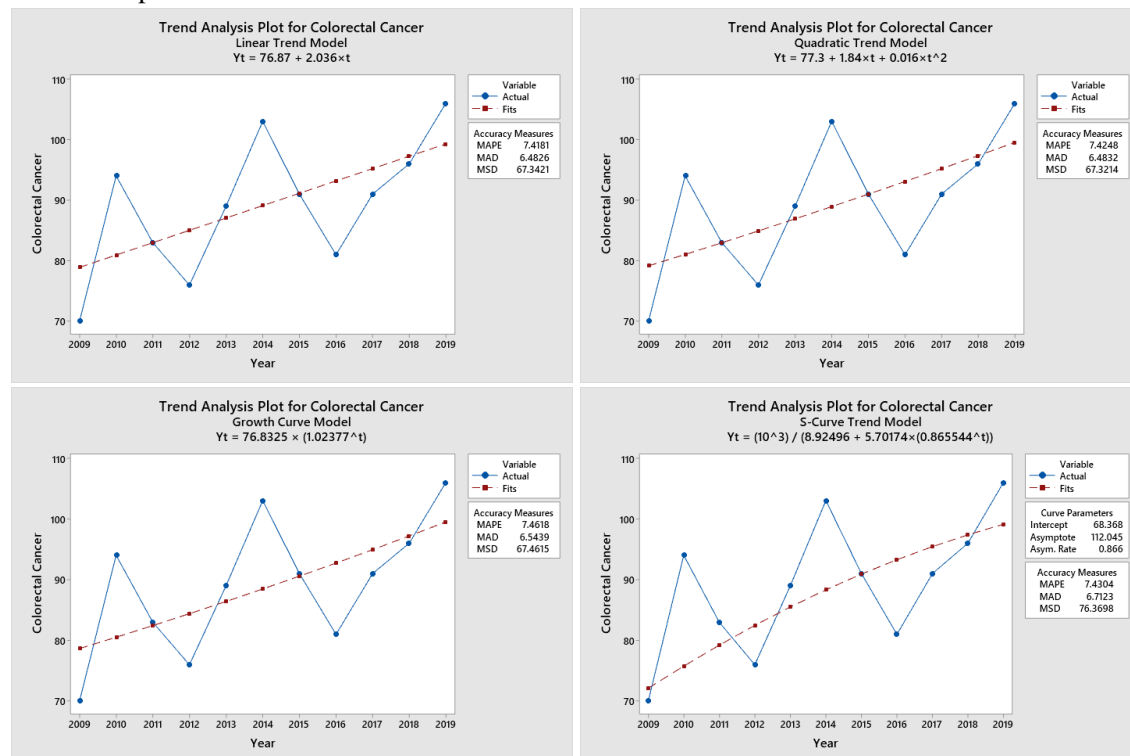


Supplementary File 6.

Detailed analysis for forecasting future ten-year incidence of colorectal cancer using the best-fitted curve model obtained from regression analysis among old patients based on tumor location and tumor side involvement

a. Regression Model for CRC Cases Among Old Patients

1. Curve Options



Model	Automatic Fitted-Curve	Accuracy Measurements		
		MAPE	MAD	MSD
Linear	$Y_t = 76.87 + 2.036t$	7.4181	6.4826	67.3421
Quadratic*	$Y_t = 77.3 + 1.84t + 0.016t^2$	7.4248	6.4832	67.3214
Exponential Growth	$Y_t = 76.8325 \times (1.02377^t)$	7.4618	6.5439	67.4615
S-shaped	$Y_t = 10^3 / (8.92496 + 5.70174 \times (0.865544^t))$	7.4304	6.7123	76.3698

*The best-fitted model is the one that has the lowest value for three parameters (MAPE, MAD, and MSD), or at least for two parameters out of three, or at least having the lowest value for MAPE.

2. The significance test results for the slope of curve estimation (i.e., Quadratic model) employing the ANOVA statistical test in SPSS.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	456.159	1	456.159	5.542	.043
Residual	740.750	9	82.306		
Total	1196.909	10			

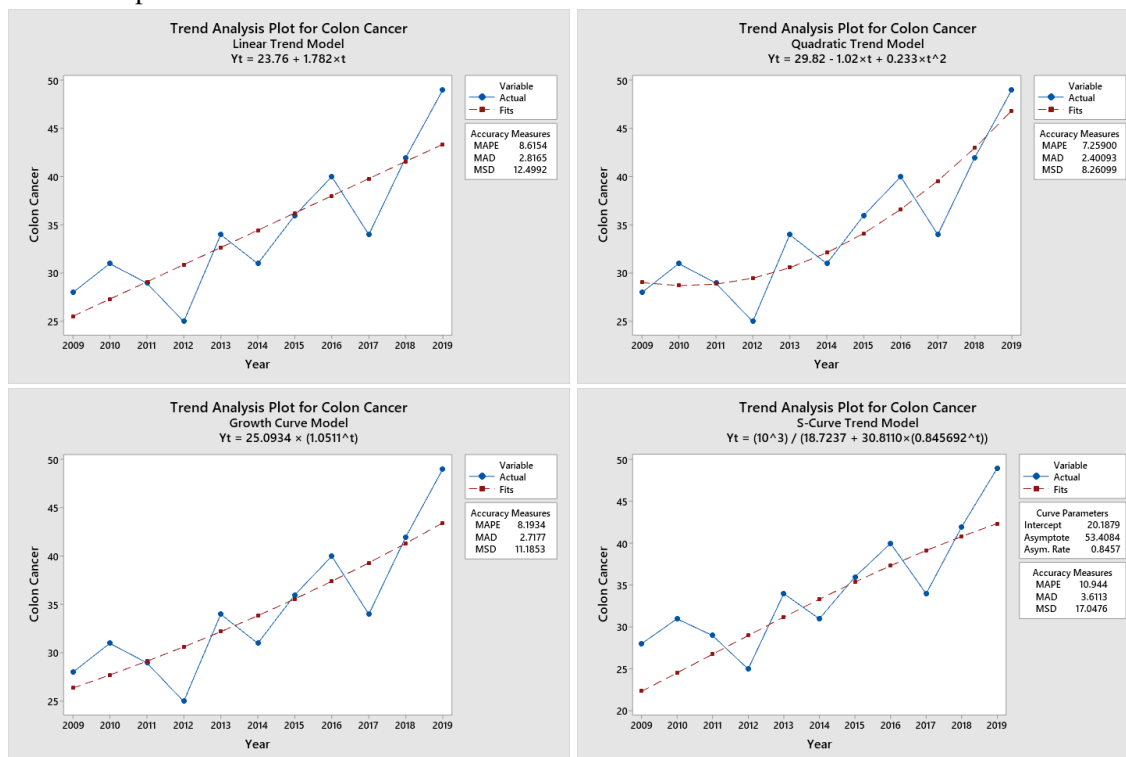
The independent variable is Year.

3. The forecast of the number of cases in the following ten-year period using the Quadratic model.

Year	Forecasted Cases
2020	101.733
2021	103.982
2022	106.263
2023	108.577
2024	110.923
2025	113.302
2026	115.714
2027	118.158
2028	120.635
2029	123.145
Mean	112.2432
Total	1122.432

b. Regression Model for Colon Cancer Cases Among Old Patients

1. Curve Options



Model	Automatic Fitted-Curve	Accuracy Measurements		
		MAPE	MAD	MSD
Linear	$Y_t = 23.76 + 1.782t$	8.6154	2.8165	12.4992
Quadratic*	$Y_t = 29.82 - 1.02t + 0.233t^2$	7.2590	2.40093	8.26099
Exponential Growth	$Y_t = 25.0934 \times (1.0511^t)$	8.1934	2.7177	11.1853
S-shaped	$Y_t = 10^3 / (18.7237 + (30.8110 \times 0.845692^t))$	10.9444	3.6113	17.0476

*The best-fitted model is the one that has the lowest value for three parameters (MAPE, MAD, and MSD), or at least for two parameters out of three, or at least having the lowest value for MAPE.

2. The significance test results for the slope of curve estimation (i.e., Quadratic model) employing the ANOVA statistical test in SPSS.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	349.413	1	349.413	22.902	.001
Residual	137.314	9	15.257		
Total	486.727	10			

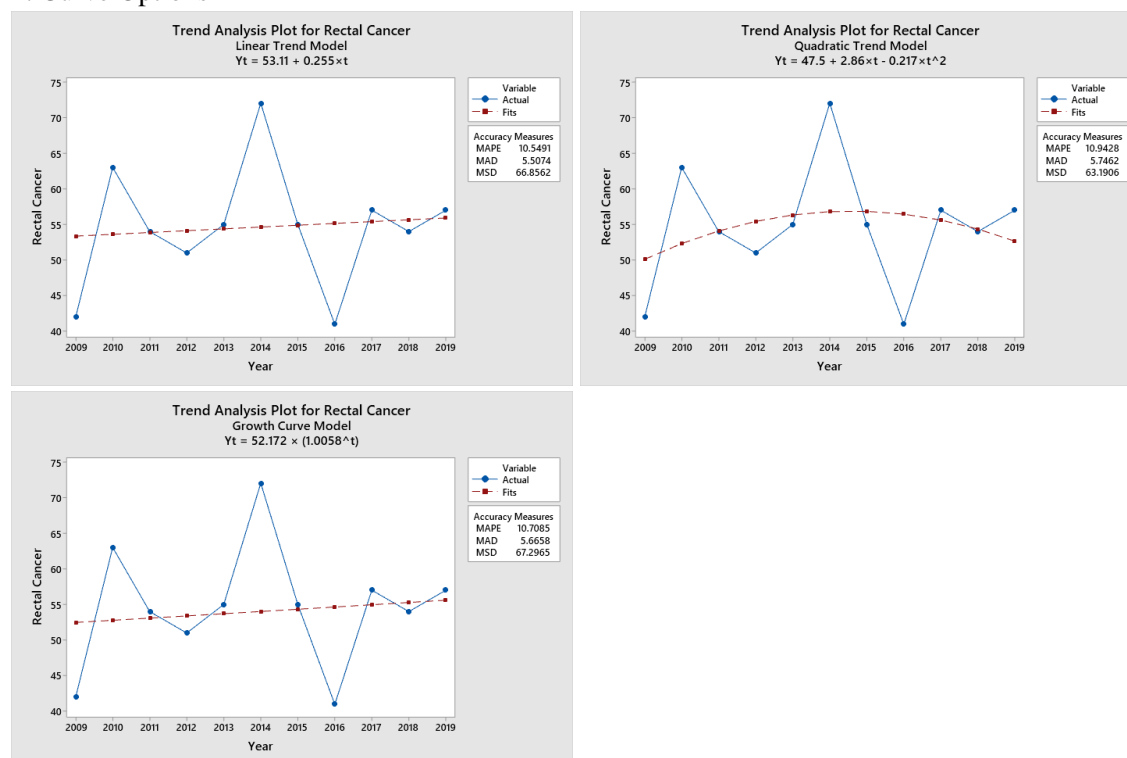
The independent variable is Year.

3. The forecast of the number of cases in the following ten-year period using the Quadratic model.

Year	Forecasted Cases
2020	51.206
2021	56.018
2022	61.297
2023	67.041
2024	73.252
2025	79.929
2026	87.072
2027	94.681
2028	102.757
2029	111.298
Mean	78.4551
Total	784.551

c. Regression Model for Rectal Cancer Cases Among Old Patients

1. Curve Options



Model	Automatic Fitted-Curve	Accuracy Measurements		
		MAPE	MAD	MSD
Linear*	$Y_t = 53.11 + 0.255t$	10.5491	5.5074	66.8562
Quadratic	$Y_t = 47.5 + 2.86t - 0.217t^2$	10.9428	5.7462	63.1906
Exponential Growth	$Y_t = 52.172 \times (1.0958^t)$	10.7085	5.6658	67.2965
S-shaped	Error: Can not fit the model to these data	n/a	n/a	n/a

*The best-fitted model is the one that has the lowest value for three parameters (MAPE, MAD, and MSD), or at least for two parameters out of three, or at least having the lowest value for MAPE.

2. The significance test results for the slope of curve estimation (i.e., Linear model) employing the ANOVA statistical test in SPSS.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.127	1	7.127	.087	.774
Residual	735.418	9	81.713		
Total	742.545	10			

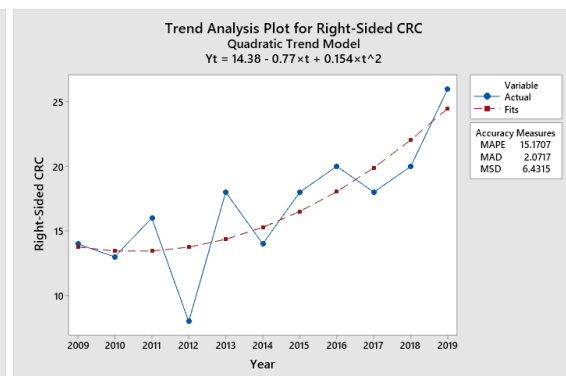
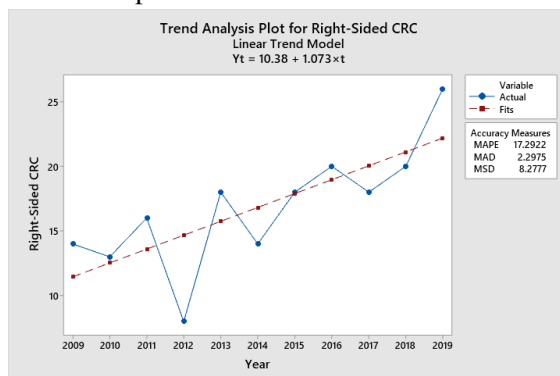
The independent variable is Year.

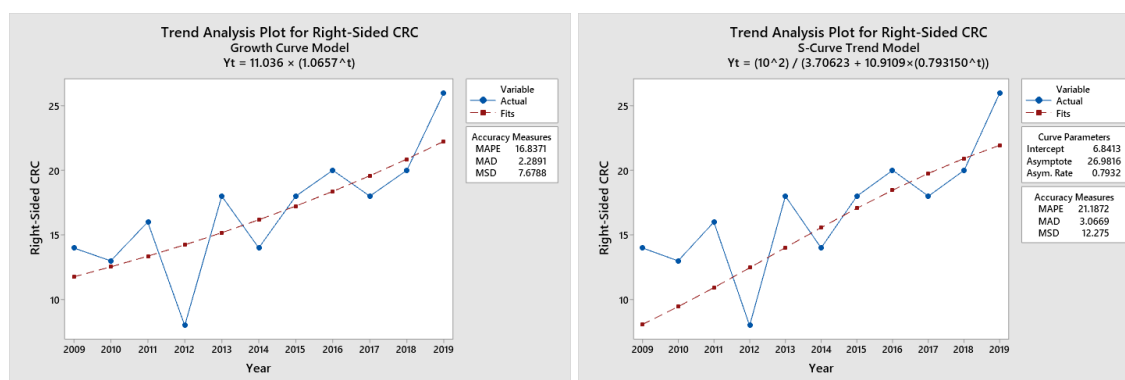
3. The forecast of the number of cases in the following ten-year period using a Linear model.

Year	Forecasted Cases
2020	56.1636
2021	56.4182
2022	56.6727
2023	56.9273
2024	57.1818
2025	57.4364
2026	57.6909
2027	57.9455
2028	58.2000
2029	58.4545
Mean	57.30909
Total	573.0909

d. Regression Model for Right-Sided CRC Cases Among Old Patients

1. Curve Options





Model	Automatic Fitted-Curve	Accuracy Measurements		
		MAPE	MAD	MSD
Linear	$Y_t = 10.38 + 1.073t$	17.2922	2.2975	8.2777
Quadratic*	$Y_t = 14.38 - 0.77t + 0.154t^2$	15.1707	2.0717	6.4315
Exponential Growth	$Y_t = 11.036 \times (1.0657^t)$	16.8371	2.2891	7.6788
S-shaped	$Y_t = 10^2 / (3.70623 + (10.9109 \times 0.793150^t))$	21.1872	3.0669	12.2758

*The best-fitted model is the one that has the lowest value for three parameters (MAPE, MAD, and MSD), or at least for two parameters out of three, or at least having the lowest value for MAPE.

2. The significance test results for the slope of curve estimation (i.e., Quadratic model) employing the ANOVA statistical test in SPSS.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	126.652	1	126.652	12.528	.006
Residual	90.984	9	10.109		
Total	217.636	10			

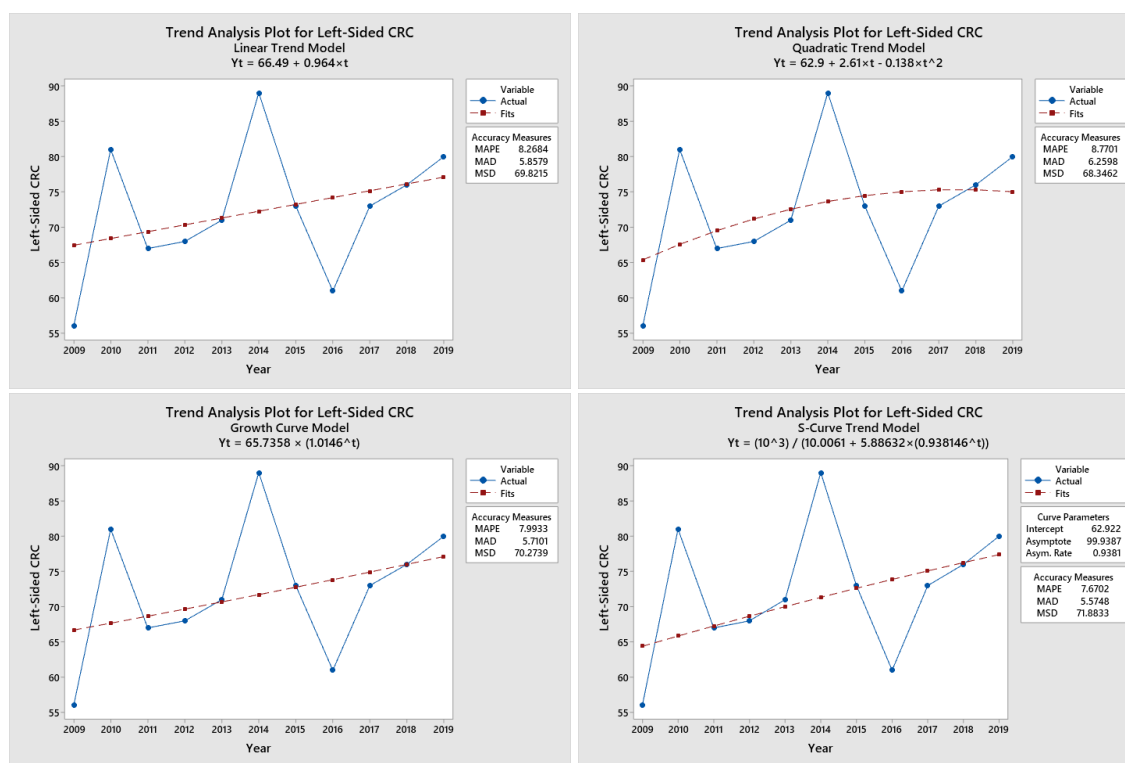
The independent variable is Year.

3. The forecast of the number of cases in the following ten-year period using the Quadratic model.

Year	Forecasted Cases
2020	27.2545
2021	30.3273
2022	33.7077
2023	37.3958
2024	41.3916
2025	45.6951
2026	50.3063
2027	55.2252
2028	60.4517
2029	65.9860
Mean	44.77412
Total	447.7412

e. Regression Model for Left-Sided CRC Cases Among Old Patients

1. Curve Options



Model	Automatic Fitted-Curve	Accuracy Measurements		
		MAPE	MAD	MSD
Linear	$Y_t = 66.49 + 0.964t$	8.2684	5.8579	69.8215
Quadratic	$Y_t = 62.8 + 2.61t - 0.138t^2$	8.7701	6.2598	68.3462
Exponential Growth	$Y_t = 65.7358 \times (1.0146^t)$	7.9933	5.7101	70.2739
S-shaped*	$Y_t = 10^3 / (10.0061 + (5.88632 \times 0.938146^t))$	7.6702	5.5748	71.8833

*The best-fitted model is the one that has the lowest value for three parameters (MAPE, MAD, and MSD), or at least for two parameters out of three, or at least having the lowest value for MAPE.

2. The significance test results for the slope of curve estimation (i.e., S-shaped curve model) employing the ANOVA statistical test in SPSS.

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	.023	1	.023	1.400	.267
Residual	.149	9	.017		
Total	.172	10			

The independent variable is Year.

3. The forecast of the number of cases in the following ten-year period using an S-shaped curve model.

Year	Forecasted Cases
2020	78.4808
2021	79.5371
2022	80.5543
2023	81.5325
2024	82.4720
2025	83.3733
2026	84.2369
2027	85.0636
2028	85.8540
2029	86.6090
Mean	82.77135
Total	827.7135