robmarkcole pyEclipseDVH updated `362bded`

1 contributor

`508 lines (507 sloc)  77.6 KB`

In [1]:
```
from pyEclipseDVH_v2 import List_txt, Load_patient, get_dmin, get_dmax, get_d_metric, Load_fil
o_df
%matplotlib inline
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:
```
txt_files = List_txt()
txt_files
```

Out[2]:
```
['Case1_AAA.txt', 'Case1_AXB.txt', 'Case5_AAA.txt', 'Case5_AXB.txt']
```

In [3]:
```
multi_df = Load_files_to_df(txt_files)
```

```
Case1_AAA.txt loaded     patID:Case1 PlanID:AAA and number of structures is 25
Case1_AXB.txt loaded     patID:Case1 PlanID:AXB and number of structures is 25
Case5_AAA.txt loaded     patID:Case5 PlanID:AAA and number of structures is 29
Case5_AXB.txt loaded     patID:Case5 PlanID:AXB and number of structures is 29
```

In [4]:
```
multi_df.head()
```

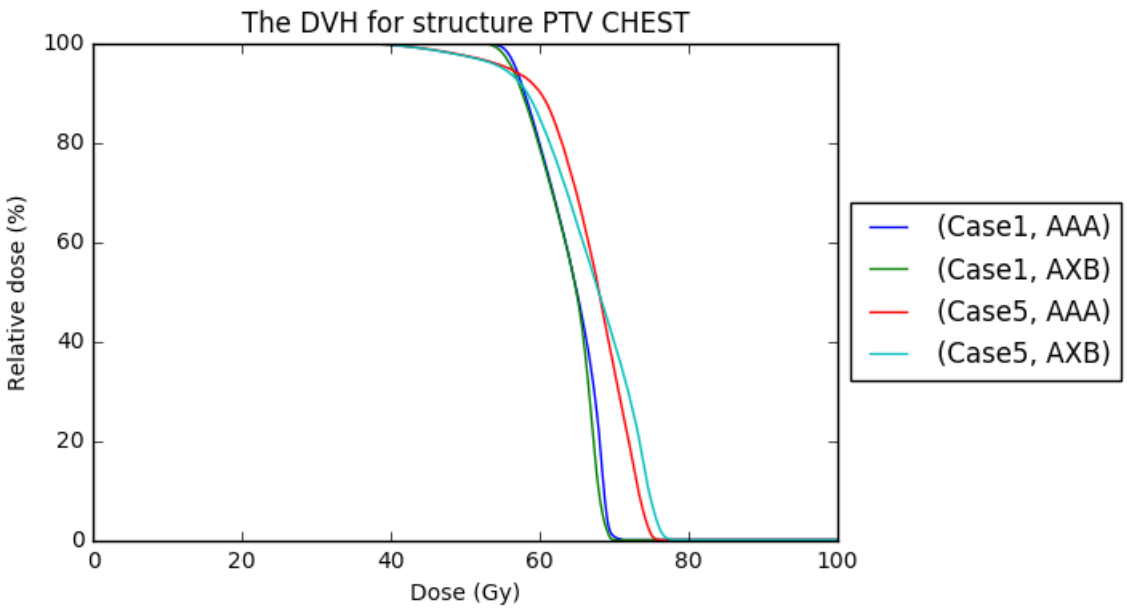
Out[4]:

Patient ID	Case1								
Plan ID	AAA								
Structure	BODY	GTV	Heart	Foramen	Foramen+5mm	Oesophagus	Foramen+3mm	Trachea	Bro tree
Dose (Gy)									
0.00	100.000000	100.0	100.000000	100.000000	100.000000	100.000000	100.000000	100.000000	100
0.05	94.650546	100.0	100.000000	100.000000	100.000000	100.000000	100.000000	100.000000	100
0.10	84.657252	100.0	99.228210	99.109820	97.594712	100.000000	98.241807	100.000000	100
0.15	75.699474	100.0	95.117282	89.524147	88.564127	99.694547	88.683684	92.911855	100
0.20	68.629984	100.0	90.089920	81.775955	81.023144	94.893054	80.788367	77.559046	100

5 rows × 108 columns

In [5]:
```
structure = 'PTV CHEST'
multi_df.xs(structure, level='Structure', axis=1).plot()
plt.legend(loc='center left', bbox_to_anchor=(1, 0.5))
plt.title('The DVH for structure ' + structure)
plt.ylabel('Relative dose (%)')
```

Out[5]:
```
<matplotlib.text.Text at 0xa685b10>
```



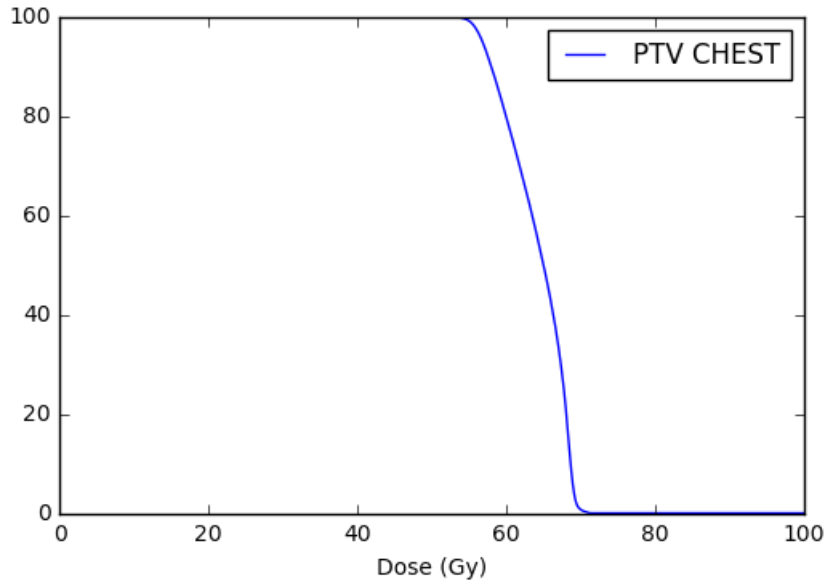
In [6]:
```
multi_df.to_csv('All_data.csv')   # save all data to flat CSV
```

Metrics for single DVH

My metrics will be slightly different from Eclipse since using interpolation, but all self consistent for comparisons

In [7]:
```
patient = 'Case1'
planID = 'AAA'
structure = 'PTV CHEST'
df = multi_df.xs(patient, level='Patient ID', axis=1).xs(planID, level='Plan ID', axis=1)[stru
e] # structure is final level so access like this
df.plot()
plt.legend()
```

Out[7]:
```
<matplotlib.legend.Legend at 0xa727810>
```



In [8]:
```
get_dmin(df)      # very close to value in Eclipse text file - 49.72
```

Out[8]:
```
49.700000000000003
```

In [9]:
```
get_dmax(df)
```

Out[9]:
```
71.200000000000003
```

In [10]:
```
get_d_metric(df, 50.0)
```

Out[10]:
```
64.965229679613714
```

In [ ]: