1. Deleted proced=2
2. 39 time, 1-16 hospital has weight=kg
3. Check proced and asa because they have missingvalues

We also know that some of the weight are not correct, and we will only use BMI in our model, and the missing rows of BMI, weight and height are the same. Therefore, we have missing values in the following table:

|  |  |
| --- | --- |
| **Variable** | **Missing**  **(total=26489)** |
| Procedure | 2.03% |
| Patient’s condition | 2.52% |
| BMI, kg/cm ^2 | 2.51% |
| Albumin | 49.92% |

The missing pattern of those variables are

1. Patient’s condition: asa.

**asa\_i by hospcode: 17,34,39 are different from 44 (OR>1), outcome=missing, so they have more missing rates of asa**

**asa\_i by proced\_i, OR=0.214 (PROCED=1 is reference)**

**a person with missing asa is likely to have non-missing procedure.**

**asa\_i by death30, OR=**0.652 (1 is reference)

a person with missing asa is likely to die.

**asa\_i by bmi\_i, OR=**0.288 (1 is reference)

a person with missing asa is likely to have non-missing bmi.

Missing asa tend to have larger BMI and less albumin

**proced\_i by death30 OR=** 0.586 (1 is reference)

A person with procede missing is likely to have higher death rate;

**proced\_i by bmi\_i OR=**0.361(1 is ref)

a person with proced missing is likely to have non-missing BMI;

**bmi\_i by hospcode: 30 vs 44 OR=** 11.376, p<.0001

**bmi\_i by sixmonth: 34-38 vs 39, OR<1, so 39 has more missing bmi**

**bmi\_i by proced\_i: OR=** 0.361, a person with missing BMI tend to have missing procedure

**bmi\_i by death30: OR=** 0.421, a person with missing BMI tend to die.

Sampling by hospital: Control for other variables