

1-DATA ANALYSIS WITH POWER BI & KNIME

1) Read the adult.csv file available in the **data** folder on the KNIME Hub. The data are provided by the **UCI Machine Learning Repository**.

2) Calculate the count and average age of women with income >50K

3) Calculate the averages of all numerical columns for each one of the 4 groups defined by sex and income values

4) Calculate

- the number of missing values in the occupation column
- the number of non-missing rows in the occupation column
- the number of rows in the occupation column
- the number of rows in the marital-status column

Notice that the last two aggregations should provide the same numbers!

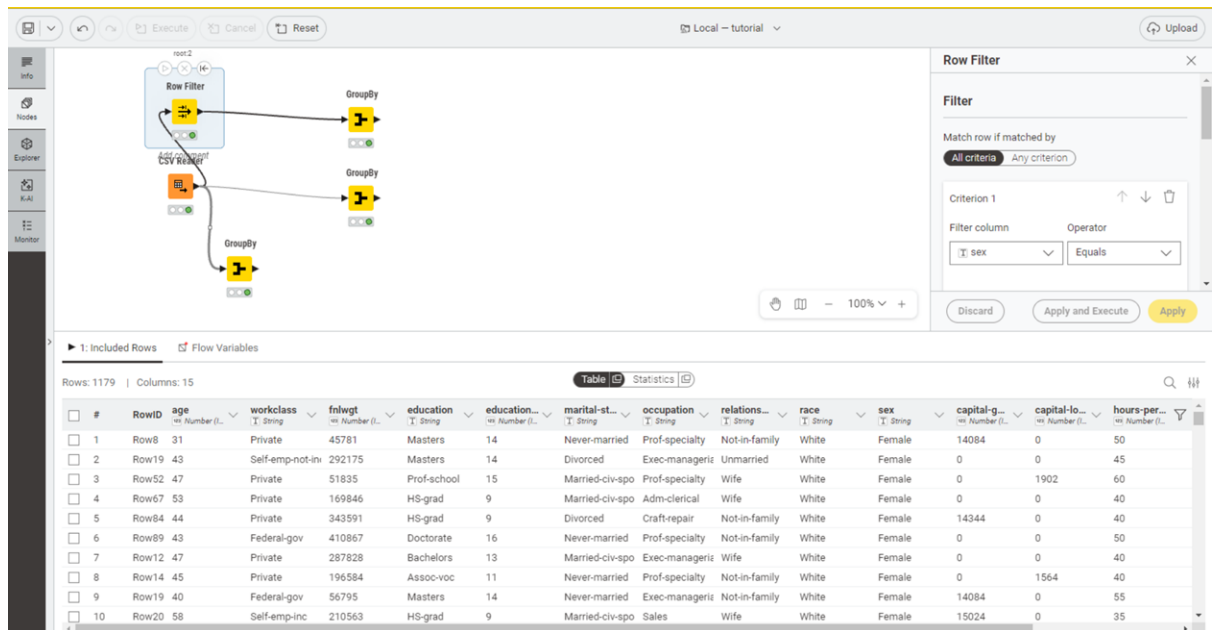
1) Read the adult.csv file

The screenshot displays the KNIME software interface. The top toolbar includes buttons for 'Execute', 'Cancel', and 'Reset'. The main workspace shows a data flow diagram with the following nodes: 'CSV Reader' (labeled 'Add comment'), 'Row Filter', and two 'GroupBy' nodes. The 'Row Filter' node is connected to the 'CSV Reader' and the first 'GroupBy' node. The 'CSV Reader' node is connected to the first 'GroupBy' node. The first 'GroupBy' node is connected to the second 'GroupBy' node. The 'GroupBy' nodes are configured to calculate 'Count' and 'Average' for the 'age' column, grouped by 'sex' and 'income'.

Below the workspace, the 'Table' view shows the first 10 rows of the data table. The table has 15 columns: #, RowID, age, workclass, fnlwgt, education, education..., marital-st..., occupation, relations..., race, sex, capital-g..., capital-lo..., and hours-per... The data is as follows:

#	RowID	age	workclass	fnlwgt	education	education...	marital-st...	occupation	relations...	race	sex	capital-g...	capital-lo...	hours-per...
1	Row0	39	State-gov	77516	Bachelors	13	Never-married	Adm-clerical	Not-in-family	White	Male	2174	0	40
2	Row1	50	Self-emp-not-in	83311	Bachelors	13	Married-civ-spo	Exec-manageriz	Husband	White	Male	0	0	13
3	Row2	38	Private	215646	HS-grad	9	Divorced	Handlers-cleanr	Not-in-family	White	Male	0	0	40
4	Row3	53	Private	234721	11th	7	Married-civ-spo	Handlers-cleanr	Husband	Black	Male	0	0	40
5	Row4	28	Private	338409	Bachelors	13	Married-civ-spo	Prof-specialty	Wife	Black	Female	0	0	40
6	Row5	37	Private	284582	Masters	14	Married-civ-spo	Exec-manageriz	Wife	White	Female	0	0	40
7	Row6	49	Private	160187	9th	5	Married-spouse	Other-service	Not-in-family	Black	Female	0	0	16
8	Row7	52	Self-emp-not-in	209642	HS-grad	9	Married-civ-spo	Exec-manageriz	Husband	White	Male	0	0	45
9	Row8	31	Private	45781	Masters	14	Never-married	Prof-specialty	Not-in-family	White	Female	14084	0	50
10	Row9	42	Private	159449	Bachelors	13	Married-civ-spo	Exec-manageriz	Husband	White	Male	5178	0	40

2) A) Filter Female and Income >50k using Row Filter



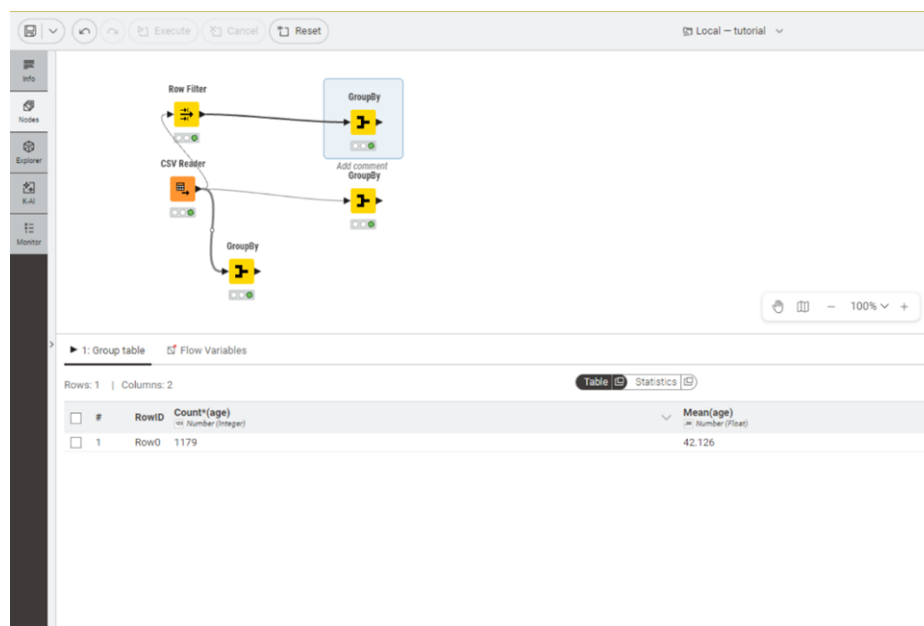
Row Filter Configuration:

- Match row if matched by: **All criteria**
- Criterion 1: Filter column **sex**, Operator **Equals**

Data Table (Filtered Rows):

#	RowID	age	workclass	fnlwgt	education	education...	marital-st...	occupation	relations...	race	sex	capital-g...	capital-lo...	hours-per...
1	Row9	31	Private	45781	Masters	14	Never-married	Prof-specialty	Not-in-family	White	Female	14084	0	50
2	Row19	43	Self-emp-not-in	292175	Masters	14	Divorced	Exec-manageris	Unmarried	White	Female	0	0	45
3	Row52	47	Private	51835	Prof-school	15	Married-civ-spo	Prof-specialty	Wife	White	Female	0	1902	60
4	Row67	53	Private	169846	HS-grad	9	Married-civ-spo	Adm-clerical	Wife	White	Female	0	0	40
5	Row84	44	Private	343591	HS-grad	9	Divorced	Craft-repair	Not-in-family	White	Female	14344	0	40
6	Row89	43	Federal-gov	410867	Doctorate	16	Never-married	Prof-specialty	Not-in-family	White	Female	0	0	50
7	Row12	47	Private	287828	Bachelors	13	Married-civ-spo	Exec-manageris	Wife	White	Female	0	0	40
8	Row14	45	Private	196584	Assoc-voc	11	Never-married	Prof-specialty	Not-in-family	White	Female	0	1564	40
9	Row19	40	Federal-gov	56795	Masters	14	Never-married	Exec-manageris	Not-in-family	White	Female	14084	0	55
10	Row20	58	Self-emp-inc	210563	HS-grad	9	Married-civ-spo	Sales	Wife	White	Female	15024	0	35

2) B) Calculate the Count and Average age of women with income >50k



GroupBy Configuration (Count):

- Group by: **sex**
- Aggregates: **Count(*)**

GroupBy Configuration (Mean Age):

- Group by: **sex**
- Aggregates: **Mean(age)**

Data Table (Grouped Results):

#	RowID	Count*(age)	Mean(age)
1	Row0	1179	42.126

- 3) Calculate the averages of all numerical columns for each one of the 4 groups defined by sex and income value

The screenshot displays a data science workflow in a software interface. The workflow consists of a CSV Reader node connected to a Row Filter node, which then connects to a GroupBy node. The GroupBy node is configured with 'sex' and 'income' as grouping variables. The output of the GroupBy node is a table with 4 rows and 7 columns. The table is titled '1: Group table' and shows the following data:

#	RowID	sex	income	Mean(age)	Mean(educatio...	Mean(capital-g...	Mean(capital-l...	Mean(hours-pe...
1	Row0	Female	<=50K	36.211	9.82	121.986	47.364	35.917
2	Row1	Female	>50K	42.126	11.787	4,200.389	173.649	40.427
3	Row2	Male	<=50K	37.147	9.452	165.724	56.807	40.694
4	Row3	Male	>50K	44.626	11.581	3,971.766	198.78	46.366

- 4) Calculate:

- the number of **missing values** in the *occupation* column
- the number of **non-missing rows** in the *occupation* column
- the **number of rows** in the *occupation* column
- the **number of rows** in the *marital-status* column

Local - tutorial

Upload

Row Filter

CSV Reader

GroupBy

GroupBy

Add comment

This node dialog is not supported here.
[Open dialog](#)

1: Group table

Flow Variables

Rows: 1 | Columns: 3

Table

Statistics

#	RowID	Missing value count(occupation) <small>vs. Number (Integer)</small>	Count(occupation) <small>vs. Number (Integer)</small>	Count(marital-status) <small>vs. Number (Integer)</small>
1	Row0	0	32561	32561

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