```sas
/*----------------------------------------------------*/
/*=(IPS10-2.146)=============*
|== Smokers and Non-Smokers    |
===========================*/


/*-------------------------------/
|2(a) Creating the data we need |
--------------------------------*/
/* Yes means Smoker, No means not a smoker.*/
data Smoking_Is_Bad;
    input Survival $ Smoker $ Age_Group $ Counts;
    datalines;
Dead Yes A 19
Alive Yes A 269
Dead No A 13
Alive No A 327
Dead Yes B 78
Alive Yes B 167
Dead No B 52
Alive No B 147
Dead Yes C 42
Alive Yes C 7
Dead No C 165
Alive No C 28
;
run;

/*-----------------------------------------------------------/
|1(a) Two-Way table for Smoking(yes|no) and Survival(dead|alive) |
------------------------------------------------------------*/
title "Conditional Distribution of Smokers and Survival rates";
proc freq data=Smoking_Is_Bad;
    tables Survival * Smoker / nopercent norow nocum;
    weight Counts;
run;

/*-----------------------------/
|1(b) Simpson's Paradox Table |
------------------------------*/

title "Conditional Table of all Age groups";
proc freq data=Smoking_Is_Bad;
    tables Survival * Age_Group * Smoker / norow nopercent;
    weight Counts;
run;


/*-------------------------------------------------------------/
|1(c) Comparing the percentage of smokers in the three age groups |
--------------------------------------------------------------*/
```

```sas
/*=(IPS10-2.100)=======*
|==Titanic Data Load    |
======================*/

FILENAME REFFILE '/home/u64309835/Homework_3/ex02-100titanic-1.csv';
/* Sheet: neg_linear */
proc import datafile=reffile
    dbms=CSV
    out=Titanic_data
    replace;
    getnames=yes;
run;



/*=======================================*/
/*------------------------------------/
|2(a) Two-Way table for Survival and Class |
------------------------------------------*/
proc format;
    value Pclass_Ticket
        1 = "First"
        2 = "Second"
        3 = "Third";
    value Dead_Alive
        0 = Dead
        1 = Alive;
run;

title "Two-Way table for Survival and Class";
proc freq data=Titanic_data;
    tables Survived * Pclass / norow nocol nopercent;
    weight Pclass;
    format Pclass Pclass_Ticket.;
    format Survived Dead_Alive.;
run;

/*==========================================*/
/*-------------------------------------------/
|2(c) Marginal Distributions                 |
--------------------------------------------*/
title "Marginal Distribution for Survival and Class";
proc freq data=Titanic_data;
    tables Survived * Pclass / nocol nopercent;
    weight Pclass;
    format Pclass Pclass_Ticket.;
    format Survived Dead_Alive.;
run;
```

```sas
/*===============================================*/
/*-----------------------------------------------/
|2(d) Conditional Distribution for Survival and Class |
-------------------------------------------------*/
title "Conditional Distribution for Survival and Class";
proc freq data=Titanic_data;
    tables Survived * Pclass / nocol norow nocum;
    weight Pclass;
    format Pclass Pclass_Ticket.;
    format Survived Dead_Alive.;
run;


/*=(IPS10-2.105)=============*
|== Which Hospital is safer?  |
============================*/

data Hospital;
    input Survival $ Hospital_Type $ Counts;
    datalines;
Dead A 63
Dead B 16
Alive A 2037
Alive B 784
;
run;

/*-----------------------------------------------/
|Question asks for a joint distribution for A & B |
-------------------------------------------------*/
title "Conditional Distribution of Hospital and Survival Type";
proc freq data=Hospital;
    tables Survival*Hospital_Type / norow nopercent;
    weight Counts;
run;


/*=(IPS10-2.106)=============*
|== Poor and Healthy Patients |
============================*/
data Good_Condition;
    input Survival $ Hospital_Type $ Counts;
    datalines;
Dead A 6
Dead B 8
Alive A 594
Alive B 592
;
run;

data Bad_Condition;
    input Survival $ Hospital_Type $ Counts;
    datalines;
Dead A 57
```

```
    Dead B 8
    Alive A 1443
    Alive B 192
    ;
    run;
    /*------------------------------------------------------------------/
    | (a) Death rate for "poor" A & B patients. Who fairs better? |
    -------------------------------------------------------------------*/
    title "Conditional Distribution of Bad Hospital and Survival Type";
    proc freq data=Bad_Condition;
        tables Survival*Hospital_Type / norow nopercent;
        weight Counts;
    run;

    title "Marginal Distribution of Bad Hospital and Survival Type";
    proc freq data=Bad_Condition;
        tables Survival * Hospital_Type / nocol nopercent;
        weight Counts;
    run;
    /*========================================================*/
    title "Conditional Distribution of Good Hospital and Survival Type";
    proc freq data=Good_Condition;
        tables Survival*Hospital_Type / norow nopercent;
        weight Counts;
    run;

    title "Marginal Distribution of Good Hospital and Survival Type";
    proc freq data=Good_Condition;
        tables Survival*Hospital_Type / nocol nopercent;
        weight Counts;
    run;
```