

## Additional file

**Table S1. Newcastle-Ottawa Scale for assessing the quality of studies in quantitative analysis**

Study ID	Year	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis (a)	Comparability of cohorts on the basis of the design or analysis (b)	Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow-up of cohorts	Total scores
Martinet L, <i>et al</i>	2011	★	★	★	★	★	★	★	★	★	9
Okayama H, <i>et al</i>	2011	★	★	★	★	★	★	★	☆	★	8
Song IH, <i>et al</i>	2017	★	★	★	★	★	☆	★	☆	★	7
Wirsing AM, <i>et al</i>	2018	★	★	★	★	★	☆	★	☆	★	7
Sebestyén T, <i>et al</i>	2018	★	★	★	★	★	☆	★	★	★	8
Hong SA, <i>et al</i>	2020	★	★	★	★	★	★	★	☆	★	8
Karpathiou G, <i>et al</i>	2021	★	★	★	★	☆	☆	★	★	★	7
Park HS, <i>et al</i>	2021	★	★	★	★	★	★	★	★	☆	8
Li H, <i>et al</i>	2022	★	★	★	★	★	★	★	★	☆	8
Asrir A, <i>et al</i>	2022	★	★	★	★	★	★	☆	☆	☆	7
Karpathiou G, <i>et al</i>	2022	★	★	★	★	★	★	☆	☆	☆	6
Zhan Z, <i>et al</i>	2023	★	★	★	★	★	★	★	★	★	9
Hyytiäinen A, <i>et al</i>	2023	★	★	★	★	★	☆	★	★	★	8

☆: scored 0, ★: scored 1.

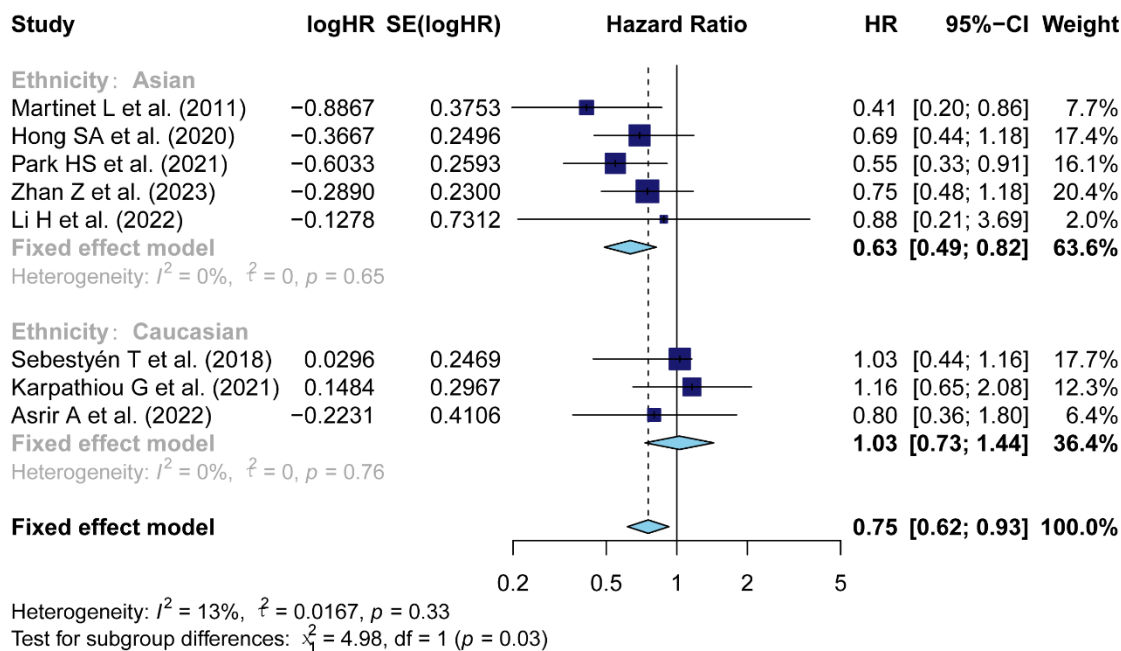
**Table S2. Association between positive-HEVs and clinicopathological parameters**

<b>Clinicopathological parameters</b>	<b>No.of studies</b>	<b>No. of patients</b>	<b>Effect model</b>	<b>Pooled OR (95%CI)</b>	<b><i>P</i></b>	<b>Heterogeneity I<sup>2</sup>(%)</b>	<b><i>P</i></b>	<b>Relationship with positive-HEVs</b>
Sex (Male vs. Female)	6	1192	Random	0.86, (0.50,1.49)	0.58	69	< 0.01	No statistical significance
Histologic grade (III vs. I-II)	4	418	fixed	1.74 (1.11, 2.73)	0.01	48	0.12	Positive
LVI (positive vs. negative)	3	237	fixed	1.05 (0.60, 1.86)	0.85	13	0.32	No statistical significance
Clinical stage (III-IV vs. I-II)	3	829	Random	0.86 (0.40, 1.85)	< 0.01	78	0.01	No statistical significance
Invasion of depth (I-II vs. III-IV)	6	1090	Random	0.91 (0.43,1.91)	0.80	83	0.01	No statistical significance
Lymph node status (N- vs N+)	6	1077	fixed	1.61 (1.22, 2.11)	< 0.01	34	0.18	Positive
Distant metastasis (M0 vs. M1)	3	362	fixed	<del>3.32</del> (1.27, 7.87)	0.01	0	0.58	Positive

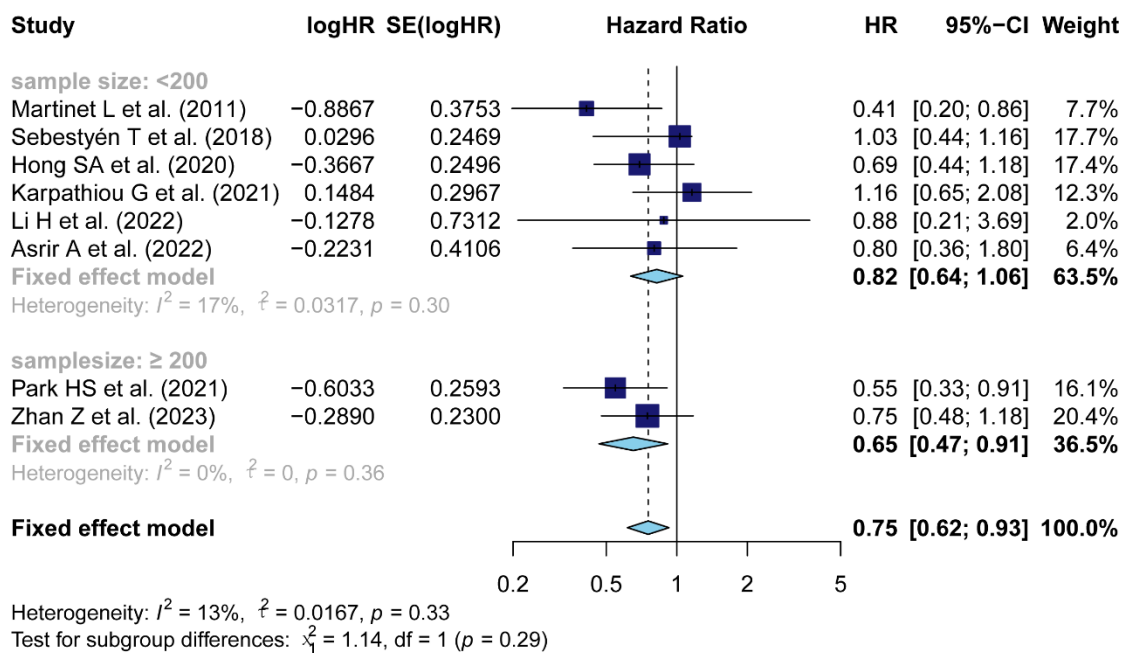
Abbreviation: LVI lymphovascular invasion, OR odds ratio

**Figure S1.**

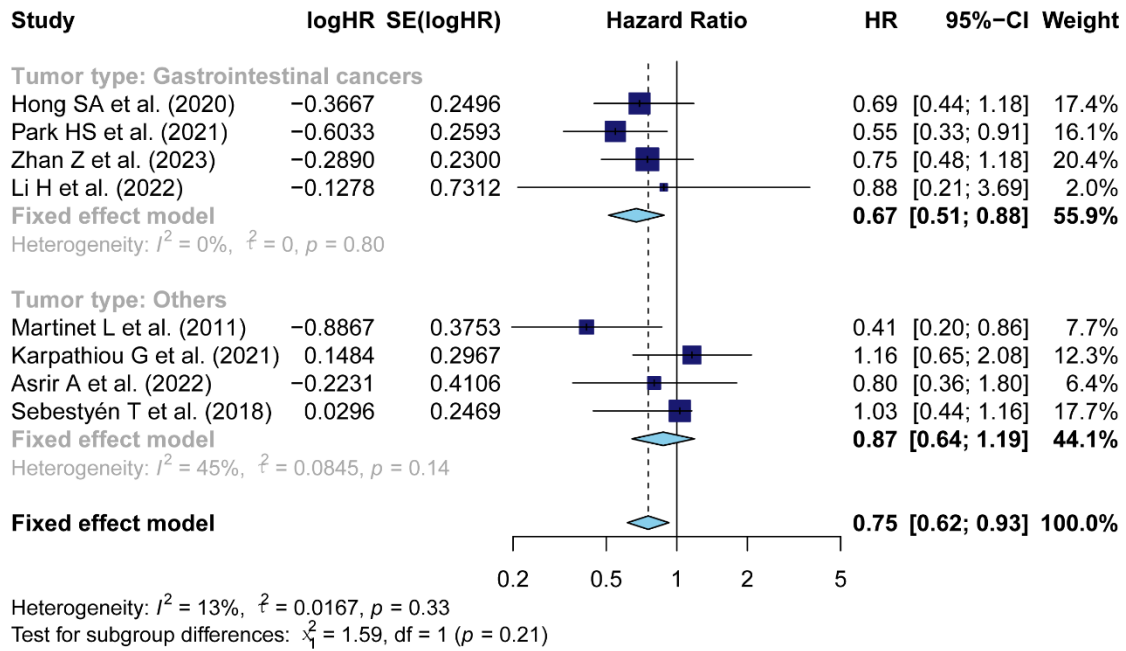
**A**



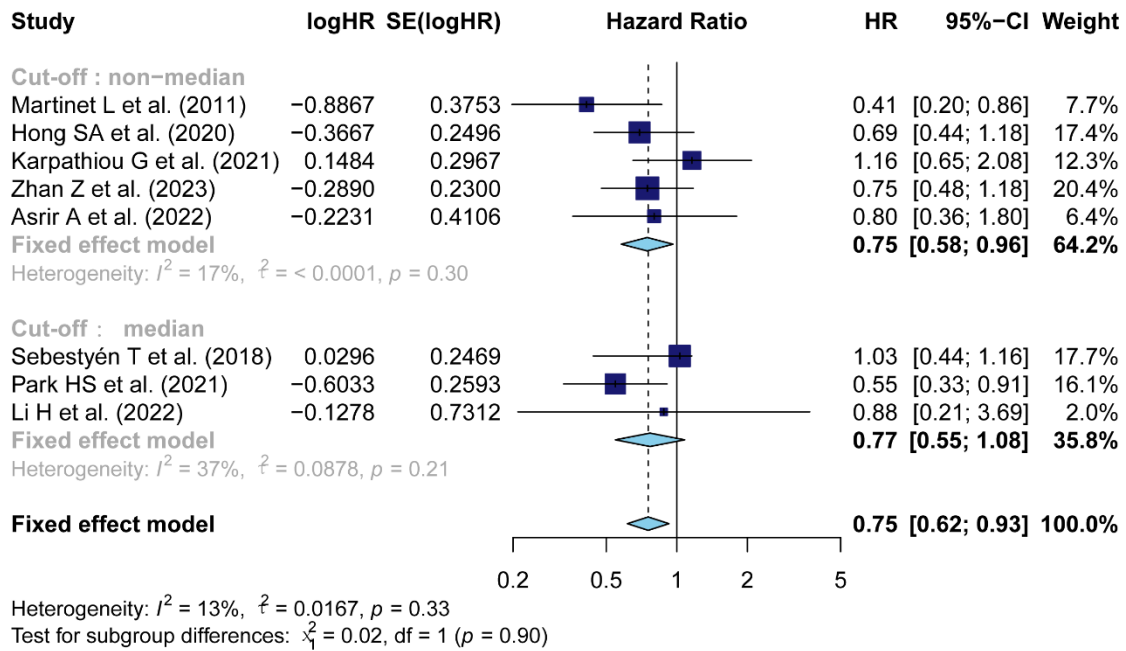
**B**



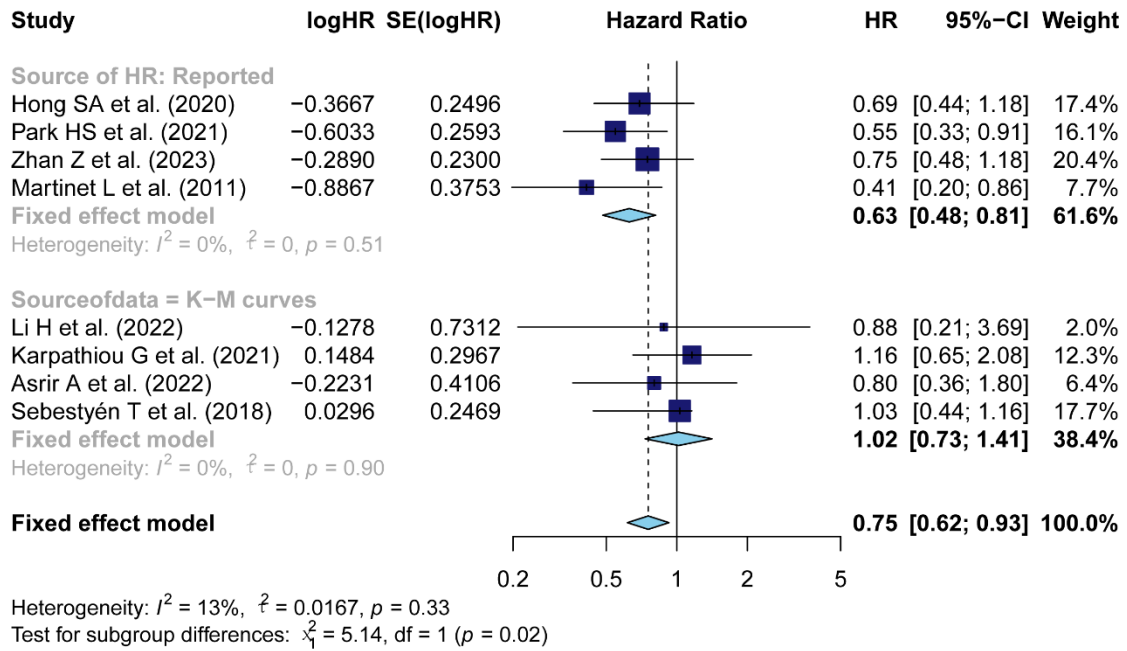
## C



## D



# E



**Figure S1.** Subgroup analysis conducted for survival outcome regarding OS, stratified by (A) ethnicity, (B) sample size, (C) tumor type, (D) cut-off criteria, and (E) source of HR