dbcreation.m

**GUI Inputs**

***GUI prompts user to enter up to 9 inputs (all dropdown menus):***

***Age range, race/ethnicity, if user has a first degree relative with a history of breast cancer, age at first menstrual cycle, age at first birth, BI-RADS breast density, if user is currently undergoing hormone replacement therapy, menopausal status, and BMI***

***As each input is selected, a query will run with the given inputs to specify the number of women in the database with those specific risk factors***

***The number of women with the inputted risk factors will be grouped by history of breast cancer, no history of breast cancer, and unknown history of breast cancer***

***A pie chart on the GUI will be updated to display the percentage of women with the given risk factors who have:***

* ***A history of breast cancer***
* ***No history of breast cancer***
* ***Unknown history of breast cancer***

**Results**

**SQL Query**

bcriskGUI.mlapp

bcriskGUI.mlapp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Input(s)** | **Output(s)** | **Purpose** | **Author** |
| dbcreation.m | Mammography data URLs (3) | Database of the mammography data | Downloads the URLs as .csv files, unzips them, reads their data into a joint MATLAB table, and inserts the data into a database file | Isabella Spinelli |
| riskcalc.m | Risk factors (up to 9, listed in above green bubble) | Percentages of women with inputted risk factor who have breast cancer history, no breast cancer history, or unknown | Uses the inputted risk factors to build an SQL query that searches for women with those risk factors; calculates subsequent output percentages for these risk factors | Demetri Tsitsios |
| bcriskGUI.mlapp | Risk factor dropdown menus (9, listed in above green bubble) | Pie chart visual of output percentages from riskcalc.m | Allows the user to input their own risk factors and displays a pie chart of risk percentages based on data stored in database file | Landon Leininger |

riskcalc.m

**Database Schema**

|  |
| --- |
| breastcancer |
| year (NUMERIC – precision 38)  age\_group\_5\_years (NUMERIC – precision 38)  race\_eth (NUMERIC – precision 38)  first\_degree\_hx (NUMERIC – precision 38)  age\_menarche (NUMERIC – precision 38)  age\_first\_birth (NUMERIC – precision 38)  BIRADS\_breast\_density (NUMERIC – precision 38)  current\_hrt (NUMERIC – precision 38)  menopaus (NUMERIC – precision 38)  bmi\_group (NUMERIC – precision 38)  biophx (NUMERIC – precision 38)  breast\_cancer\_history (NUMERIC – precision 38)  count (NUMERIC – precision 38) |

One table (breastcancer)

13 fields (year of mammogram, age group, race/ethnicity, if patient has first degree relatives with history of breast cancer, age at first period, age at first birth, BI-RADS breast density, if patient is currently undergoing hormone replacement therapy, menopausal status, BMI, if patient had a previous breast biopsy or aspiration, if patient has a history of breast cancer, number of patients with these specific factors), 1,522,340 entries