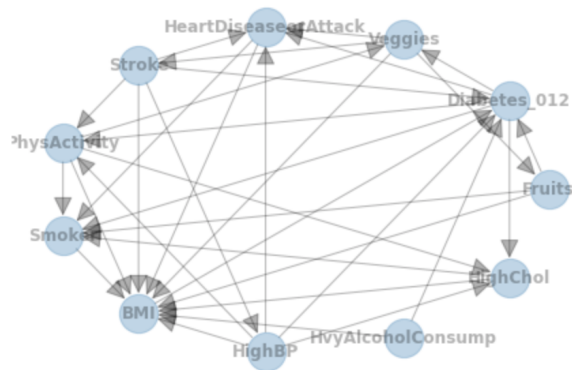


## Backdoor Adjustment

Cannot use algorithm search structure in the function for Back Door Adjustment

```
In [15]: dag_pc = estimated_model
nx.draw_circular(
    dag_pc, with_labels=True, arrowsize=30, node_size=800, alpha=0.3, font_weight="bold"
)
plt.show()
```



```
In [85]: inference = CausalInference(dag_pc)
```

```
-----
NotImplementedError                                Traceback (most recent call last)
<ipython-input-85-57b01f8f0717> in <module>
----> 1 inference = CausalInference(dag_pc)

~/opt/anaconda3/lib/python3.7/site-packages/pgmpy/inference/CausalInference.py in __init__(
click to scroll output; double click to hide _nodes)
    57         if not isinstance(model, BayesianNetwork):
    58             raise NotImplementedError(
----> 59                 "Causal Inference is only implemented for BayesianNetworks at this
time."
    60             )
    61         self.model = model

NotImplementedError: Causal Inference is only implemented for BayesianNetworks at this time
.
```

```
In [74]: model = BayesianModel([('Fruits', 'Diabetes_012'), ('Fruits', 'BMI'),
                                ('Fruits', 'Smoker'), ('Diabetes_012', 'PhysActivity'), ('Diabetes_012',
                                ('Diabetes_012', 'HighChol'), ('Diabetes_012', 'HeartDiseaseorAttack'),
                                ('Veggies', 'HeartDiseaseorAttack'))])
```

```
In [56]: print(estimated_model.edges())
```

```
[('Fruits', 'Diabetes_012'), ('Fruits', 'BMI'), ('Fruits', 'Smoker'), ('Diabetes_012', 'PhysActivity'), ('Diabetes_012', 'Veggies'), ('Diabetes_012', 'HighChol'), ('Diabetes_012', 'HeartDiseaseorAttack'), ('Diabetes_012', 'Smoker'), ('Veggies', 'HeartDiseaseorAttack'), ('Veggies', 'Fruits'), ('Veggies', 'BMI'), ('Veggies', 'Stroke'), ('HeartDiseaseorAttack', 'Smoker'), ('HeartDiseaseorAttack', 'BMI'), ('Stroke', 'PhysActivity'), ('Stroke', 'HighBP'), ('Stroke', 'HeartDiseaseorAttack'), ('Stroke', 'BMI'), ('Stroke', 'Diabetes_012'), ('PhysActivity', 'Smoker'), ('PhysActivity', 'Veggies'), ('PhysActivity', 'BMI'), ('PhysActivity', 'HighChol'), ('Smoker', 'BMI'), ('BMI', 'Diabetes_012'), ('HighBP', 'Diabetes_012'), ('HighBP', 'PhysActivity'), ('HighBP', 'BMI'), ('HighBP', 'HighChol'), ('HighBP', 'HeartDiseaseorAttack'), ('HvyAlcoholConsump', 'Diabetes_012'), ('HvyAlcoholConsump', 'BMI'), ('HighChol', 'BMI'), ('HighChol', 'Smoker')]
```

```
### -- Veggies, Smoker --
```

```
In [82]: model=BayesianModel(estimated_model.edges())
```

```
-----
ValueError                                Traceback (most recent call last)
~/opt/anaconda3/lib/python3.7/site-packages/networkx/convert.py in to_networkx_graph(data,
create_using, multigraph_input)
    171         try:
--> 172             return from_edgelist(data, create_using=create_using)
    173         except Exception as e:

~/opt/anaconda3/lib/python3.7/site-packages/networkx/convert.py in from_edgelist(edgelist,
create_using)
    489     G = nx.empty_graph(0, create_using)
--> 490     G.add_edges_from(edgelist)
    491     return G

~/opt/anaconda3/lib/python3.7/site-packages/pgmpy/base/DAG.py in add_edges_from(self, ebunch,
weights)
    284         for edge in ebunch:
--> 285             self.add_edge(edge[0], edge[1])
    286
```