

# Linear Statistical Modeling Methods with SAS

## SAS Viya Model Manager

Xuemao Zhang  
East Stroudsburg University

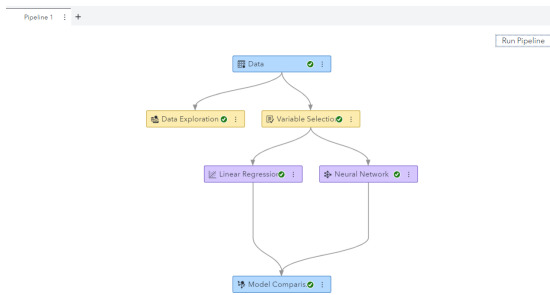
April 19, 2024

# Outline

- Registering the Champion Model
- SAS Model Manager

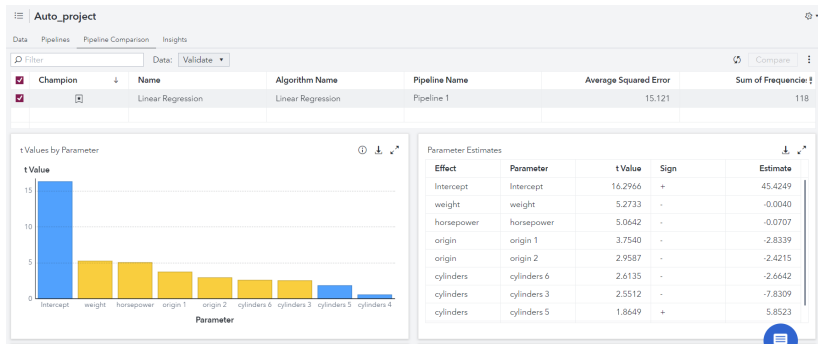
# Registering the Champion Model

- We had one model only in the last lecture
- Let's add another model using Neural Network with 1 hidden layer
  - ▶ Hidden layer activation function is set to Identity
  - ▶ You do not need to have more than 1 model in the pipeline to register a model



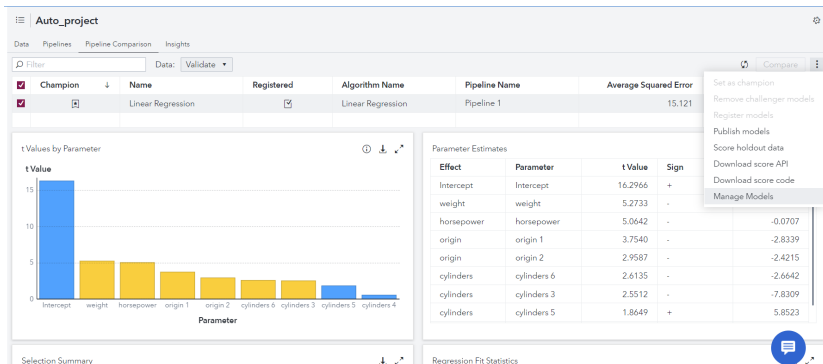
# Registering the Champion Model

- It is not surprising that linear regression model is still the champion model
- On the Pipeline Comparison tab, click the Project Pipeline menu in the upper right corner and select Register models.



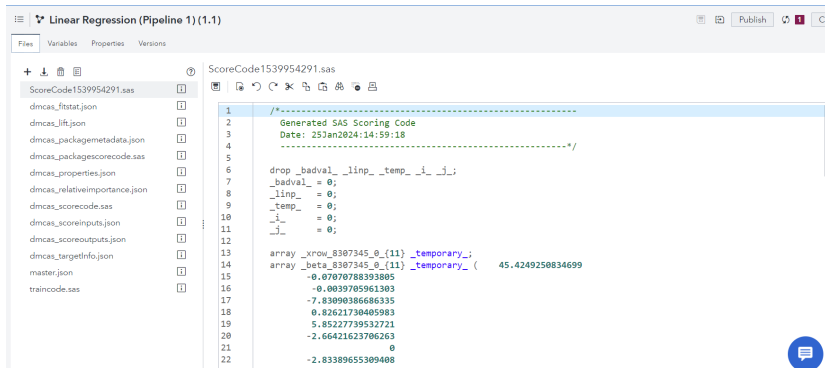
# Registering the Champion Model

- The new column, Registered, indicating that the model has been registered.
  - After the model is registered, we can view and use it in SAS Model Manager.



# Registering the Champion Model

- In the Pipeline Comparison window, select the Project Pipeline menu in the upper right corner. The Manage Models option becomes active after at least one model is registered.
  - ▶ Select *Manage Models* to access Model Manager.

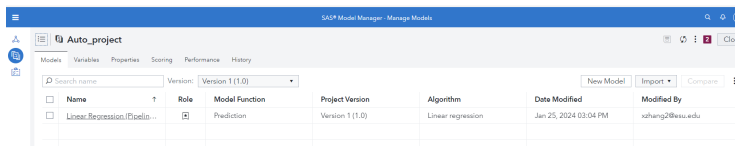


```
1  /*-----*/
2  Generated SAS Scoring Code
3  Date: 25Jan2024:14:59:18
4  /*-----*/
5
6  drop _badval_ _linp_ _temp_ _i_ _j_;
7  _badval_ = 0;
8  _linp_ = 0;
9  _temp_ = 0;
10 _i_ = 0;
11 _j_ = 0;
12
13 array _xrow_8307345_0_{11} _temporary_;
14 array _beta_8307345_0_{11} _temporary_ ( 45.4249250834699
15 -0.07070788393805
16 -0.0039705961303
17 -7.83090386686335
18 0.82621730405983
19 5.85227739532721
20 -2.66421623706263
21 0
22 -2.83389655309408
23
```

- Check the scoring code in `dmcas_scorecode.sas`

# SAS Model Manager

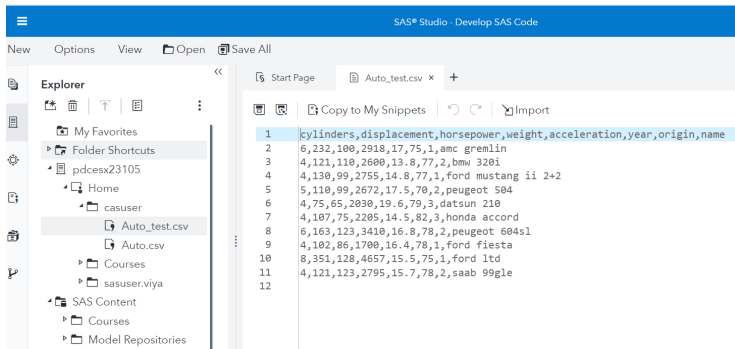
- In the left pane, we can click the Projects icon, the second icon from the top, to display the Projects list.
- Select the project to open it.



- Click the Scoring tab. On the Tests tab, click New Test. In the New Test window, enter a name for the scoring test.

# SAS Model Manager

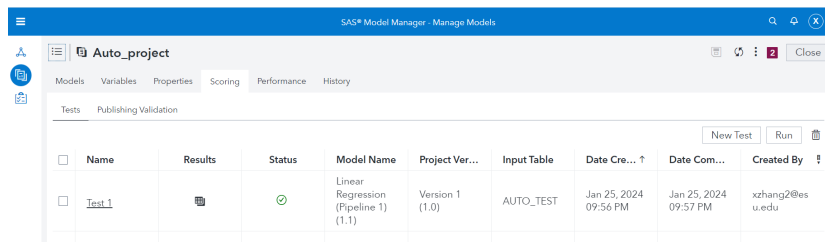
- In the Model field, click Choose Model.
  - ▶ In the Choose a Model window, select the champion model.
  - ▶ Now we are back at the New Test window, and we are ready to select a future data set to be scored.
    - ★ We use the data Auto\_test and save the test, Test 1.
- The Auto\_test data:






# SAS Model Manager

- Go back to the *Scoring* tab for the project. The scoring test that we just saved is listed, and we select its check box. Then click *Run*.
- When the run is finished, the Status column has a green check mark, and a table icon appears in the Results column.



The screenshot shows the SAS Model Manager interface for a project named 'Auto\_project'. The 'Scoring' tab is selected, displaying a table of tests. The table has columns for Name, Results, Status, Model Name, Project Version, Input Table, Date Created, Date Completed, and Created By. A test named 'Test 1' is listed with a green checkmark in the Status column and a table icon in the Results column. The 'Run' button is visible in the top right corner of the table area.

<input type="checkbox"/>	Name	Results	Status	Model Name	Project Ver...	Input Table	Date Cre... ↑	Date Com...	Created By
<input type="checkbox"/>	<u>Test 1</u>		✓	Linear Regression (Pipeline 1) (1.1)	Version 1 (1.0)	AUTO_TEST	Jan 25, 2024 09:56 PM	Jan 25, 2024 09:57 PM	xzhang2@es u.edu

# SAS Model Manager

- To open the results, click the table icon in the Results column.
  - In the left pane, under Test Results, click Output.

Auto\_project > Test 1 Close

Test Results

- Output
- Code
- Log

Output Table

cylinders	displacem...	horsepower	weight	acceleration	year	origin	name	Predicted: ...	Prediction ... !
6	232	100	2918	17	75	1	amc gremlin	21.2698243 91	21.26982439 1
4	121	110	2600	13.8	77	2	bmw 320i	25.7282218 42	25.72822184 2
4	130	99	2755	14.8	77	1	ford mustang ii 2+2	25.4781729 86	25.47817298 6
5	110	99	2672	17.5	70	2	peugeot 504	31.2461857 36	31.24618573 6
4	75	65	2030	19.6	79	3	datsun 210	33.5948197 87	33.59481978 7
4	107	75	2205	14.5	82	3	honda accord	32.1928866 25	32.19288662 5
6	163	123	3410	16.8	78	2	peugeot 604sl	18.1024039 45	18.10240294 5
4	102	86	1700	16.4	78	1	ford fiesta	30.5863543 94	30.58635439 4
8	351	128	4657	15.5	75	1	ford ltd	15.0493532 07	15.04935320 7
4	121	123	2795	15.7	78	2	saab 900gle	24.0347531 06	24.03475310 6

- If we want, we can reduce the number of columns or rearrange columns in the output table.
- Just click the *Options icon* in the upper right corner and select **Manage columns**.

# SAS Model Manager

- **Question:** Was the full data used to fit the model for predictions?
- In the champion model, only the variables weight, horsepower, origin 1, origin 2, cylinders 3, cylinders 4, cylinders 5, cylinders 6 are selected. Let's use SAS to verify. Some SAS code is already available in Lecture 16.

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