite_events;

```



```
        by surgical_procedure;

proc freq data = composite_events;
    tables surgical_procedure;
    title3 'Table 5 - Surgical procedure';

proc freq data = composite_events;
    tables composite_outcome;
    by surgical_procedure;
```