

Figure S1 Annual incidence of LO-CRLM among sub-population stratified by demographics from 2010 to 2019. (A) Sex. (B) Race. (C) Insurance. (D) Incoming. (E) Percent of no high school degree. (F) Geographical distribution. LO-CRLM, late-onset colorectal liver metastases.

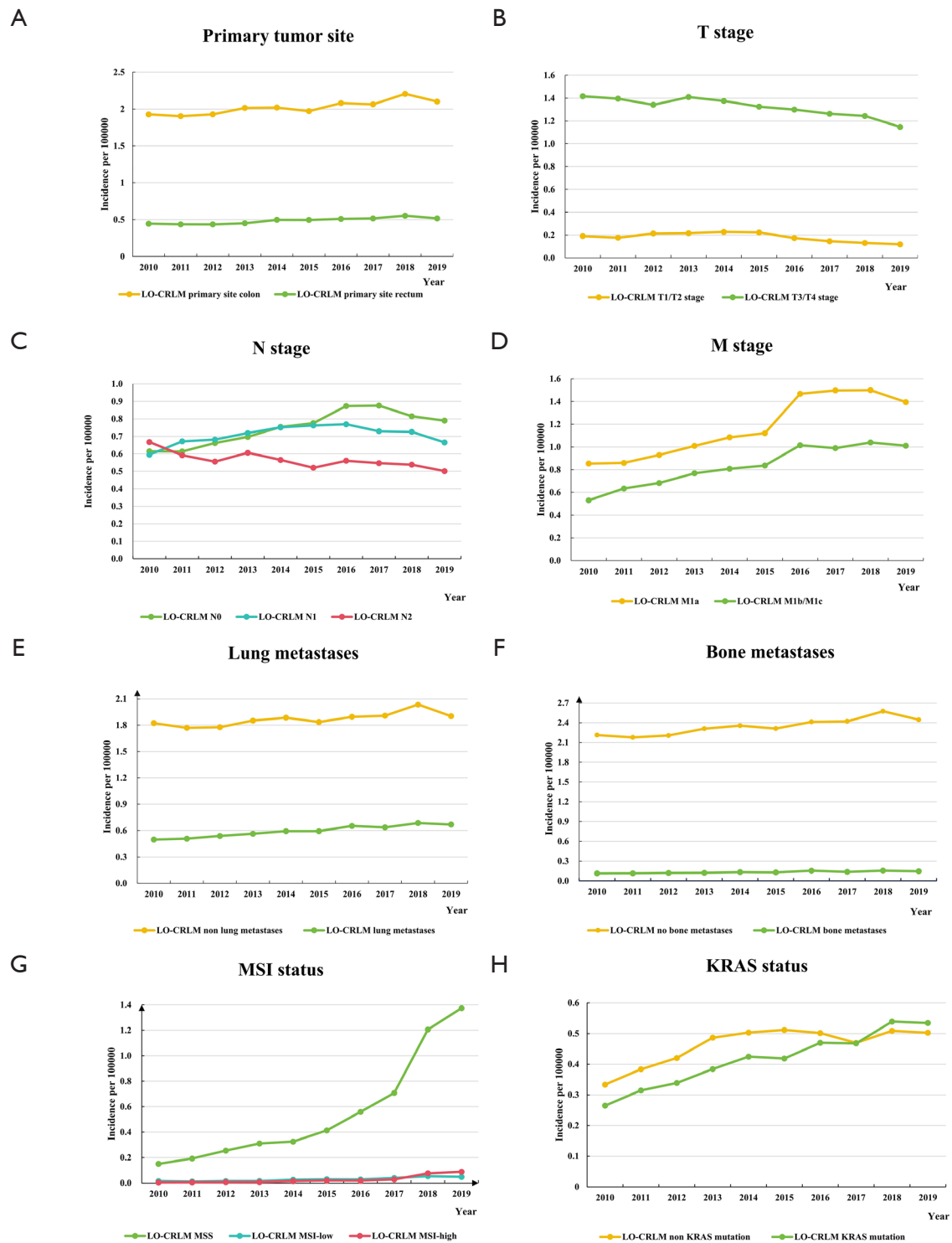


Figure S2 Annual incidence of LO-CRLM among sub-population stratified by tumor characteristics from 2010 to 2019. (A) Primary tumor sites. (B) T stage. (C) N stage. (D) M stage. (E) Lung metastases. (F) Bone metastases. (G) MSI status. (H) KRAS status. LO-CRLM, late-onset colorectal liver metastases; microsatellite instability, MSI; Kirsten rat sarcoma viral oncogene homolog, KRAS.

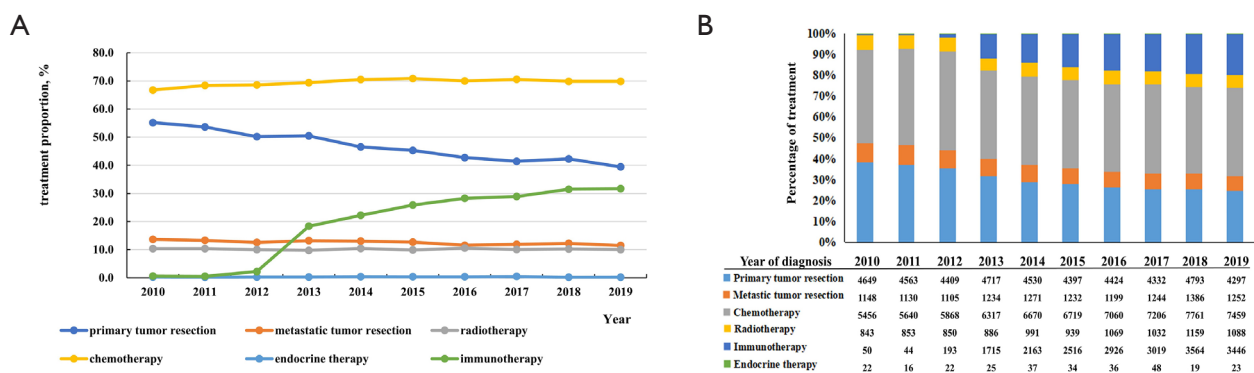


Figure S3 Treatment trends of LO-CRLM patients from 2010 to 2019. (A) Trends in proportion of treatment modalities used by LO-CRLM patients from 2010 to 2019. (B) Temporal trends for treatment from 2010 to 2019. LO-CRLM, late-onset colorectal liver metastases.

Table S1 One-, 3- and 5-year OS rates of CRLM, EO-CRLM and LO-CRLM in the whole population and sub-population stratified by demographics, tumor characteristics and treatment

Variables	1-, 3- and 5-year OS rate (%)		
	CRLM	EO-CRLM	LO-CRLM
None stratifying	59.1, 26.3, 15.0	77.5, 39.1, 23.7	55.8, 24.0, 13.4
Charlson-Deyo score			
0	62.2, 28.4, 16.4	78.3, 39.6, 24.1	58.7, 25.9, 14.7
1	54.5, 22.7, 12.3	76.6, 37.2, 21.6	52.4, 21.4, 11.5
≥2	40.4, 14.9, 7.3	57.4, 27.9, 16.8	39.5, 14.2, 6.7
Sex			
Female	60.6, 27.0, 14.8	76.7, 38.7, 23.0	57.8, 24.9, 13.4
Male	57.2, 25.5, 15.1	78.6, 39.5, 24.4	53.3, 22.9, 13.4
Race			
White	59.1, 26.6, 15.0	78.6, 40.8, 24.6	55.7, 24.2, 13.4
Black	56.9, 22.6, 13.1	71.3, 29.7, 18.6	54.2, 21.3, 12.1
Others	66.4, 32.1, 19.7	81.6, 41.8, 25.6	62.3, 29.5, 18.0
Rural-Urban Grouping			
Metro areas	59.0, 26.4, 15.1	77.5, 39.2, 23.8	55.7, 24.0, 13.6
Urban areas	57.9, 24.2, 12.9	76.1, 35.8, 20.6	55.1, 22.4, 11.7
Rural areas	55.0, 22.6, 11.2	75.0, 31.1, 17.3	52.4, 21.6, 10.4
Facility type			
Community Cancer Program	53.5, 21.5, 11.9	74.7, 34.3, 18.7	51.3, 20.2, 11.2
Comprehensive Community Cancer Program	55.4, 22.6, 11.8	74.9, 35.6, 20.1	53.1, 21.1, 10.8
Academic/Research Program	64.3, 31.0, 19.1	79.9, 41.7, 26.9	61.7, 29.2, 17.7
Integrated Network Cancer Program	56.6, 25.3, 14.2	77.0, 39.4, 24.3	54.1, 23.5, 12.9
Percent of no high school degree			
≥21%	58.1, 25.5, 15.0	73.4, 35.6, 22.9	55.2, 23.6, 13.5
13.0-20.9%	57.2, 24.4, 13.5	75.5, 35.6, 21	54.2, 22, 12.3
7.0-12.9%	58.7, 25.8, 14.0	78.6, 39.9, 22.9	55.3, 23.3, 12.5
<7.0%	61.0, 28.2, 16.7	81.1, 43.7, 27.2	57.2, 25.3, 14.8
Median income			
<\$38,000	55.6, 22.7, 12.6	72.9, 33.7, 19.8	52.7, 20.9, 11.4
\$38,000-\$47,999	57.1, 24.1, 13.2	75.1, 35.7, 20.9	54.0, 22.1, 11.9
\$48,000-\$62,999	58.7, 26.3, 15.0	77.5, 39.1, 24.3	55.3, 24.0, 13.3
≥\$63,000	62.0, 29.0, 16.9	81.3, 43.8, 26.6	58.4, 26.2, 15.1
Insurance status			
Not Insured	59.6, 25.0, 14.6	68.6, 27.9, 14.7	56.8, 24.1, 14.5
Private Insurance/Managed Care	72.8, 36.1, 21.3	81.3, 42.8, 26.4	69.6, 33.6, 19.4
Medicaid	62.6, 27.7, 16.3	71.6, 33.1, 19.7	59.1, 25.6, 14.9
Medicare	47.1,18.0, 9.5	62.1, 26.2, 14.6	46.8, 17.9, 9.4
Other Government	62.4, 30.1, 15.1	83.0, 42.9, 25.7	58.0, 27.3, 12.8
Diagnosis year			
2010-2012	57.0, 23.6, 12.9	75.4, 35.3, 20.7	53.9, 21.6, 11.5
2013-2015	58.7, 25.9, 15.0	77.0, 37.3, 22.8	55.5, 24.0, 13.6
2016-2019	61.2, 29.3, 16.4	79.5, 44.0, 25.0	57.6, 26.4, 14.8
Primary tumor site			
Primary sites in colon	56.7, 24.7, 14.1	76.0, 37.4, 22.9	53.5, 22.6, 12.7
Primary sites in rectum	68.4, 32.7, 18.1	81.9, 43.8, 25.7	65.1, 30.0, 16.4
CEA level			
<5 ng/mL	70.1, 38.5, 25.1	83.3, 51.9, 36.7	67.4, 35.7, 22.7
≥5 ng/mL	57.3, 22.9, 12.1	75.8, 34.5, 19.4	53.9, 20.8, 10.7
Grade			
Well differentiation	68.6, 34.6, 20.7	86.1, 50.0, 33.9	65.3, 31.7, 18.2
Moderate differentiation	68.7, 33.0, 19.0	84.4, 46.0, 28.4	65.5, 30.4, 17.1
Poor differentiation	49.3, 19.4, 11.1	65.1, 27.9, 16.4	46.5, 17.9, 10.2
Undifferentiation	49.0, 18.2, 10.3	66.8, 26.1, 16.5	46.0, 16.9, 9.2
Tumor size			
<5cm	68.6, 33.4, 19.3	84.4, 47.3, 28.6	65.5, 30.8, 17.6
≥5cm	62.0, 28.5, 17.0	78.2, 40.2, 26.2	59.0, 26.3, 15.3
Lymph invasion			
No	73.3, 40.4, 25.3	87.0, 53.7, 36.2	70.7, 37.8, 23.1
Yes	66.2, 30.3, 16.9	82.5, 43.5, 25.4	63.0, 27.7, 15.3
Perineural invasion			
No	67.9, 34.1, 20.8	83.8, 47.8, 31.5	65.1, 31.6, 18.9
Yes	67.7, 30.7, 16.5	83.2, 43.9, 24.5	64.1, 27.7, 14.7
T stage			
T1	52.5, 22.8, 12.5	73.1, 36.3, 21.2	48.7, 20.3, 10.9
T2	77.8, 46.9, 31.7	90.0, 59.9, 44.9	74.8, 43.7, 28.5
T3	74.6, 39.2, 23.5	87.6, 52.5, 33.3	71.9, 36.5, 21.5
T4	59.1, 24.1, 13.0	76.1, 35.1, 19.6	56.1, 22.1, 11.8
N stage			
N0	58.1, 28.0, 16.8	78.9, 41.9, 27.3	55.1, 25.9, 15.2
N1	66.3, 32.1, 18.5	81.8, 44.7, 27.5	63.2, 29.6, 16.7
N2	63.0, 25.8, 14.1	79.2, 39.2, 21.9	59.4, 22.8, 12.3
M stage			
M1a	66.8, 34.2, 20.4	84.5, 50.1, 32.1	63.6, 31.2, 18.3
M1b	50.0, 16.5, 7.9	69.0, 25.0, 12.8	46.4, 15.0, 7.0
M1c	49.8, 14.7, not reach	69.3, 25.9, not reach	45.9, 12.6, not reach
Bone metastases			
No	60.6, 27.4, 15.6	79.0, 40.5, 24.6	57.3, 25.0, 14.0
Yes	36.3, 8.9, 4.1	51.8, 12.4, 5.6	33.8, 8.4, 3.8
Brain metastases			
No	59.7, 26.7, 15.2	78.0, 39.5, 23.9	56.4, 24.3, 13.6
Yes	30.3, 7.8, 4.6	46.8, 14.1, 9.4	27.5, 6.8, 3.8
Lung metastases			
No	62.6, 30.0, 17.6	80.3, 43.6, 27.3	59.3, 27.4, 15.8
Yes	48.8, 14.8, 6.5	68.2, 23.1, 10.6	45.7, 13.5, 5.8
KRAS mutation			
No	71.8, 34.3, 19.1	84.3, 46.6, 28.2	68.7, 31.2, 16.8
Yes	68.3, 25.5, 13.5	77.9, 31.8, 18.3	66.2, 24.1, 12.5
MSI status			
MSS	72.6, 35.8, 20.6	83.7, 45.8, 27.9	69.5, 33.0, 18.6
MSI-high	73.4, 38.0, 23.1	86.1, 49.3, 31.9	70.6, 35.5, 21.1
MSI-low	64.9, 36.3, 25.9	79.6, 50.8, 40.1	60.9, 32.3, 21.8
Primary tumor site resection			
No	46.2, 14.6, 6.8	66.2, 23.1, 11.6	43.0, 13.3, 6.1
Yes	72.6, 38.1, 23.0	86.9, 51.9, 33.1	69.7, 35.3, 21.0
Metastases resection			
No	55.3, 21.8, 11.6	73.9, 32.6, 18.8	52.3, 20.0, 10.4
Yes	82.2, 53.2, 34.9	92.0, 63.8, 42.3	79.5, 50.1, 32.8
Radiation			
No	57.3, 25.0, 14.2	76.6, 37.9, 23.0	54.1, 22.9, 12.7
Yes	71.2, 35.7, 21.2	82.6, 46.2, 28.6	68.2, 32.9, 19.3
Chemotherapy			
No	20.8, 8.4, 5.3	38.9, 18.0, 12.6	19.8, 7.8, 4.9
Yes	73.1, 32.9, 18.4	81.6, 41.2, 24.7	71.1, 30.9, 17.0
Immunotherapy			
No	53.8, 24.0, 13.9	74.3, 37.6, 23.1	50.6, 21.8, 12.4
Yes	79.6, 35.3, 18.8	85.8, 42.8, 24.7	77.9, 33.2, 17.2

OS, overall survival; CRLM, colorectal liver metastases; EO-CRLM, early-onset colorectal liver metastases; LO-CRLM, late-onset colorectal liver metastases; CEA, carcinoembryonic antigen.