Experiment Results with Dice on Adult Income Dataset:

Example 1:
- This dataset describes adult income greater or less than 50k or not
- The upper part of the figure below the shows an instance for which different counterfactual data points have been found out in the lower part of the figure
- The sign "–" in the counterfactual sets implies that the value there is same as the original data instance for which counterfactuals have been found out.

	age	workclass	education	marital_status	occupation	race	gender	hours_per_week	income
0	29	Private	HS-grad	Married	Blue-Collar	White	Female	38	0

```
Diverse Counterfactual set (new outcome: 1.0)
```

	age	workclass	education	marital_status	occupation	race	gender	hours_per_week	income
0	44.0	-	Assoc	-	-	-	-	-	1
1	-	-	-	-	-	-	-	85.0	1
2	-	-	Masters	-	-	-	-	95.0	1
3	37.0	-	-	-	Service	-	-	-	1
4	-	-	-	-	Sales	-	-	68.0	1
5	-	-	Doctorate	-	-	-	-	48.0	1
6	51.0	-	-	-	Professional	-	-	-	1
7	-	-	Assoc	-	-	-	-	51.0	1
8	-	-	-	-	-	-	-	79.0	1
9	59.0	-	-	-	Other/Unknown	-	-	-	1

Example 2:

- This data is about predicting a patient will have a stroke or not
- A lot of time a feature has values with a specific range.If the dice model varies the input beyond its maximum and minimum limits then the counterfacts would be invalid
  In the figure below the bmi has been inserted in the 7.7 and 3.8 range in counterfacts table **which is meaningless**

bmi	stroke
30.4	0

bmi	stroke
7.7	1.0
3.8	1.0
31.000000000000007	1.0

- We have to use `permitted_range` and `features_to_vary` functions with which we can control the limits of a particular feature.The result is shown below in which the BMI stays in a logical limit

bmi	stroke
30.4	0

bmi	stroke
23.9	1.0
31.000000000000007	-
31.000000000000007	1.0

-

Link:

1. https://github.com/Dipta-novice/Dice/blob/main/Binary_Classification_on_Adult_Income_dataset%20(1).ipynb
2. https://github.com/Dipta-novice/Dice/blob/main/Dice_on_Stroke_DataSet.ipynb