

```

Value of k = 2
Centroid: [23.55026444 37.01751231]
Distortion: 3.79

Value of k = 3
Centroid: [19.21804631 39.39586404 28.60716868]
Distortion: 2.51

Value of k = 4
Centroid: [18.76227549 33.84988302 41.69049874 26.63631405]
Distortion: 1.75

Value of k = 5
Centroid: [18.6136025 37.06044892 26.26913411 43.08590415 31.84322631]
Distortion: 1.37

Value of k = 6
Centroid: [37.21334772 22.8940497 17.80525449 43.14367193 27.11711206 32.25390007]
Distortion: 1.13

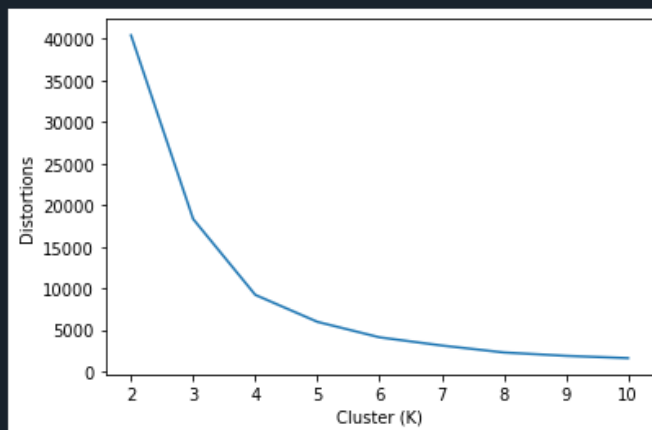
Value of k = 7
Centroid: [22.8940497 40.43610956 17.80525449 32.0812753 27.10806704 44.69101873
36.33320124]
Distortion: 1.0

Value of k = 8
Centroid: [28.27243365 40.42656283 17.61370089 32.20239733 44.69101873 21.75047078
36.33342906 25.61816308]
Distortion: 0.82

Value of k = 9
Centroid: [17.64685662 41.49578582 28.26841401 35.69745678 32.05182789 21.87539469
44.95213878 38.47140337 25.65777837]
Distortion: 0.74

Value of k = 10
Centroid: [32.05182789 17.61370089 43.96241927 25.61269272 38.41385508 21.73952922
35.69157381 28.25966726 41.24293404 47.63240172]
Distortion: 0.71

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Original size: 2111
Final data set of (n): 2111

```

The elbow graph is available for inspection.

- I. CDC 6-level obesity levels.
- II. or the study-specific ordinal levels.

In the plot, we can see that 4 is the optimal number of clusters for the dataset.

At $k = 4$ increases, then slowly decreases. The NObesdad count is: {NObes}

a	range	9	range object
centroids	Array of float64	(10,)	[32.05182789 17.61370089 43.96241927 25.61269272 38.41385508 21.739529 ...]
clusters	cluster._kmeans.KMeans	1	KMeans object of sklearn.cluster._kmeans module
cmap	Array of int32	(2111,)	[3 3 3 ... 2 2 2]
distortions	list	9	[40425.98742967742, 18326.074107057855, 9208.069878582231, 5961.894792 ...]
file	str	18	ObesityDataSet.csv
frame	DataFrame	(2111, 4)	Column names: Height, Weight, NObeyesdad, BMI
H	str	6	Height
i	str	10	NObeyesdad
k	int	1	10
kMeansInit	int	1	150
labels	list	3	['Height', 'Weight', 'NObeyesdad']
meanDistortion	float64	1	0.7055620747269082
N	str	10	NObeyesdad
new_size	int	1	2111
NObese	int	1	7
size	int	1	2111
test_frame	DataFrame	(2111, 1)	Column names: BMI
W	str	6	Weight