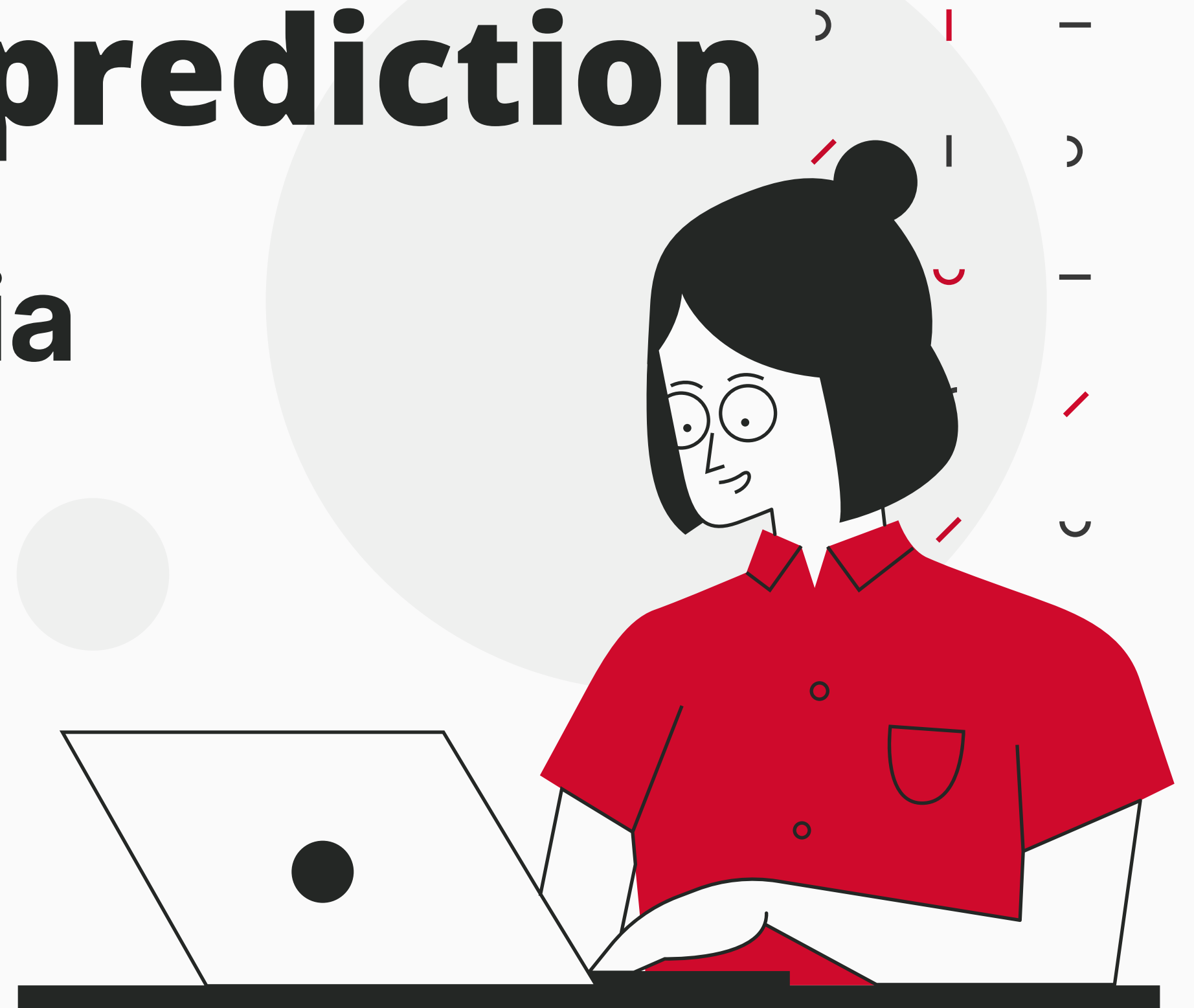


# Applying interpolation in trajectory prediction

## Atutova Natalia

FACULTY OF MECHANICS AND MATHEMATICS  
LAST YEAR  
NSU (NOVOSIBIRSK STATE UNIVERSITY)  
DEPARTMENT OF THEORETICAL CYBERNETICS  
CRYPTOGRAPHY SPECIALIZATION



## **Methods**

**Data processing**

**Interpolation**

**Least square method**

**Linear approximation**

## **Motivation**

**Little data used**

**Applying fill techniques  
to prediction**

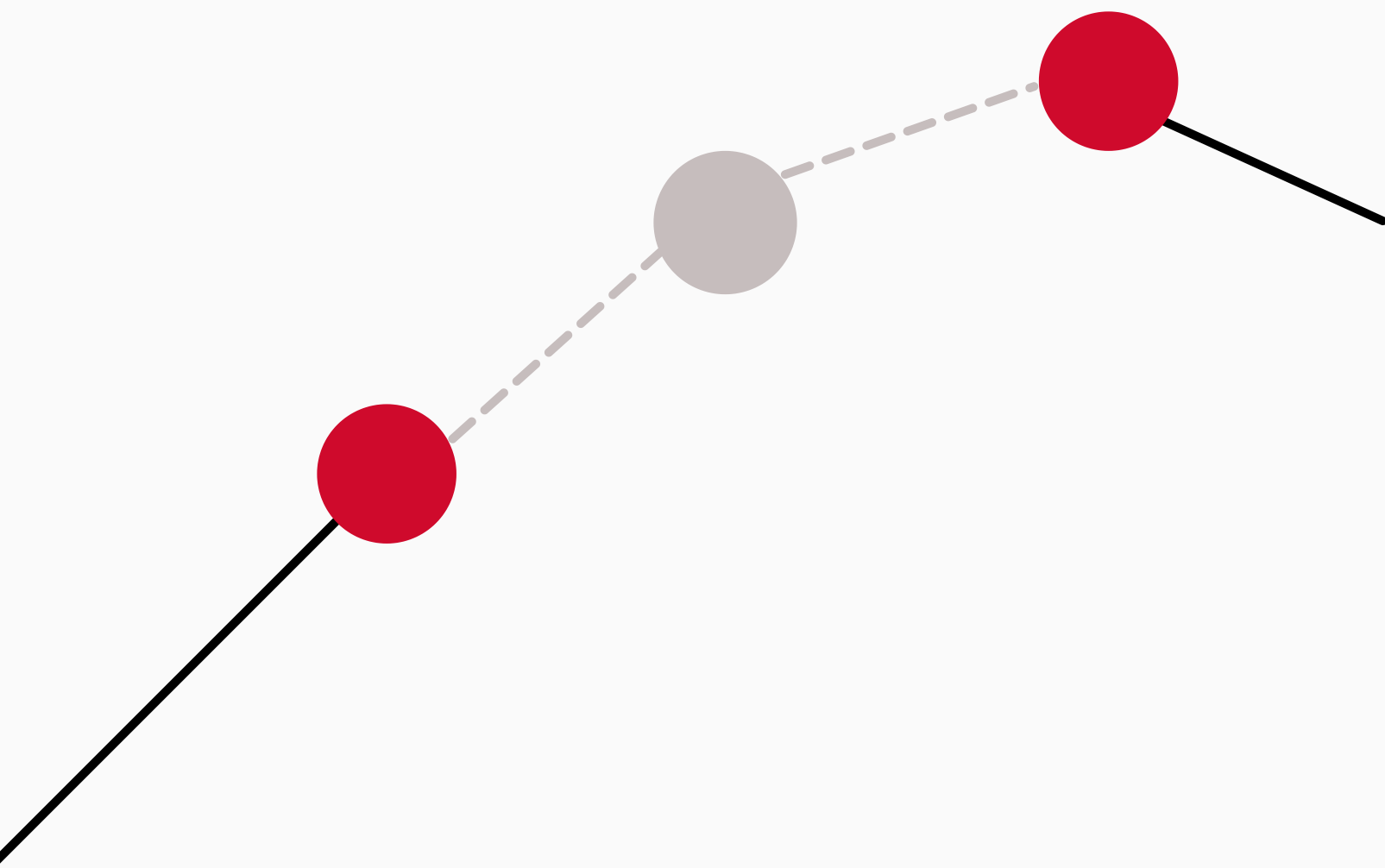


# Best solution

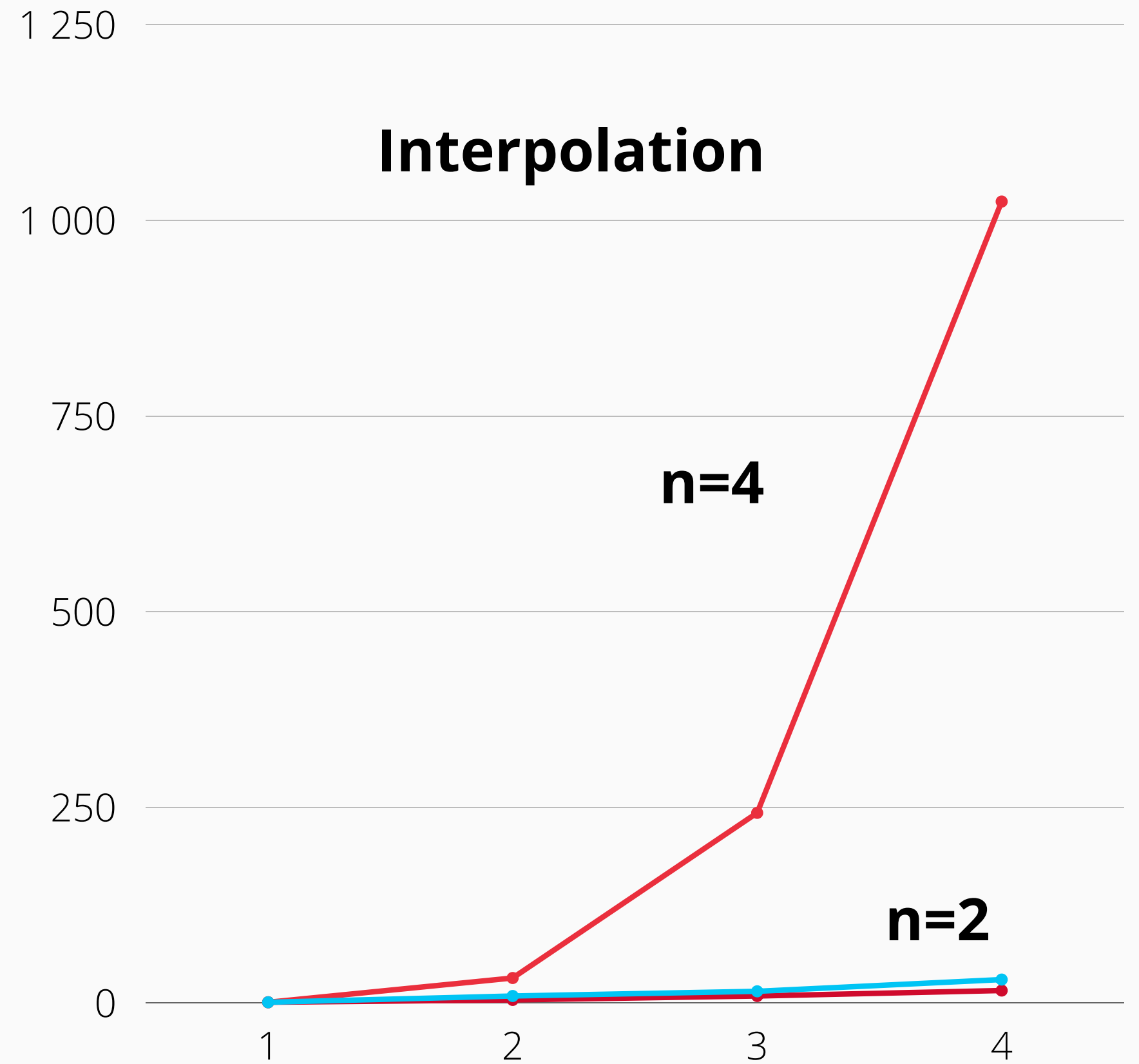


Participant team	Short ADE	Short FDE	Medium ADE	Medium FDE	Long ADE	Long FDE
AtutovaNata (LSM+addition (1,10,20))	1.05	2.37	2.88	7.38	9.43	25.64
AtutovaNata (Square (1,10,20))	1.14	2.61	3.16	8.07	10.27	27.75

## Data augmentation



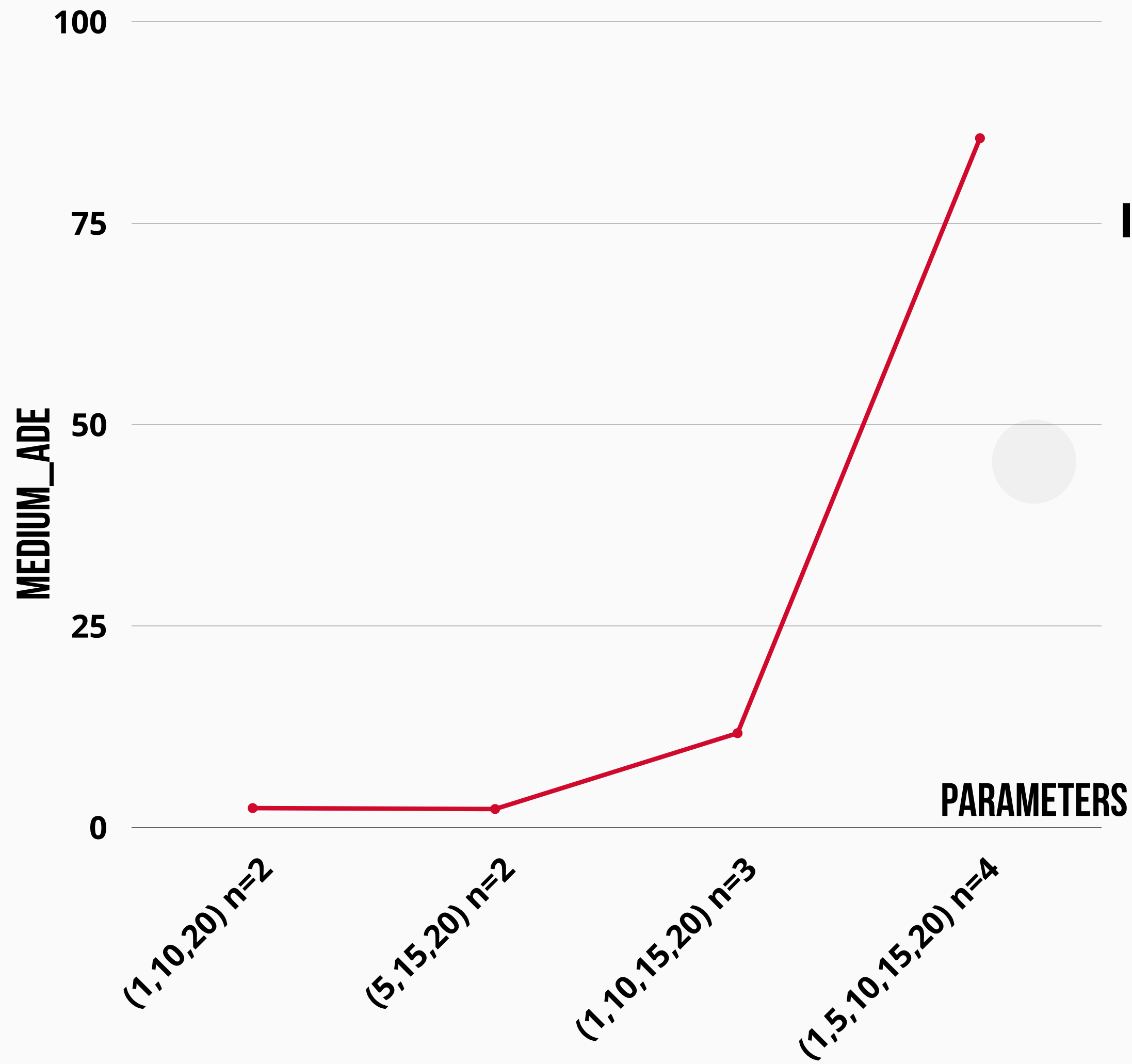
## Interpolation



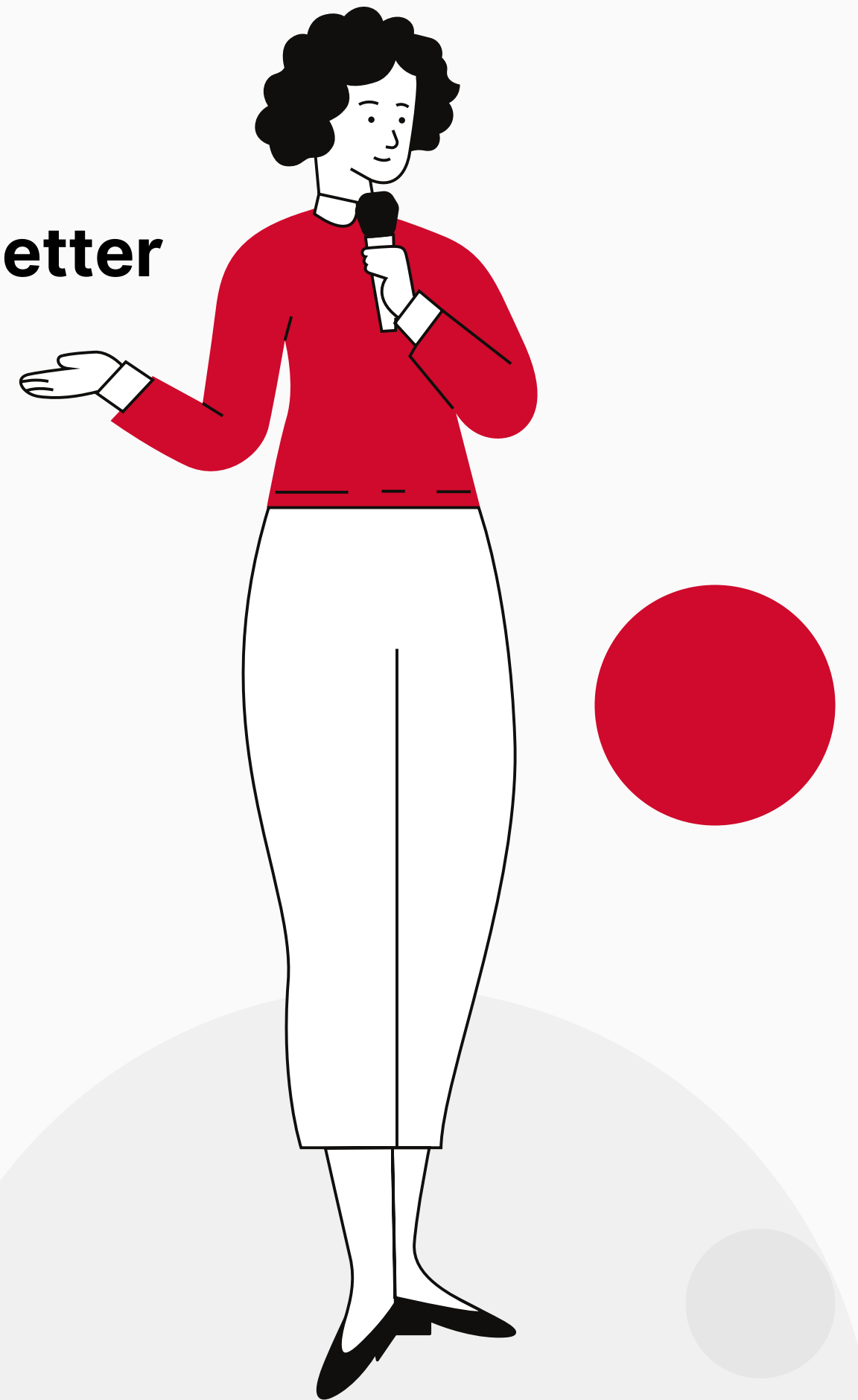
# Interpolation

	short_ade	short_fde	medium_ade	medium_fde	long_ade	long_fde
(1,10,20) n=2	0.87519	1.9908	2.4020	6.1152	7.83530	21.4554
(5,15,20) n=2	0.82748	1.8858	2.2883	5.86290	7.56999	20.87219
(1,10,15,20) n=3	2.69188	7.60710	11.7028	37.33572	64.6908	223.0770
(1,5,10,15,20) n=4	12.16821	41.09641	85.5532	329.06967	831.5782	3476.90552





**less is better**

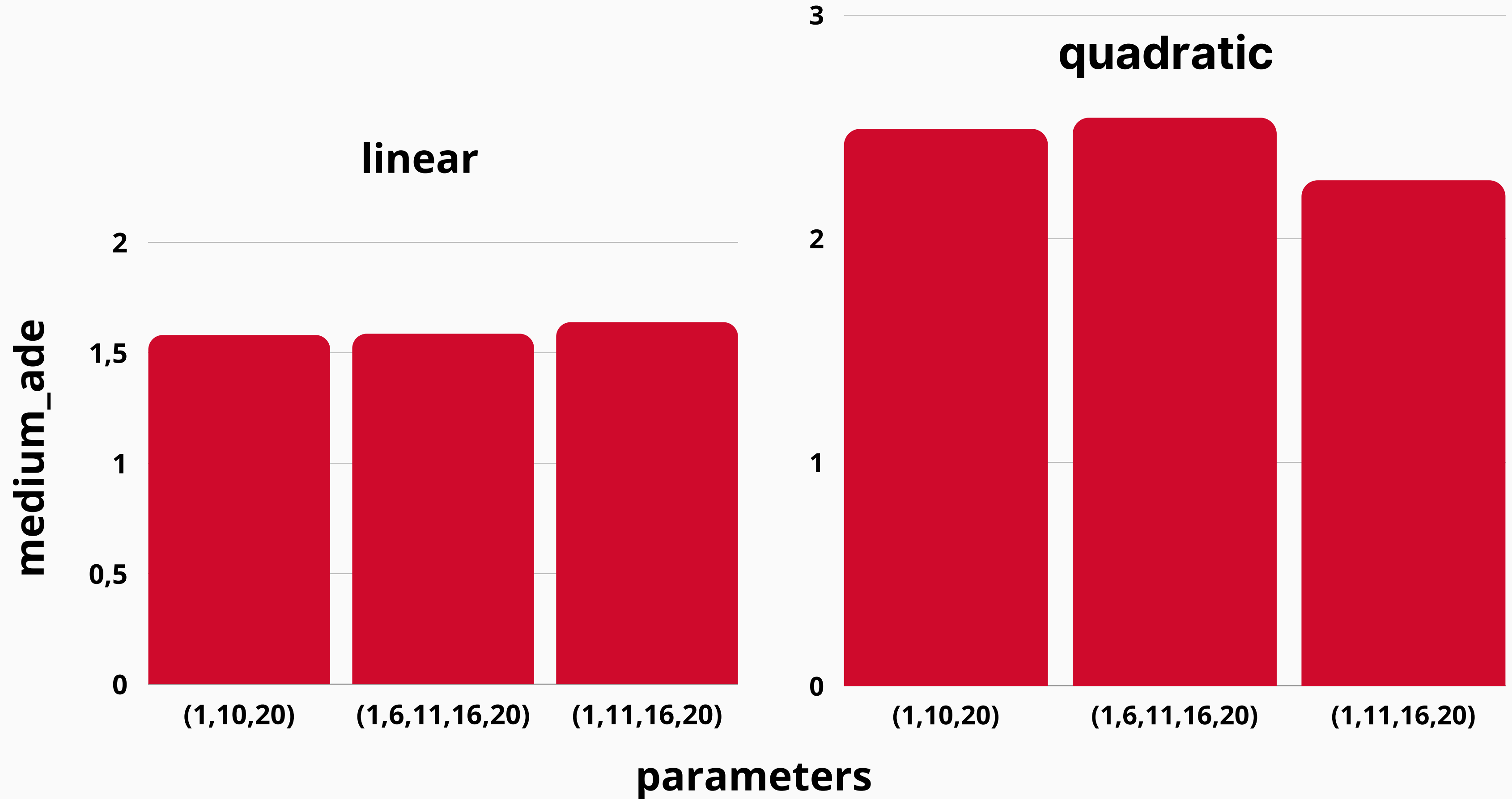


# Least square method

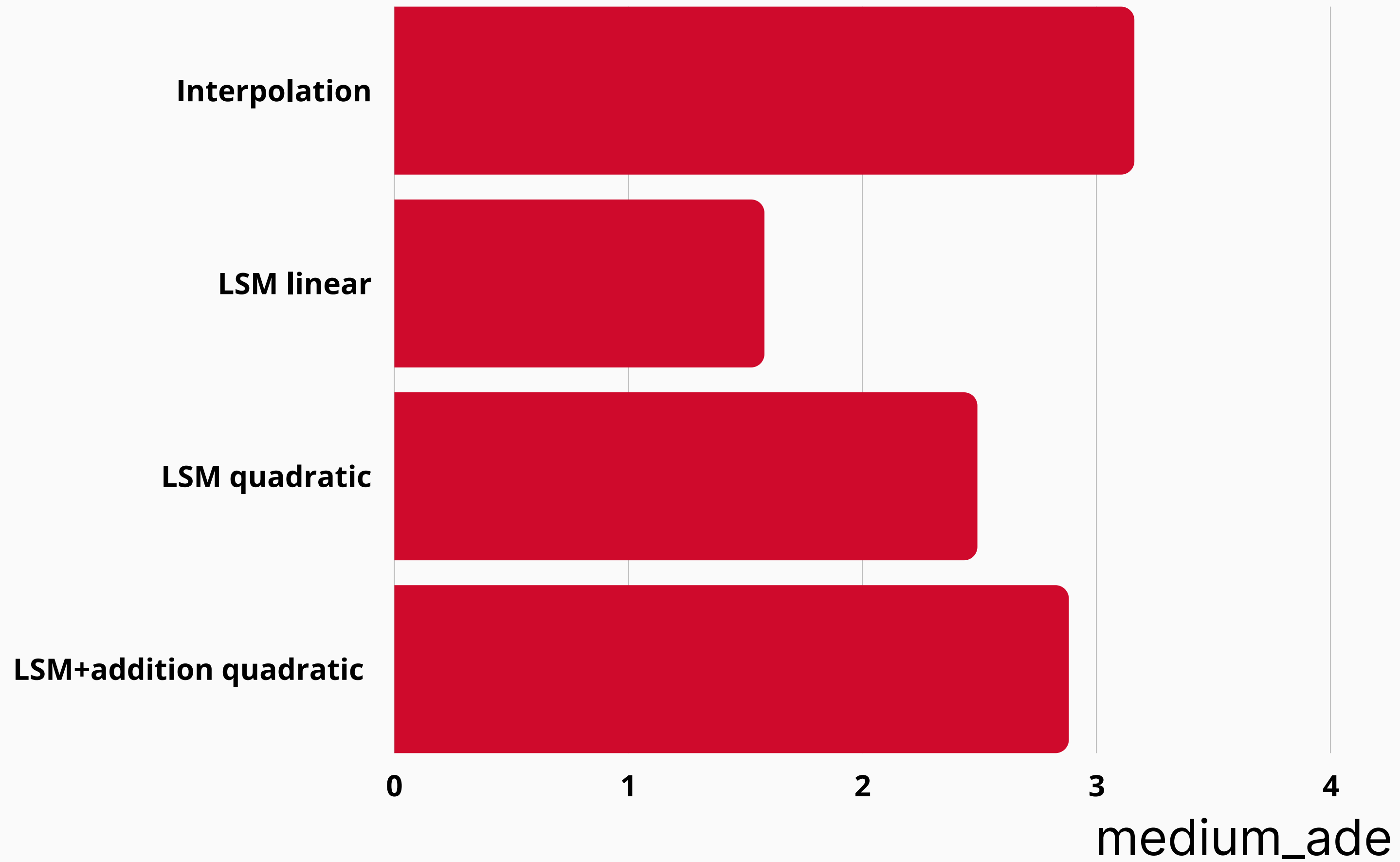
linear	short_ade	short_fde	medium_ade	medium_fde	long_ade	long_fde
(1,10,20)	0.73982	1.4359	1.5792	3.4835	4.0263	9.7323
(1,6,11,16,20)	0.75608	1.44172	1.5850	3.46850	4.0116	9.67638
(1,11,16,20)	0.78411	1.4950	1.6374	3.5686	4.10947	9.86262

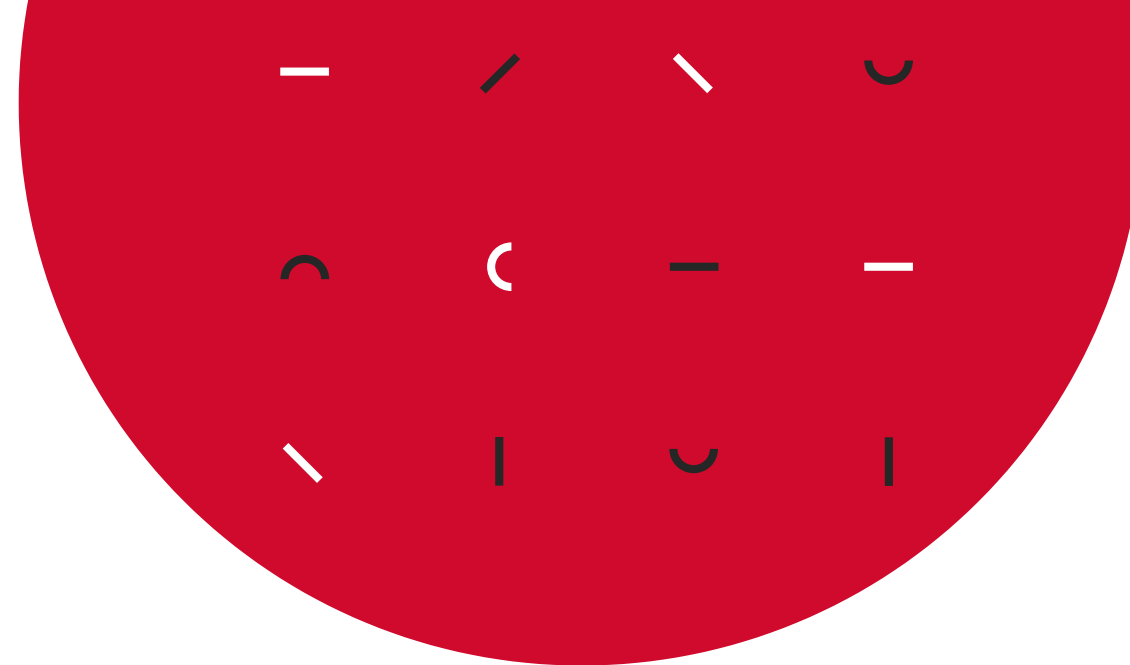
quadratic	short_ade	short_fde	medium_ade	medium_fde	long_ade	long_fde
(1,10,20)	0.90015	2.05312	2.4892	6.36433	8.17419	22.43394
(1,6,11,16,20)	0.9433	2.1072	2.5390	6.4219	8.2212	22.4671
(1,11,16,20)	0.8229	1.85801	2.25927	5.77338	7.45124	20.53055

# Least square method









**IN THE PLANS**  
**- USING OTHER INTERPOLATION METHODS**  
**- WORKING WITH DATASET**

Thank you for your attention !

