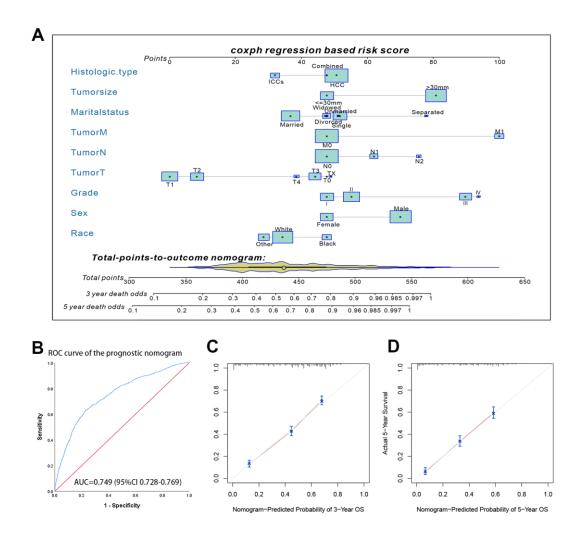
SUPPLEMENTARY FIGURES

Study	TE	seTE	Hazard Ratio	HR	95%-CI	Weight (fixed)	Weight (random)
Ailawadhi, S.,2012,Multiple myeloma (MM)		0.0130	0		[0.88; 0.93]	2.9%	1.4%
Ailawadhi, S.,2014,Waldenstrom's macroglobulinemia Zhao, H. Y.,2019,BCLM(breast cancer liver metastases)		0.0569 0.3548			[0.75; 0.94] [0.52; 2.08]	0.1% 0.0%	1.3% 0.2%
Zhang, Z. Y.,2016,Colorectal cancer	-0.05	0.0172	e.	0.95	[0.92; 0.98]	1.6%	1.4%
Zhang, G.,2018,(ccRCC)clear cell renal cell carcinoma Zandberg, D. P.,2018,HNSCC(squamous cell carcinoma of the head and neck)		0.0343 0.0597	+		[0.69; 0.79] [1.09; 1.38]	0.4% 0.1%	1.4% 1.3%
Yang, Q.,2019,LCNEC(pulmonary large cell neuroendocrine carcinoma)		0.0485	+		[0.81; 0.98]	0.2%	1.3%
Yang, Q.,2019,ONSCLC(other non-small cell lung cancer)		0.0050	+1		[0.80; 0.82]	19.1%	1.5%
Yang, H.,2018,IA NSCLC(non-small-cell lung cancer) Yan, B.,2009,Colorectal Cancer		0.0485	-		[0.63; 0.76] [0.74; 0.83]	0.2% 0.5%	1.3% 1.4%
Xu, C.,2017,Nasopharyngeal carcinoma		0.0398	+	0.90	[0.83; 0.97]	0.3%	1.4%
Xie, Y,,2018,Tongue cancer Xie, J. C.,2018,Astrocytoma		0.0641 0.0114	10		[0.80; 1.03] [0.89; 0.94]	0.1% 3.7%	1.2% 1.5%
Xiao, Z.,2019,Hepatocellular carcinoma	-0.10	0.0301	+	0.91	[0.86; 0.96]	0.5%	1.4%
Wu, W.,2018,Hepatocellular carcinoma Wang, Q.,2019,Anal adenocarcinoma (AA)&rectal adenocarcinoma (RA)		0.0254 0.2235			[0.86; 0.95] [0.69; 1.67]	0.8% 0.0%	1.4% 0.4%
Wang, F.,2019,Primary myelodysplastic syndrome	-0.22	0.0143	4		[0.78; 0.83]	2.4%	1.4%
Wang, B.,2019,Lung cancer bone metastasis Walker, G. V.,2014,one of the 10 most deadly cancers		0.0234 0.0100			[0.84; 0.92] [0.78; 0.81]	0.9% 4.8%	1.4% 1.5%
Wantel, M. S.,2014,Glioblastoma		0.0189			[0.91; 0.98]	1.4%	1.4%
Vest, M. T.,2012,Stage IIIA non-small cell lung cancer (NSCLC)		0.1355			[1.17; 1.98]	0.0%	0.8%
Tramontano, A. C.,2018,Esophageal Cancer Tchelebi, L.,2016,Rectal melanoma		0.0617 0.2925			[0.48; 0.61] [0.68; 2.14]	0.1% 0.0%	1.2% 0.3%
Smith, E. C.,2012,Hodgkinlymphoma		0.0516	+	0.64	[0.58; 0.70]	0.2%	1.3%
Singh, G. K.,2001,All-cause Shapiro, M.,2015,Pancreatic Cancer		0.0127 0.0473			[0.47; 0.49] [0.84; 1.01]	3.0% 0.2%	1.4% 1.3%
Seo, M.,2018,Non-muscle-invasive Bladder Cancer		0.0159	r.		[0.93; 0.99]	1.9%	1.4%
Saad, A. M.,2018,stage IV esophageal carcinoma		0.0376	it.		[0.90; 1.04]	0.3%	1.4% 0.6%
Roche, A. M.,2016,Medullary Thyroid Cancer Reyes, M. E.,2016,Colorectal cancer		0.1752 0.0672			[0.82; 1.62] [1.36; 1.77]	0.0% 0.1%	1.2%
Pan, Y.,2018, Primary spinal chordoma	-0.17		+	0.85	[0.69; 1.04]	0.0%	1.0%
Pan, X. X.,2019,Nasopharyngeal carcinoma Pagedar, N. A.,2018,Head and neck cancer		0.0653 0.0164			[0.72; 0.93] [1.04; 1.11]	0.1% 1.8%	1.2% 1.4%
Osazuwa-Peters, N., 2019, Head and neck cancer	-0.11	0.1470		0.90	[0.67; 1.20]	0.0%	0.7%
Olarte, L. S.,2014,Major Salivary Gland Cancer Niu, Q.,2018,Bladder urothelial carcinoma		0.0407 0.0146	+		[0.67; 0.79] [0.93; 0.99]	0.3% 2.3%	1.4% 1.4%
Nipp, R.,2018, Pancreatic cancer		0.0210	1		[0.99; 1.07]	1.1%	1.4%
Nipp, R.,2018, Pancreatic cancer stage		0.0197			[0.93; 1.01]	1.2%	1.4%
Nguyen, H. S.,2018,Subependymal Giant Cell Astrocytoma Mukkamalla, S. K. R.,2018,Cholangiocarcinoma		0.5084 0.0136	0		[0.46; 3.39] [0.91; 0.96]	0.0% 2.6%	0.1% 1.4%
Mishra, M. V.,2011, Primary pancreatic lymphoma	-0.36	0.1510		0.70	[0.52; 0.94]	0.0%	0.7%
Menis, M.,2006,Colorectal cancer Megwalu, U. C.,2017,Major Salivary Gland Adenoid Cystic Carcinoma		0.0835 0.2060	1		[0.90; 1.25] [0.66; 1.48]	0.1% 0.0%	1.1% 0.5%
Megwalu, U. C.,2014,Laryngeal Cancer	-0.21	0.0471	+	0.81	[0.74; 0.89]	0.2%	1.3%
Megwalu, U. C.,2016,Papillary thyroid microcarcinoma Megwalu, U. C.,2017,Oropharyngeal cancer		0.0601	+		[0.64; 0.81] [0.96; 1.12]	0.1% 0.3%	1.2% 1.4%
Megwalu, U. C.,2017, Oropharyngeal Cancer		0.0393	Ę		[0.96; 1.12]	0.3%	1.4%
Meguid, R. A.,2008,Colon cancers		0.0119	4		[0.80; 0.83]	3.4%	1.5%
Liu, Y.,2019,Esophageal cancer Liu, S.,2019,Anaplastic oligodendroglioma		0.1327 0.0624	<u>i</u>		[0.91; 1.54] [0.81; 1.04]	0.0% 0.1%	0.8% 1.2%
Liu, G.,2019, Papillary thyroid cancer	-0.65	0.0679	+	0.52	[0.46; 0.60]	0.1%	1.2%
Lin, D.,2018,Anal cancer Li, G.,2019,Pancreatic neuroendocrine tumor		0.0396 1.0205 ·	+	0.62	[0.57; 0.67] [0.10; 5.58]	0.3% 0.0%	1.4% 0.0%
Klaassen, Z.,2016,Adrenocortical carcinoma		0.0820	+		[0.73; 1.00]	0.1%	1.1%
Kim, J. A., 2013, Merkel Cell Carcinoma		0.1375			[0.42; 0.72]	0.0%	0.8%
Kim, E.,2016,Anal Carcinoma Kim, A.,2017,Esophageal cancer		0.0352 0.0209	-		[0.58; 0.67] [0.83; 0.90]	0.4% 1.1%	1.4% 1.4%
Kamel, M. G., 2017, Non-Hodgkin's lymphoma (5years suvival)		0.0335	+	0.61	[0.57; 0.65]	0.4%	1.4%
Kamel, M. G.,2017,Non-Hodgkin's lymphoma(10years suvival) Huang, J. F.,2019, Primary Spinal Chordoma		0.0280 0.1586	*		[0.59; 0.66] [0.75; 1.39]	0.6% 0.0%	1.4% 0.7%
Hu, C. Y.,2019,Lip squamous cell carcinoma	-0.22	0.0797	+	0.80	[0.68; 0.94]	0.1%	1.1%
Horton, J. K.,2011,Soft tissue sarcoma Hall, M. D.,2015, Rectal Cancer		0.1173 0.0663	크		[0.53; 0.84] [0.64; 0.83]	0.0% 0.1%	0.9% 1.2%
Greenstein, A. J.,2007,Esophageal cancer		0.1024			[0.77; 1.15]	0.0%	1.0%
Gore, J. L.,2005,Bladder carcinoma		0.0444	+		[1.00; 1.19]	0.2%	1.3%
Gleason, M. X.,2013, Pancreatic ductal adenocarcinoma Gleason, M. X.,2013, EPDAC (extended pancreatic ductal adenocarcinoma) survival		0.0326 0.0208	Į.		[0.83; 0.94] [0.87; 0.94]	0.5% 1.1%	1.4% 1.4%
Giri, S.,2015,Hairy Cell Leukemia	-0.14	0.0784	+	0.87	[0.75; 1.01]	0.1%	1.1%
Ellington, C. L.,2012, Adenoid cystic carcinoma of the head and neck Cronin, D. P.,2005, Non-Hodgkin's lymphoma (Localized and Regional Stage Lymphomas)		0.0593			[0.65; 0.82] [0.32; 0.98]	0.1% 0.0%	1.3% 0.3%
Cronin, D. P.,2005,Non-Hodgkin's lymphoma(Distant Stage Lymphomas)	-0.18	0.2408			[0.52; 1.34]	0.0%	0.4%
Costa, L. J.,2016,Multiple myeloma		0.0367	Ì		[0.83; 0.96]	0.4% 0.7%	1.4%
Coburn, N. G.,2006,Gastric cancer Best, B.,2016,Head and Neck Cancer		0.0269 0.1768		0.82	[0.77; 0.86] [0.55; 1.10]	0.0%	1.4% 0.6%
Chen, C.,2019, Acute myeloid leukemia	-0.05	0.0129	c	0.95	[0.92; 0.97]	2.9%	1.4%
Carroll, J. E., 2010, Pancreatic cancer Chavez-MacGregor, M., 2011, Breast cancer		0.0513 0.1828			[0.82; 1.01] [0.45; 0.91]	0.2% 0.0%	1.3% 0.6%
Borate, U. M.,2015, Acute myeloid leukemia	-0.14	0.0380	+	0.87	[0.81; 0.94]	0.3%	1.4%
Baine, M.,2011, Pancreatic cancer Amin, R. N.,2016, Esophageal Cancer		0.0105 0.4426			[0.95; 0.99] [0.39; 2.23]	4.4% 0.0%	1.5% 0.1%
Alshareef, S. H., 2019, Colorectal Cancer	-0.14	0.0263	*		[0.39, 2.23]	0.0%	1.4%
Al-Husseini, M. J.,2018,Colorectal cancer	-0.20	0.0053	ų.	0.82	[0.81; 0.82]	17.1%	1.5%
Al-Husseini, M. J.,2018,Glioblastoma Li Zhang,2019,Hepatocellular carcinoma		0.0103 0.0852	1		[0.92; 0.96] [0.77; 1.07]	4.6% 0.1%	1.5% 1.1%
Zhiyu Xiao,2019,Hepatocellular carcinoma	-0.10	0.0295	+	0.91	[0.86; 0.96]	0.6%	1.4%
Anthony S. Robbins,2008,Liver Transplantation Hepatocellular Carcinoma Dongyun Yang, PhD,2014,Hepatocellular Carcinoma		0.1688 0.0136	<u>;</u>]		[0.80; 1.56] [0.91; 0.96]	0.0% 2.6%	0.6% 1.4%
	0.07						
Fixed effect model Random effects model			\$		[0.84; 0.85] [0.83; 0.89]	100.0%	100.0%
Heterogeneity: $l^2 = 98\%$, $\tau^2 = 0.0214$, $p = 0$				0.00	[2:00, 0:00]		100.070
			0.2 0.5 1 2 5				

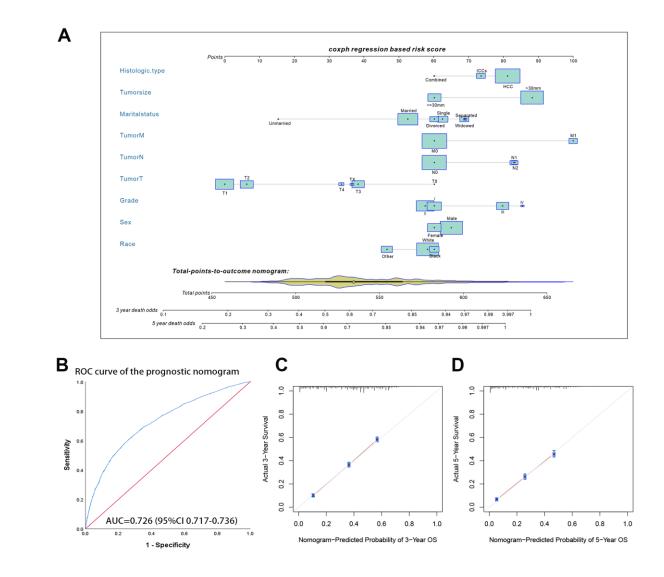
Supplementary Figure 1. Forest plots of the association between gender difference and the risk of cancer patients (Female vs· Male). Each square represents a study, and the size of the square represents the weighting of each study. The diamond box indicates the 95%CI. Heterogeneity is denoted by the I^2 and $\tau^{2.}$ p <0.001 in random effects model. HR= hazard ratio, CI=confidence interval.

Study	TE	seTE	Hazard Ratio	HR	95%-CI	Weight (fixed)	Weight (random)
Xiao, Z.,2019 Wu, W.,2018 Zhao, H. Y.,2019 Mukkamalla, S. K. R.,2018 Li Zhang,2019 Dongyun Yang, PhD,2014	-0.11 0.04 -0.06 -0.10	0.0301 0.0254 0.3548 0.0136 0.0852 0.0136		1.04 0.94 0.91	[0.86; 0.96] [0.86; 0.95] [0.52; 2.08] [0.91; 0.96] [0.77; 1.07] [0.91; 0.96]	0.1% 39.9% 1.0%	8.1% 11.4% 0.1% 39.9% 1.0% 39.5%
Fixed effect model Random effects model Heterogeneity: $J^2 = 0\%$, $\tau^2 = 0$	0, <i>p</i> = 0. ⁻	70 0.	.5 1		5 [0.91; 0.94] 5 [0.91; 0.94]	100.0% 	 100.0%

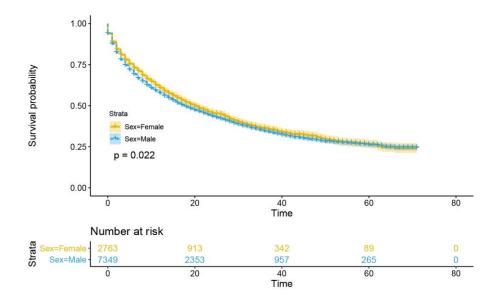
Supplementary Figure 2. Forest plots of the association between gender difference and the risk of liver cancer (Female vs. Male). Each square represents a study, and the size of the square represents the weighting of each study. The diamond box indicates the 95%CI. Heterogeneity is denoted by the I^2 and τ^2 . p <0.001 in the fixed effect model. HR= hazard ratio, CI=confidence interval.



Supplementary Figure 3. Nomogram and ROC curve for non-surgical liver cancer patients before women menopause (established by Cox regression model). (A) A survival nomogram for predict 3- and 5-year OS rates of non-surgical liver cancer patients before women menopause (i·e·, \leq 55 years of age). The yellow Violin Plot and the light blue box display the distribution of patients in the primary cohort. The size of the light blue box represents the proportion of patients. (B) Receiver operating characteristic (ROC) curves for prediction models. (C, D) The calibration curve of the nomogram-predicted probability (3-year OS and 5-year OS, respectively). Age, sex, race, grade, tumor TNM stage, marital status, tumor size, and histological type are contained in the models, p<0.001.



Supplementary Figure 4. Nomogram and ROC curve for non-surgical liver cancer patients after women menopause (established by Cox regression model). (A) A survival nomogram for predict 3- and 5-year OS rates of non-surgical liver cancer patients after women menopause (i.e., > 55 years of age). The yellow Violin Plot and the light blue box display the distribution of patients in the primary cohort. The size of light blue box represents the proportion of patients. (B) Receiver operating characteristic (ROC) curve for prediction models. (C, D) The calibration curve of the nomogram-predicted probability (3-year OS and 5-year OS, respectively). Age, sex, race, grade, tumor TNM stage, marital status, tumor size, and histological type are contained in the models, p<0.001.



Supplementary Figure 5. Kaplan-Meier survival analysis with log-rank test was performed in non-surgical liver cancer patients after women menopause (i.e. > 55 years of age).