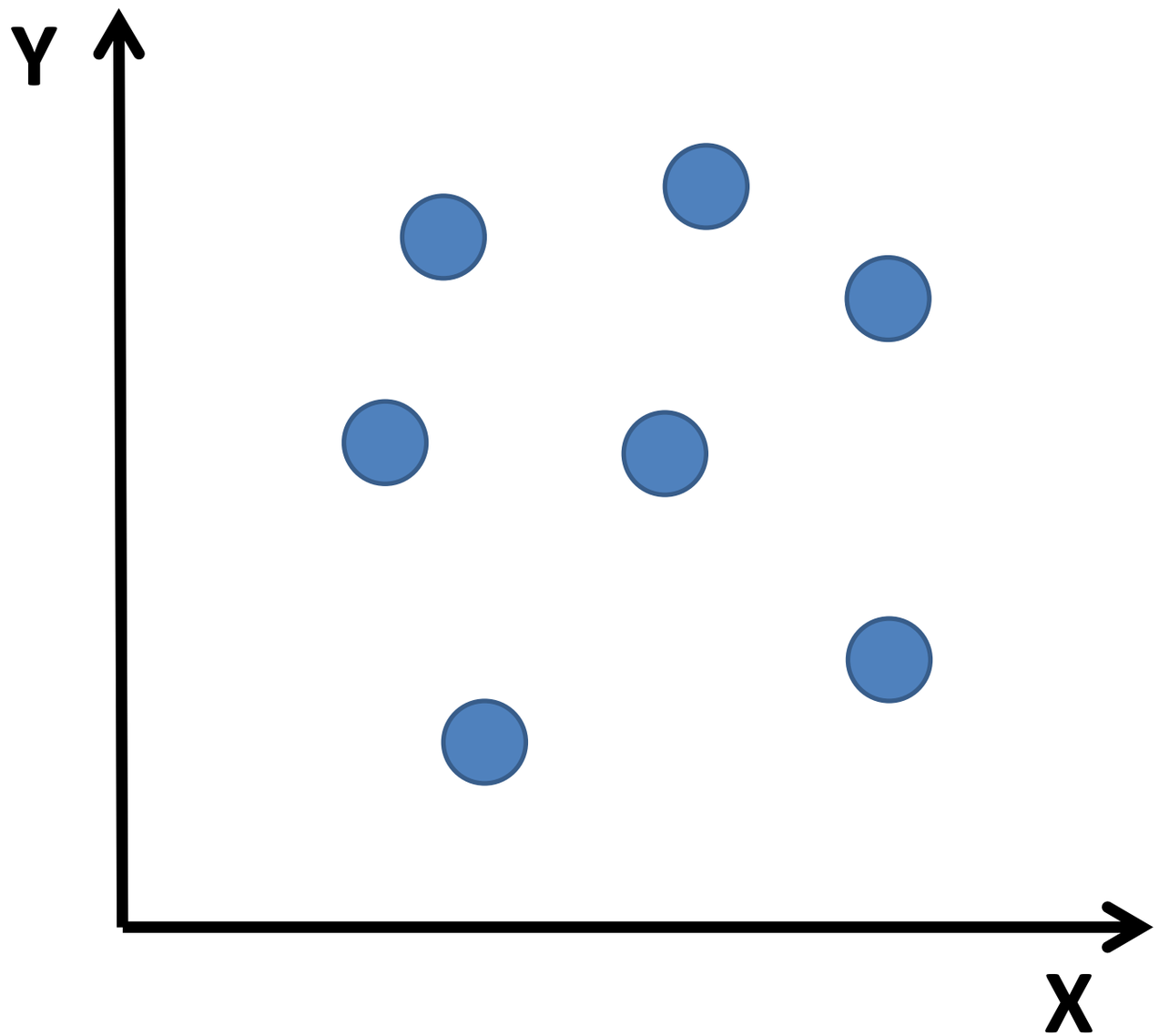
Dimensionality Reduction

Principle Component Analysis

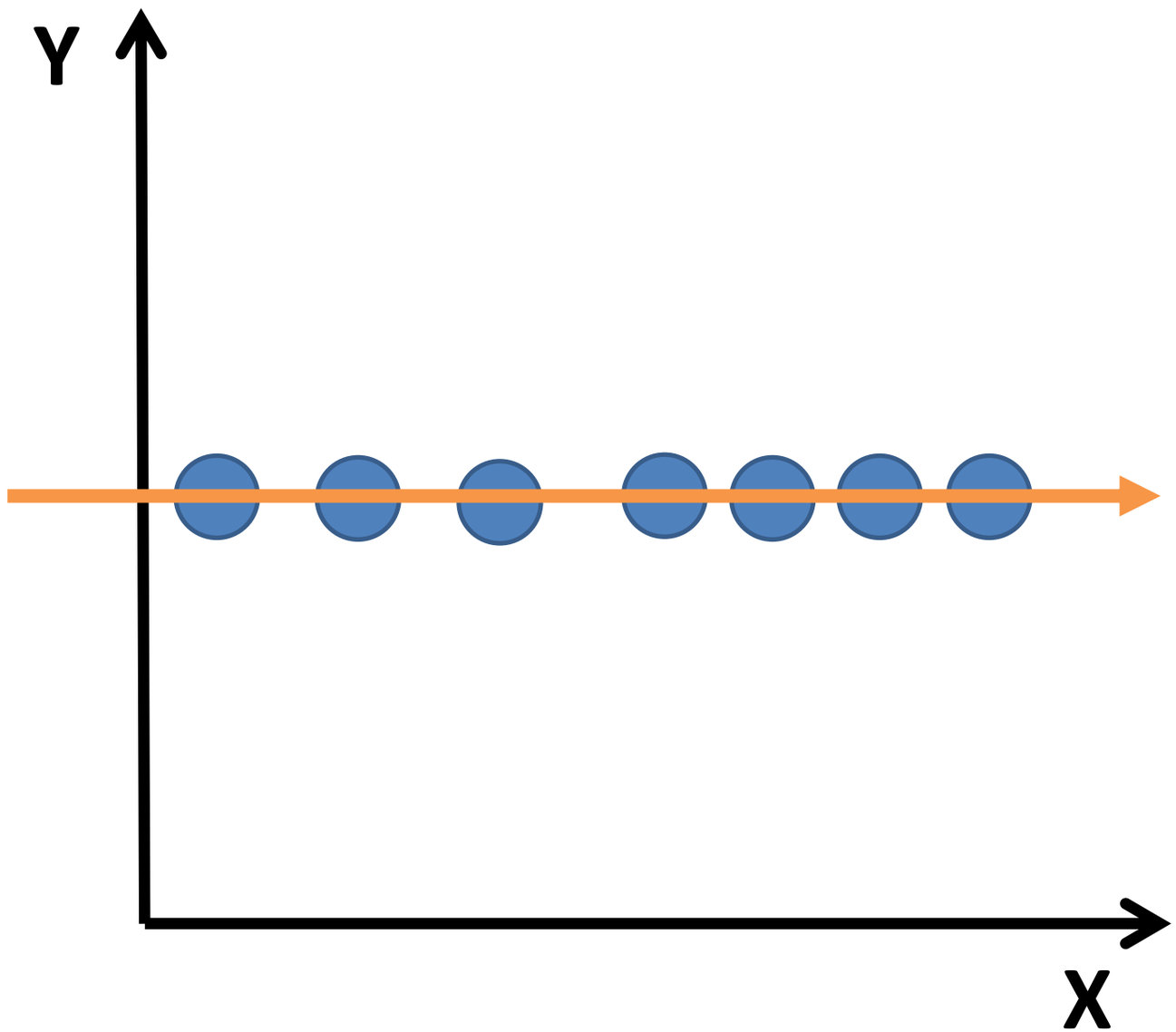


What is the Dimensionality of this data?

1D

2D

Principle Component Analysis

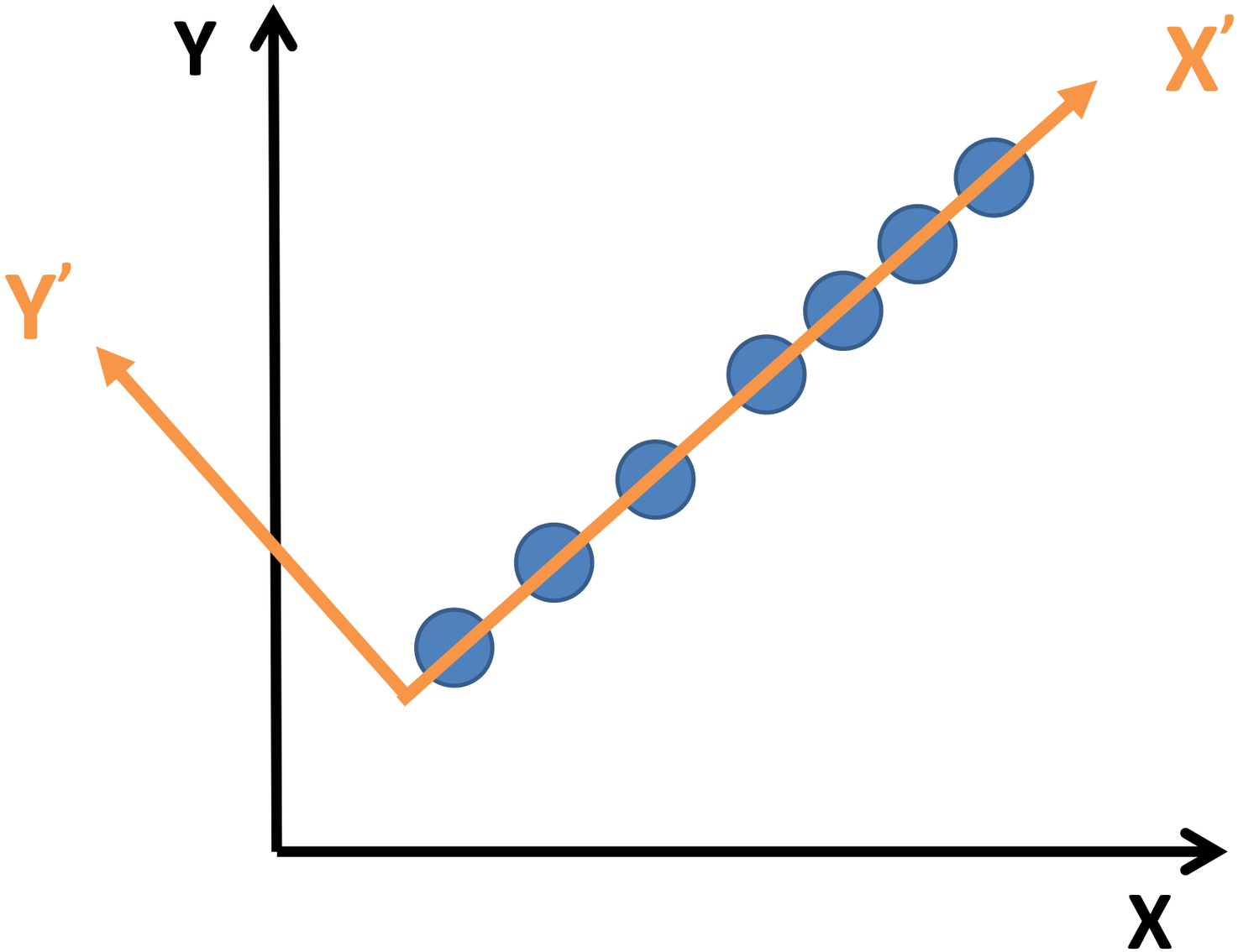


What is the Dimensionality of this data?

1D

2D

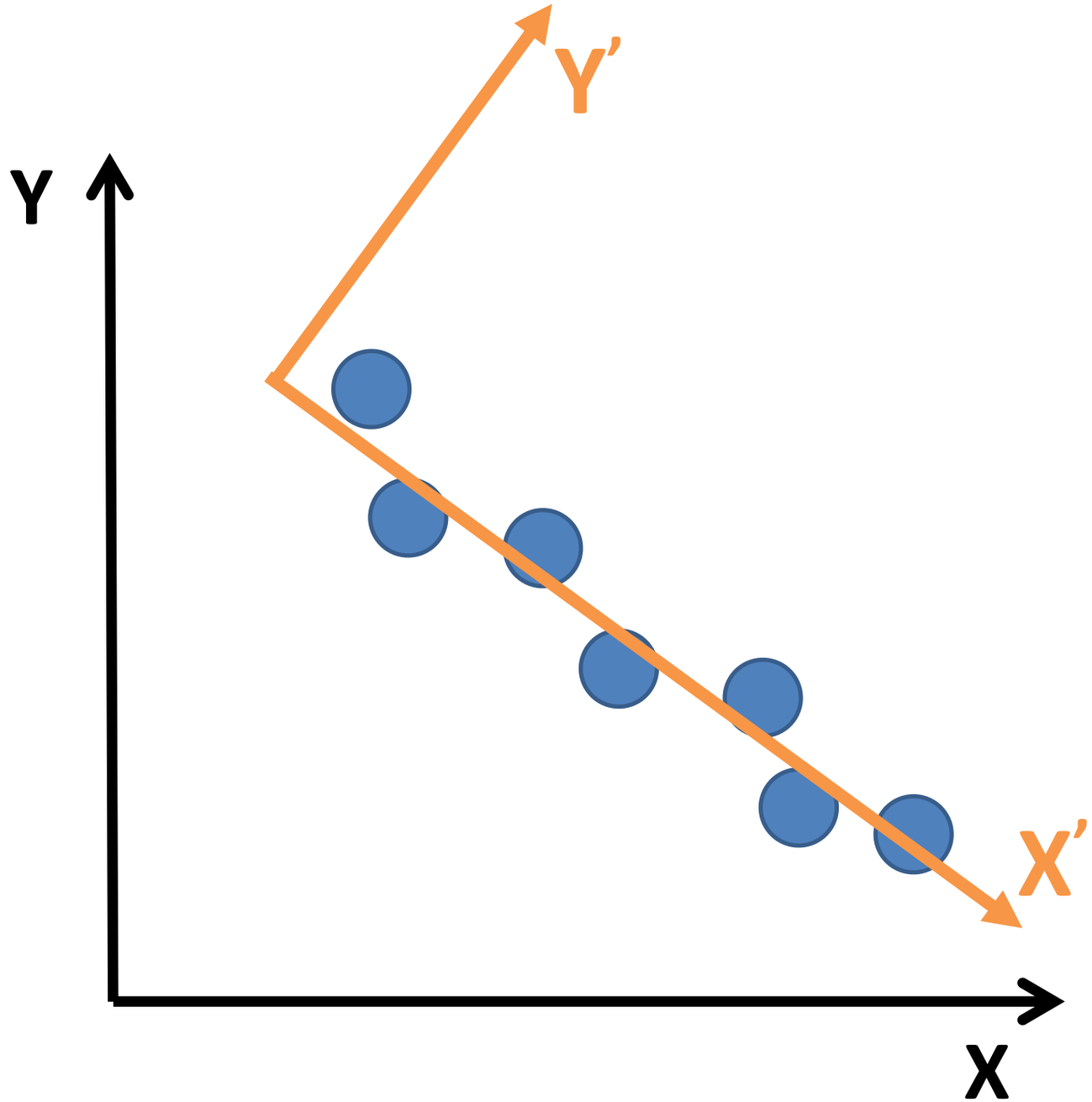
Principle Component Analysis



What is the Dimensionality of this data?

- 1D
- 2D

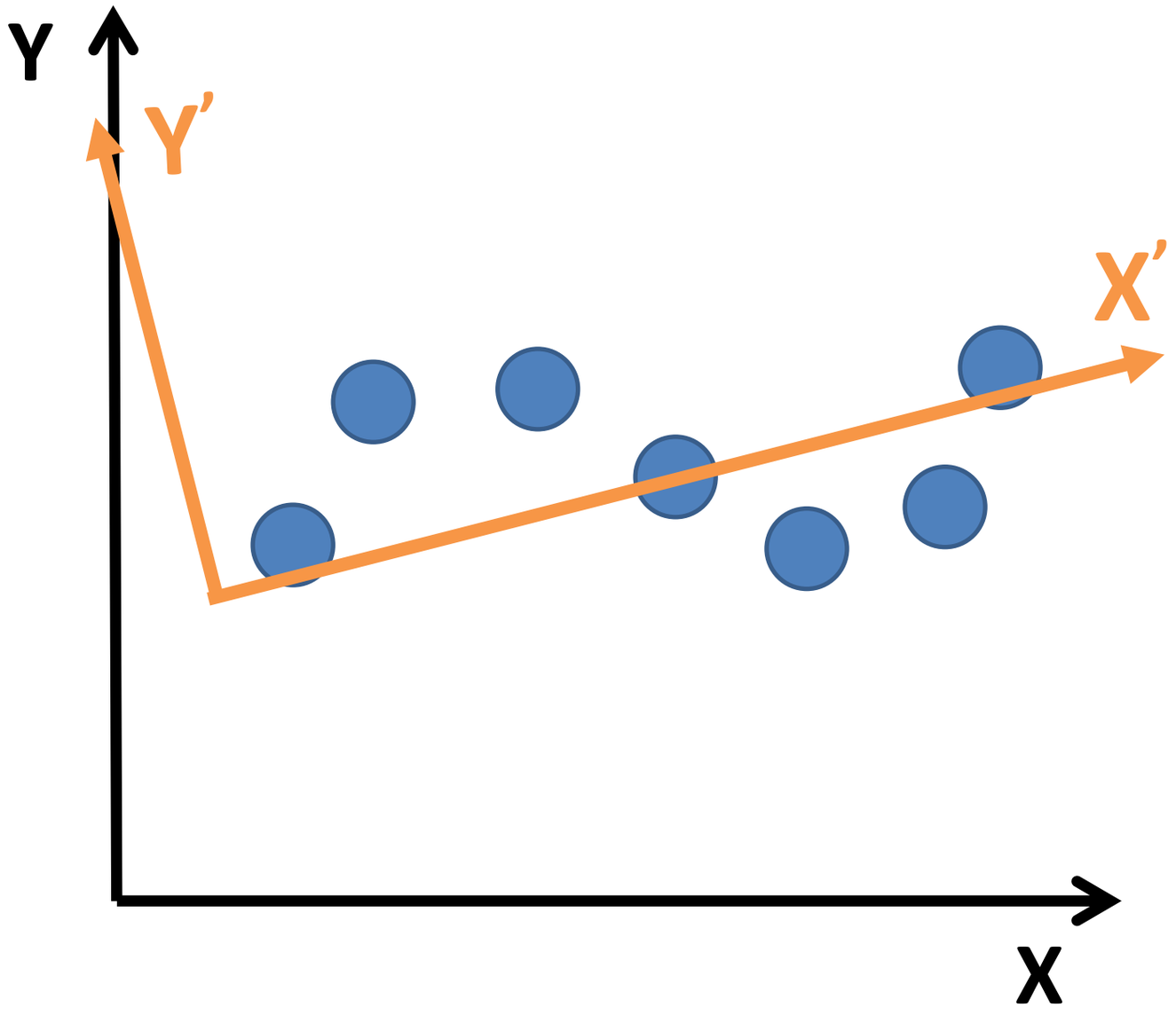
Principle Component Analysis



What is the Dimensionality of this data?

- 1D
- 2D

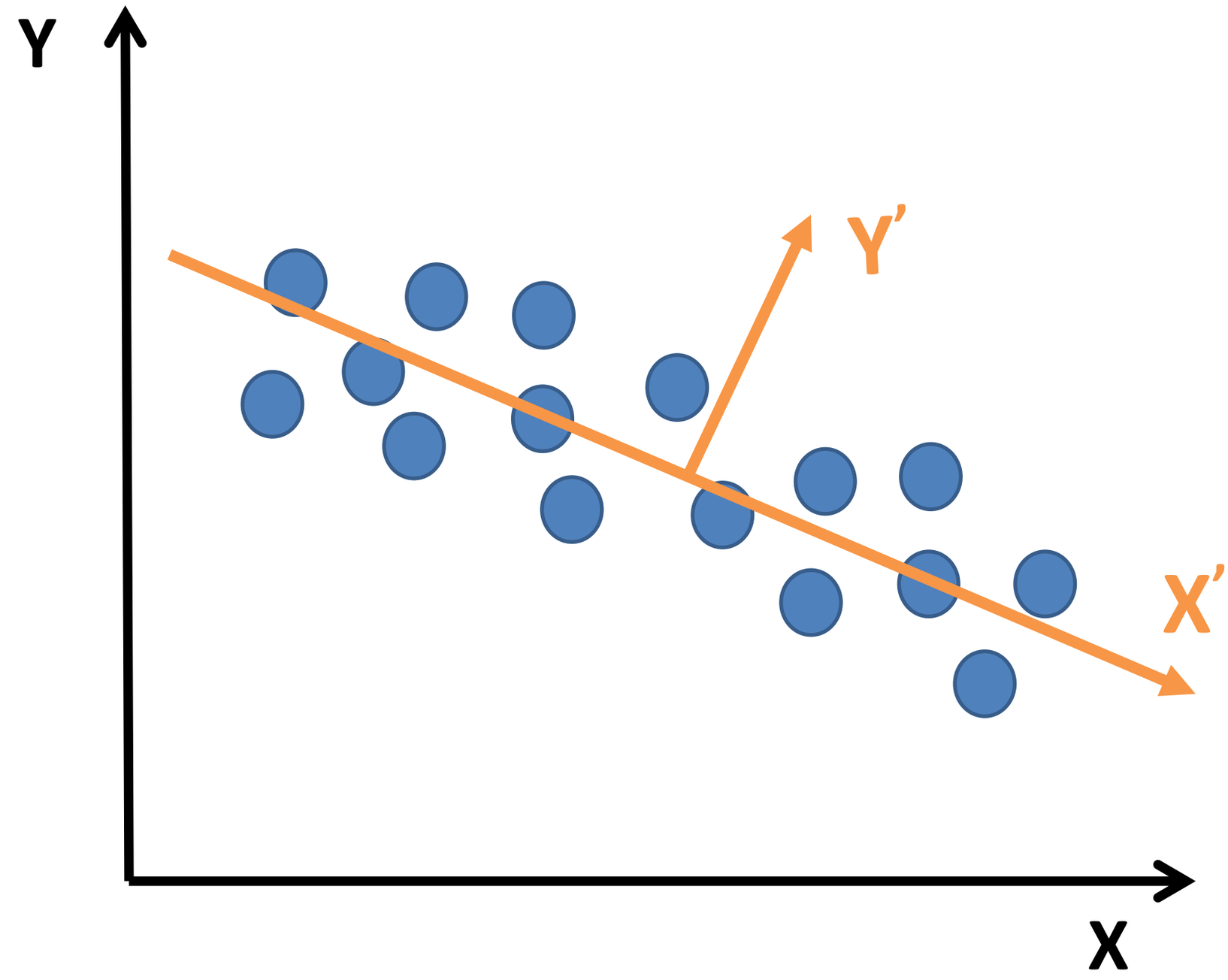
Principle Component Analysis



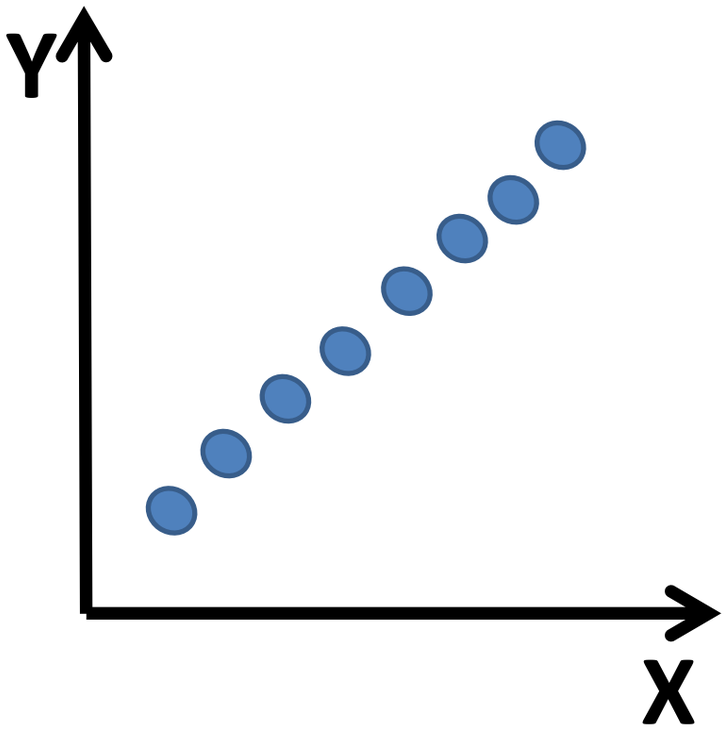
What is the Dimensionality of this data?

- 1D
- 2D

Principle Component Analysis

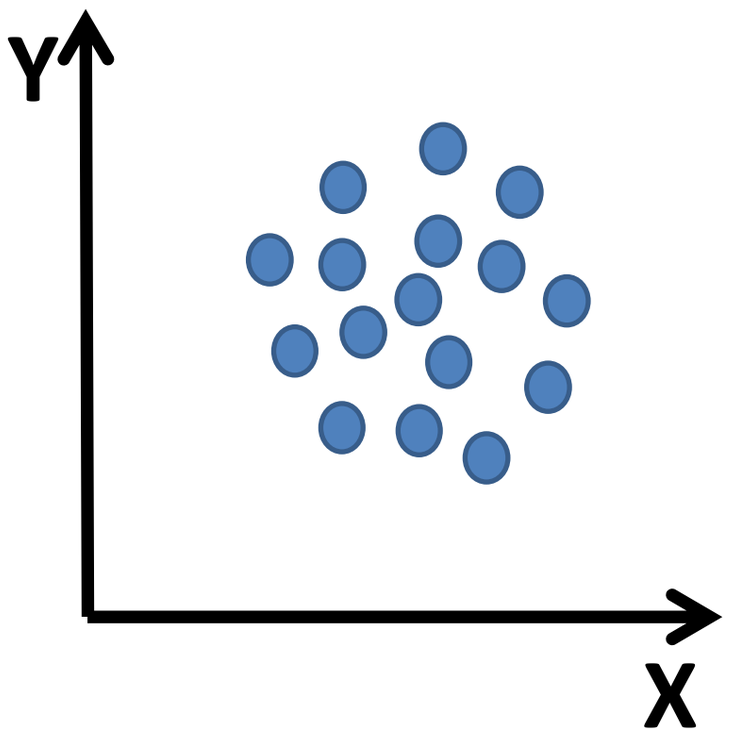


PCA Results?



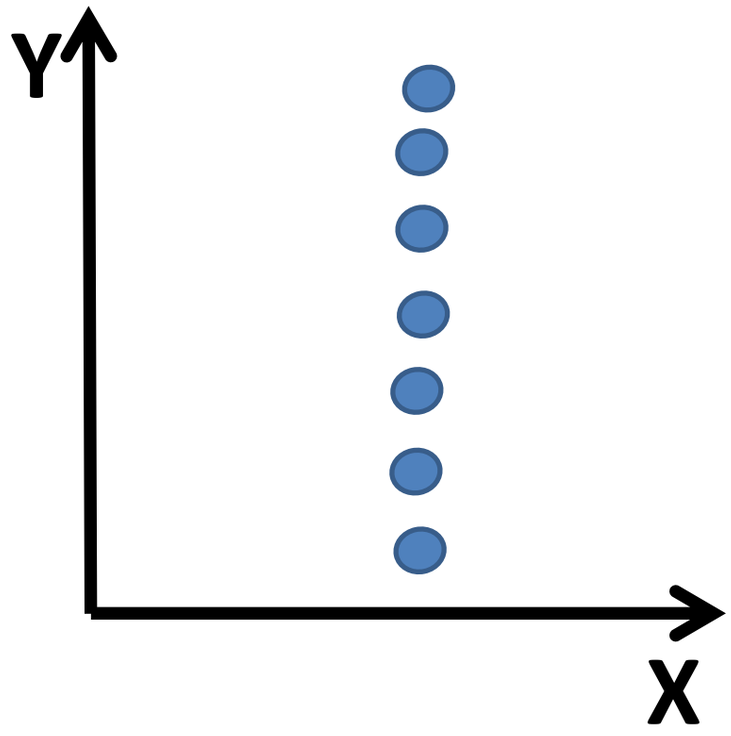
YES

NO



YES

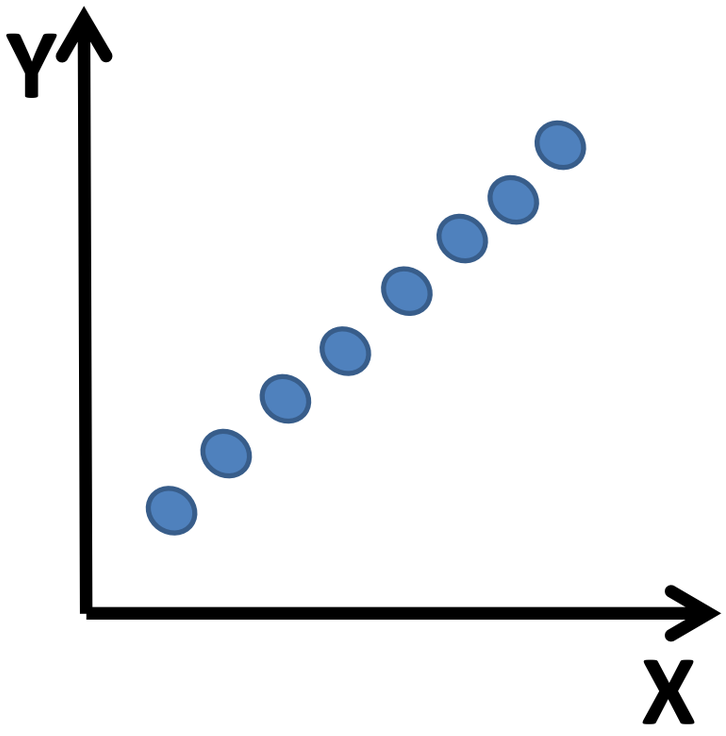
NO



YES

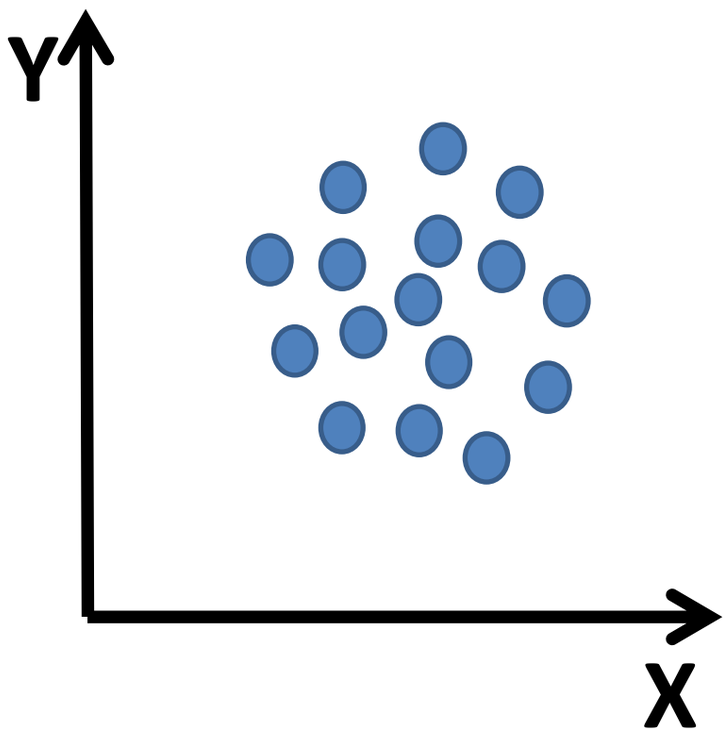
NO

Major Axis Dominates?



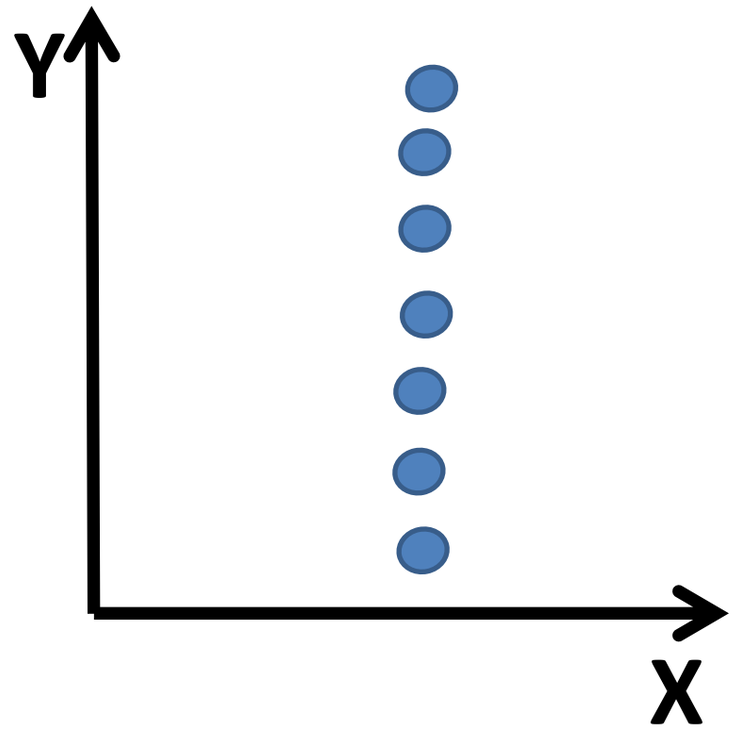
YES

NO



YES

NO



YES

NO

DICE ANALYTICS

Measurable vs Latent Features

Given the features of house, what is its price?

Measurable Features
Square Footage
School Ranking
Neighborhood Safety
No. of Rooms

Latent Features
Size
Neighborhood

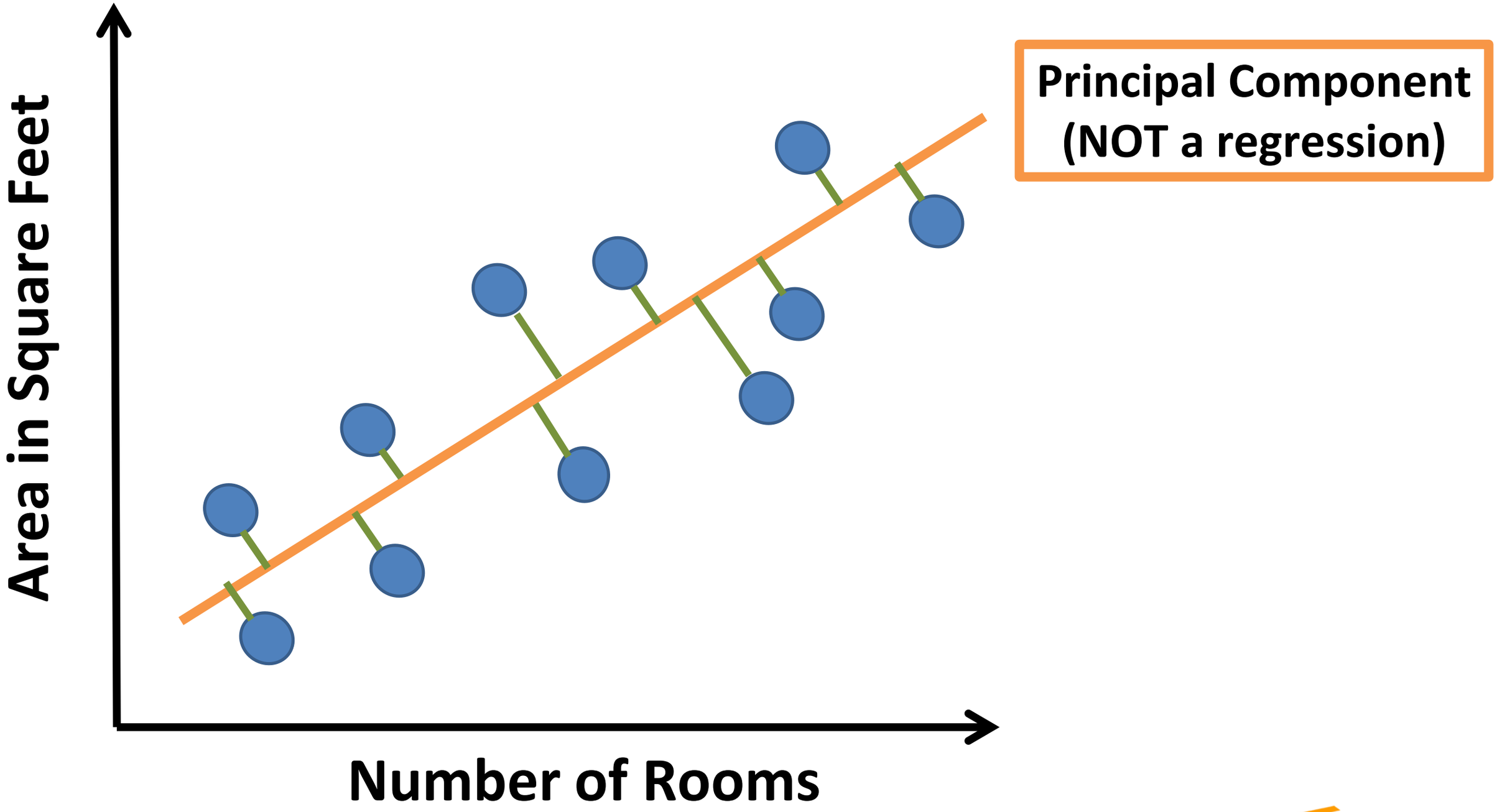
Measurable vs Latent Features

Given the features of house, what is its price?

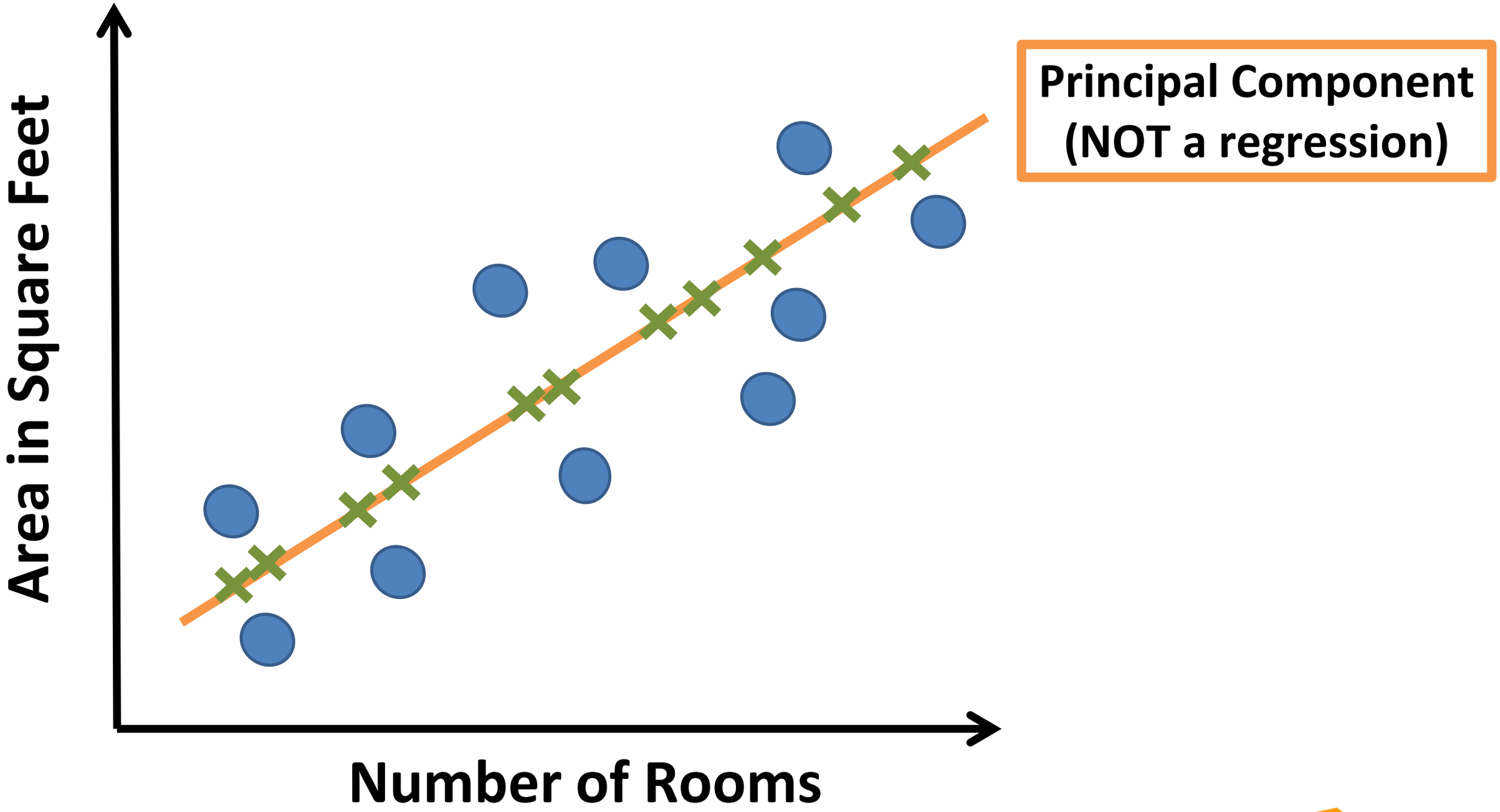
Measurable Features
Square Footage
School Ranking
Neighborhood Safety
No. of Rooms

Latent Features
Size
Neighborhood

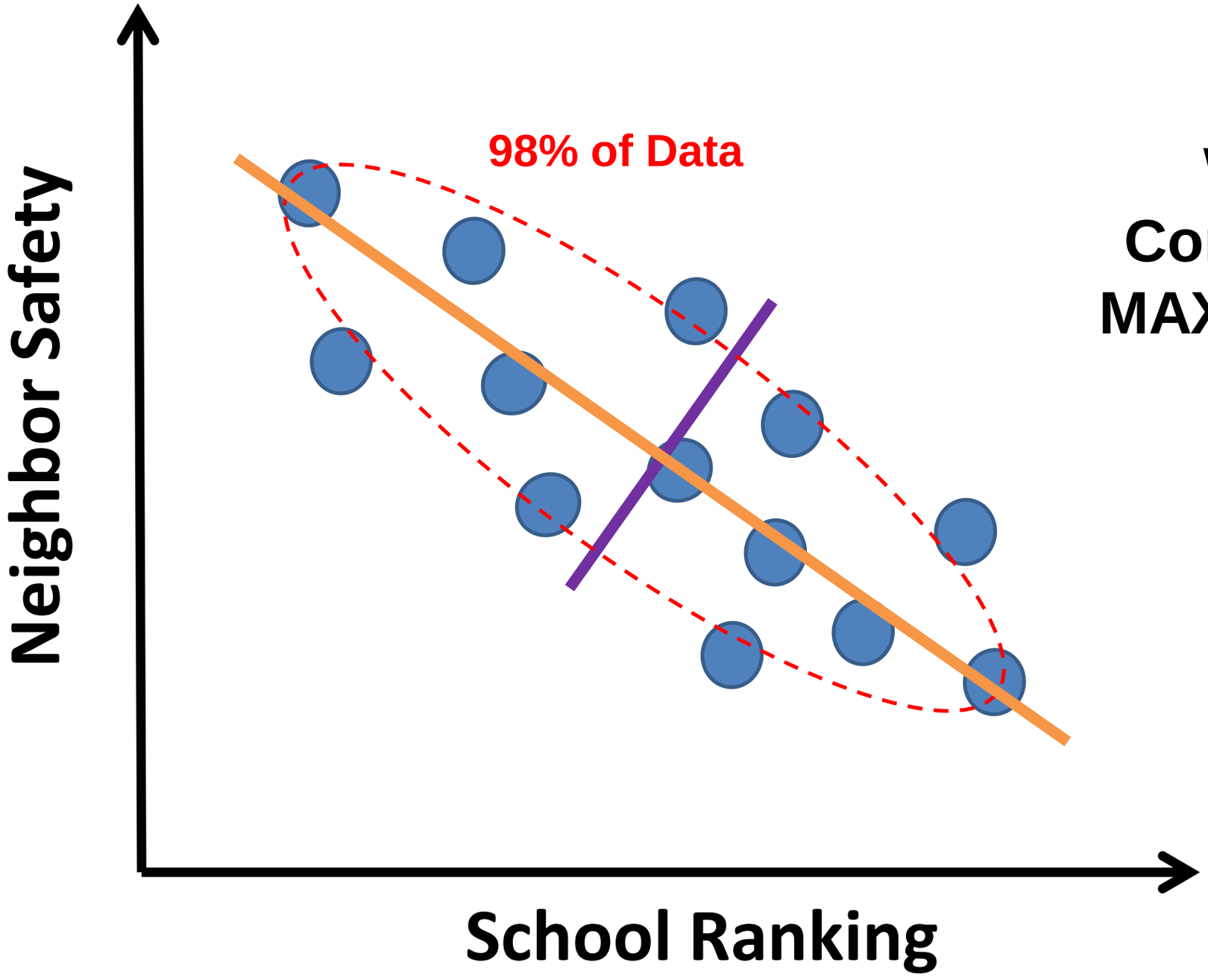
Preserving Information in Principal Component



Preserving Information in Principal Component



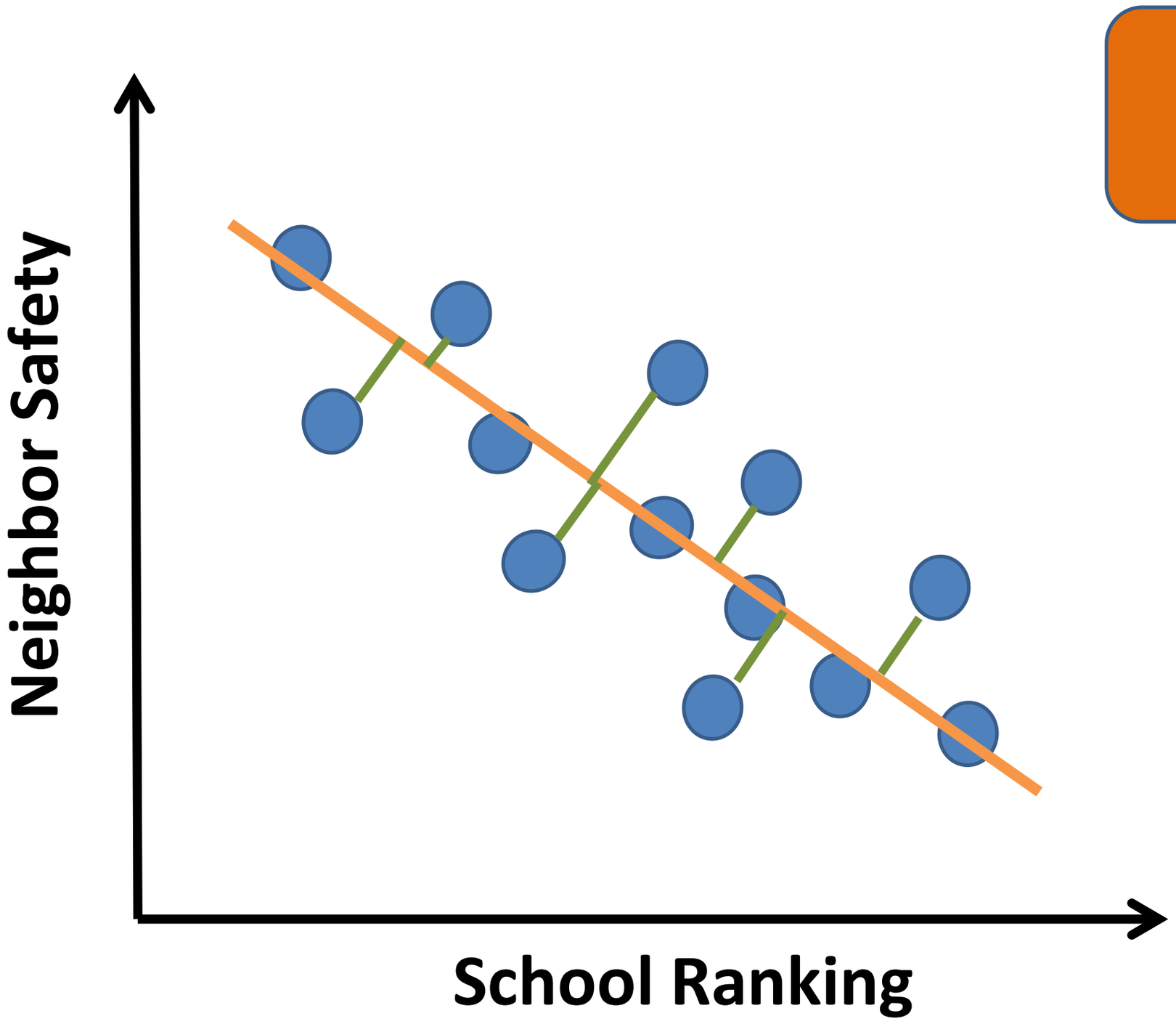
How to determine Principal Component



Which Principal Component Covering MAXIMUM VARIANCE?

- Orange
- Purple

Maximum Variance & Information Loss



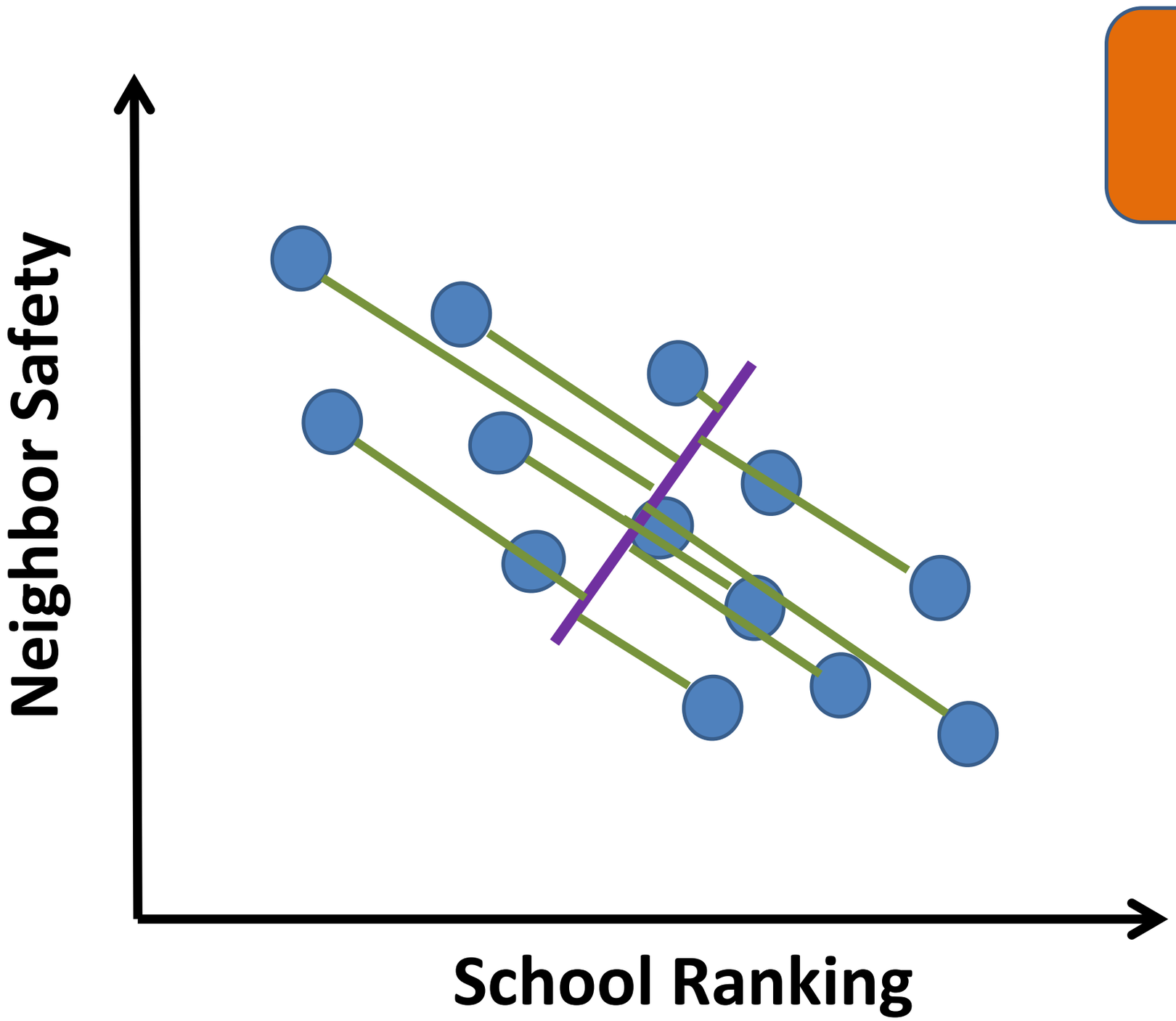
Neighbor Safety
+
School Ranking

PCA

Neighbor Quality

DICE ANALYTICS

Maximum Variance & Information Loss



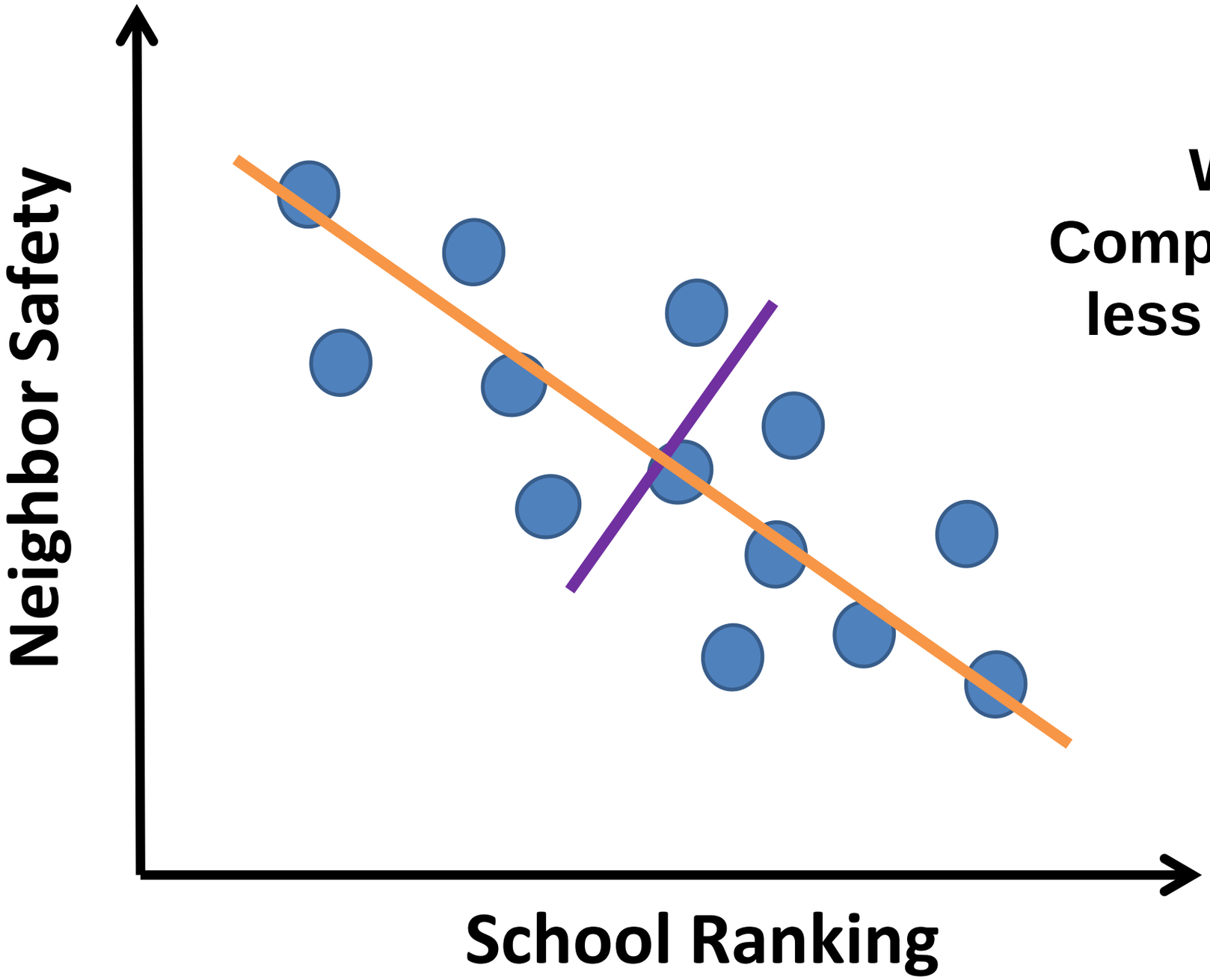
Neighbor Safety
+
School Ranking

PCA

Neighbor Quality

DICE ANALYTICS

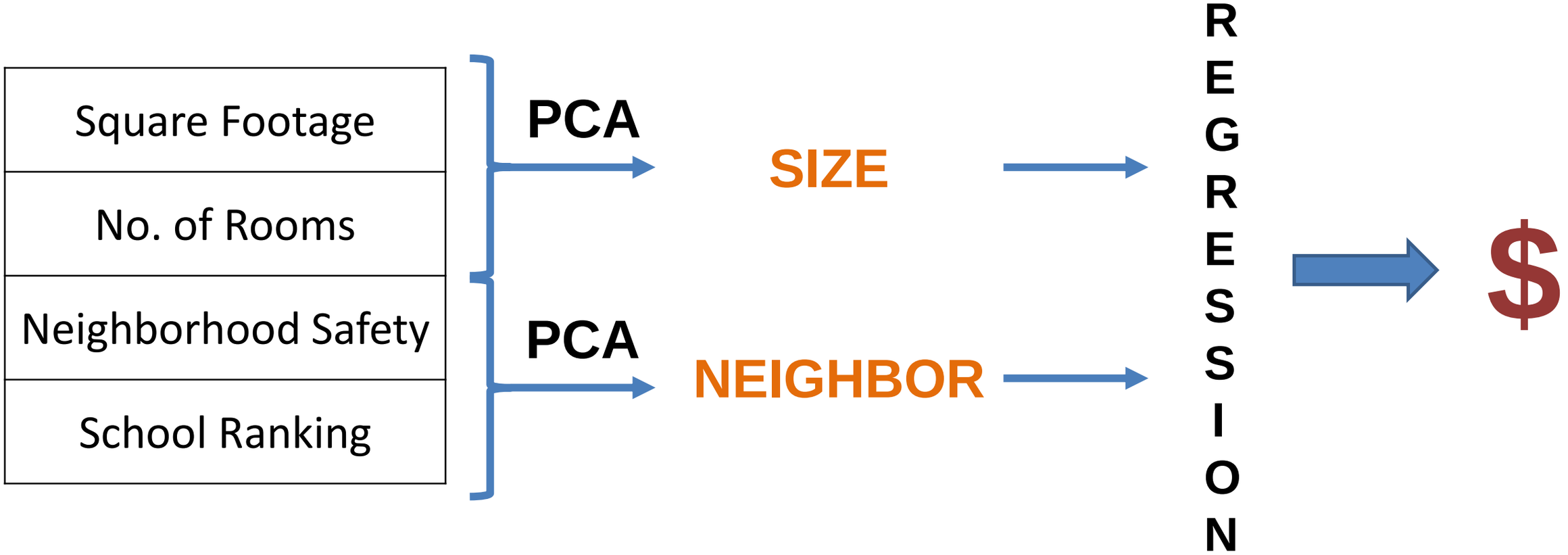
Maximum Variance & Information Loss



Which Principal Component Covering has less Information Loss?

- Orange
- Purple

PCA as General Algorithm for Feature Transformation



DICE ANALYTICS