	Progression-Free Survival (months)	Overall Survival (months)
	Median (IQR)	Median (IQR)
Patients		
Without irAE	3.6 (1.3-13.1)	7.8 (2.4-20.5)
With irAE	16.8 (5.9-n/r)	27.4 (13.9-n/r)
irAE Events		
All	n/a	n/a
Dermatological	19.6 (7.0-n/r)	26.9 (12.6-n/r)
Endocrine	17.1 (10.4-n/r)	33.6 (19.7-n/r)
Gastrointestinal	45.4 (24.2-n/r)	n/r (22.3-n/r)
Hepatic	11.5 (2.2-n/r)	n/r (12.0-n/r)
Musculoskeletal	19.4 (6.4-26.5)	19.9 (10.8-35.3)
Pulmonary	3.9 (0.4-7.5)	7.3 (0.7-10.7)

Supplementary Table S1: Progression-free survival and overall survival for patients with or without irAE and irAE events by the organ affected. n/r = not reached. n/a = not applicable

A

B

C
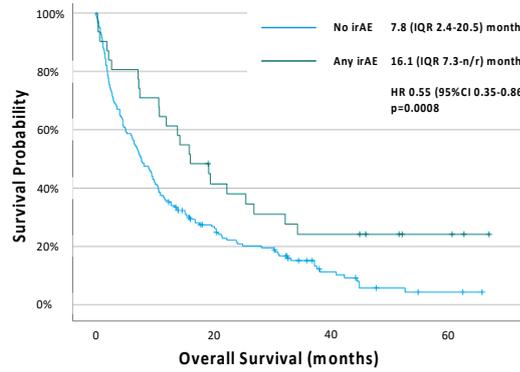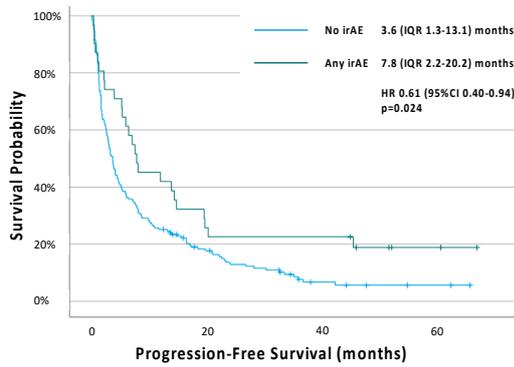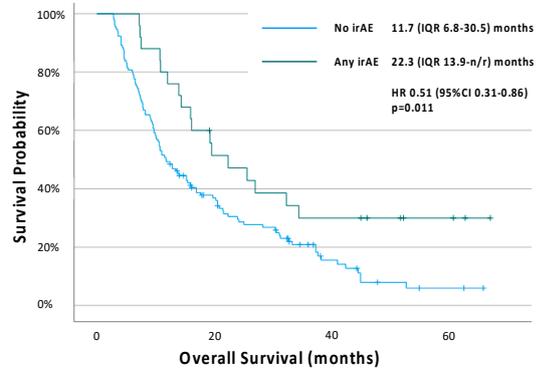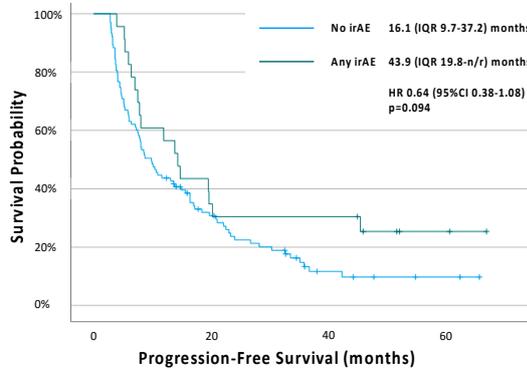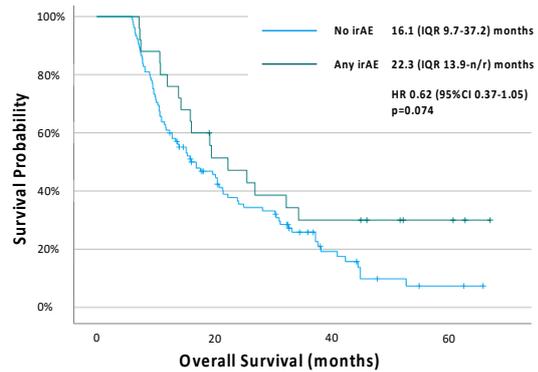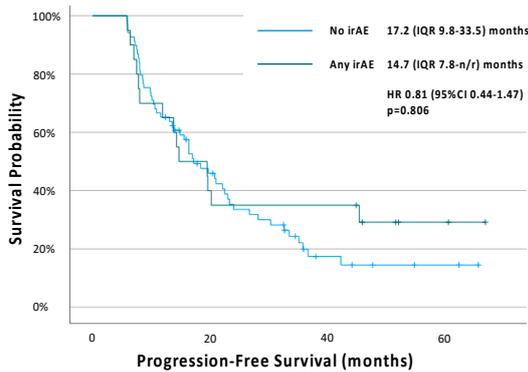
Supplementary Figure S1: Kaplan-Meier survival curves examining the relationship between the occurrence of severe (i.e. grade 3-5) immune-related adverse events and progression-free survival or overall survival in (A) all patients, (B) 12-week landmark and (C) 24-week landmark. n/r = not reached

A

B

C
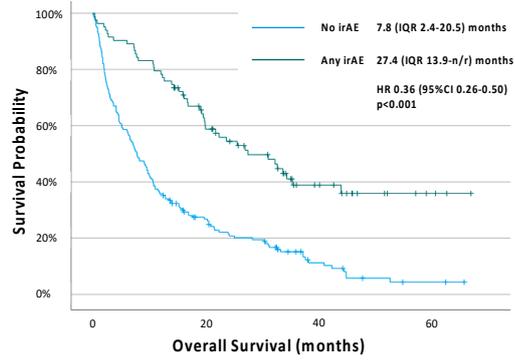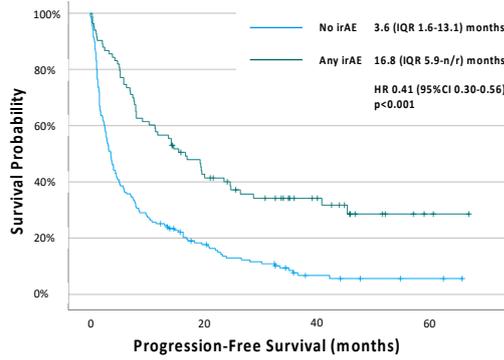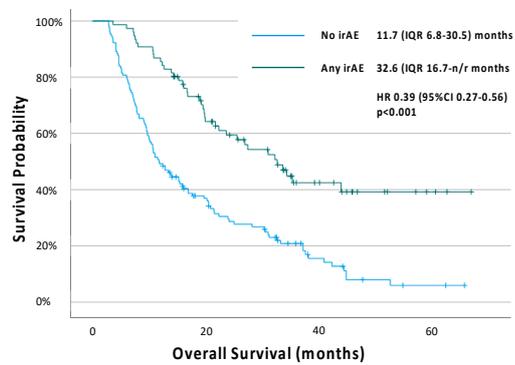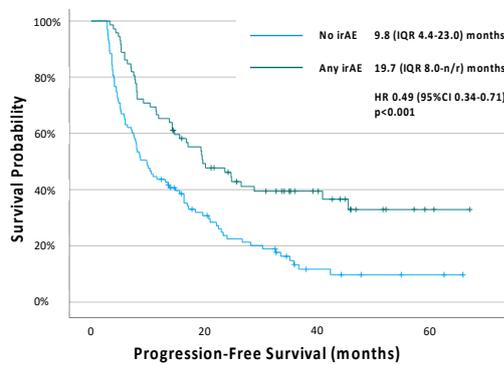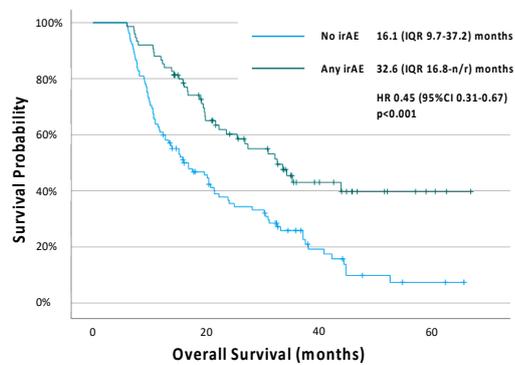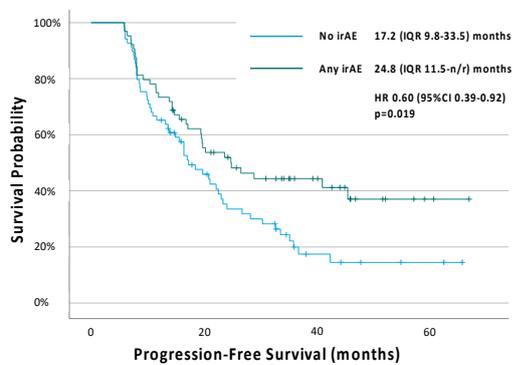
Supplementary Figure S2: Kaplan-Meier survival curves examining the relationship between the occurrence of mild (i.e. grade 1-2) immune-related adverse events and progression-free survival or overall survival in (A) all patients, (B) 12-week landmark and (C) 24-week landmark. n/r = not reached

A

B
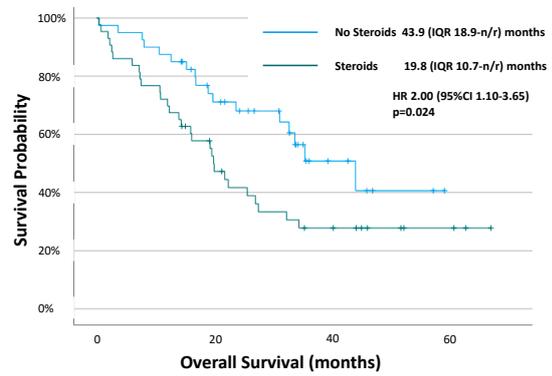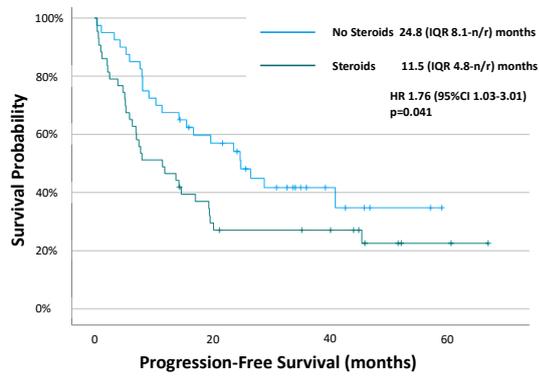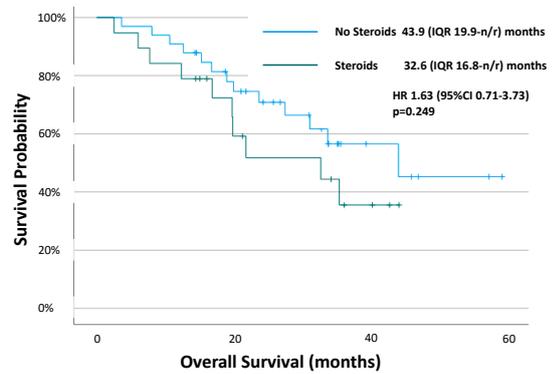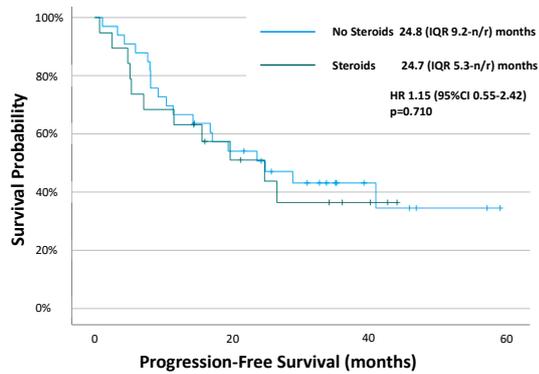
Supplementary Figure S3: Kaplan-Meier survival curves examining the relationship between steroid use and progression-free survival or overall survival in (A) all patients and (B) patients with mild (i.e. grade 1-2) immune-related adverse events. n/r = not reached

A

B
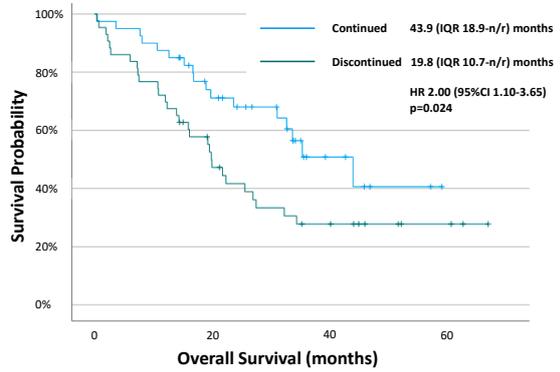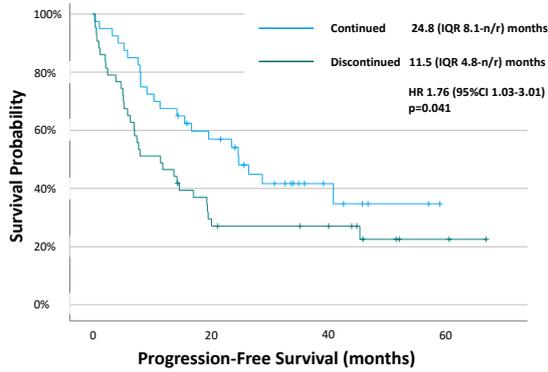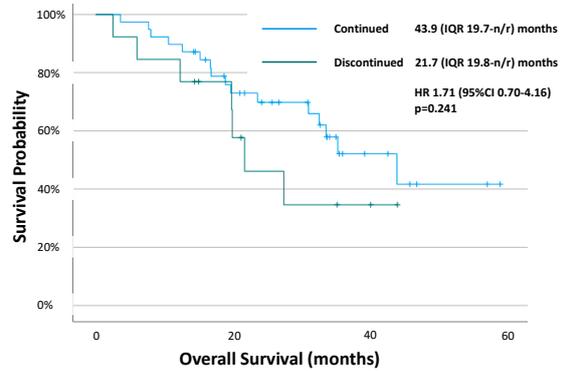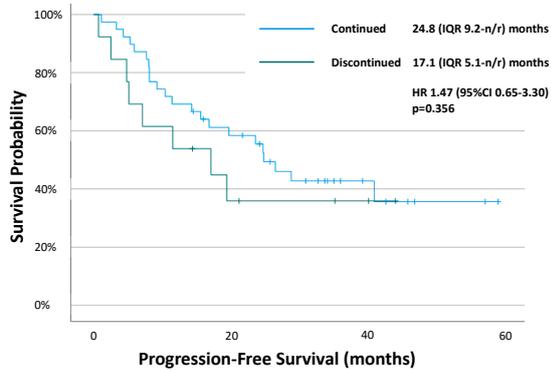
Supplementary Figure S4: Kaplan-Meier survival curves examining the relationship between treatment discontinuation and progression-free survival or overall survival in (A) all patients and (B) patients with mild (i.e. grade 1-2) immune-related adverse events. n/r = not reached

	Progression-Free Survival				Overall Survival			
	Univariate		Multivariate		Univariate		Multivariate	
	HR (95% CI)	*p*	HR (95% CI)	*P*	HR (95% CI)	*p*	HR (95% CI)	*p*
Age (<75 years, ≥75 years)	1.21 (0.85-1.73)	*0.288*			1.16 (0.79-1.70)	*0.447*		
Sex (Male, Female)	1.08 (0.83-1.41)	*0.574*			0.99 (0.75-1.30)	*0.924*		
Performance Status (0, 1, 2)	**1.55 (1.20-2.00)**	***0.01***	**1.40 (1.07-1.83)**	***0.012***	**1.64 (1.25-2.26)**	***<0.001***	***1.49 (1.12-1.98)***	***0.006***
Histological Subtype (Squamous, non-squamous)	1.06 (0.76-1.47)	*0.751*			1.07 (0.76-1.49)	*0.712*		
PD-L1 Status (<90%, ≥90%)	**0.76 (0.58-1.00)**	***0.048***	**0.71 (0.54-0.93)**	***0.012***	0.76 (0.58-1.01)	*0.055*		
WCC (≤11x10^9/L , >11x10^9/L)	**1.54 (1.17-2.03)**	***0.002***			**1.67 (1.26-2.23)**	***<0.001***		
Neutrophils (≤7.5x10^9/L, >7.5x10^9/L)	**1.76 (1.34-2.32)**	***<0.001***			**1.88 (1.42-2.49)**	***<0.001***		
Neutrophil/Lymphocyte Ratio (≤5, >5)	**1.68 (1.29-2.20)**	***<0.001***			**1.85 (1.40-2.44)**	***<0.001***		
Platelet/Neutrophil Ratio (≤180, >180)	1.27 (0.95-1.70)	*0.108*			**1.39 (1.02-1.88)**	***0.036***		
Albumin (<35g/L, ≥35g/L)	**1.93 (1.48-2.53)**	***<0.001***			**2.12 (1.60-2.80)**	***<0.001***		
Prognostic Nutritional Index (<45, ≥45)	**0.63 (0.48-0.83)**	***0.001***			**0.57 (0.43-0.76)**	***<0.001***		
Scottish Inflammatory Prognostic Score (0, 1, 2)	**1.66 (1.39-1.97)**	***<0.001***	**1.64 (1.38-1.96)**	***<0.001***	**1.75 (1.47-2.09)**	***<0.001***	**1.69 (1.41-2.02)**	***<0.001***

Supplementary Table S2: The relationship between prognostic factors and progression-free or overall survival in all patients. Bold/italics represent statistically significant findings (p<0.05)

A

B

C
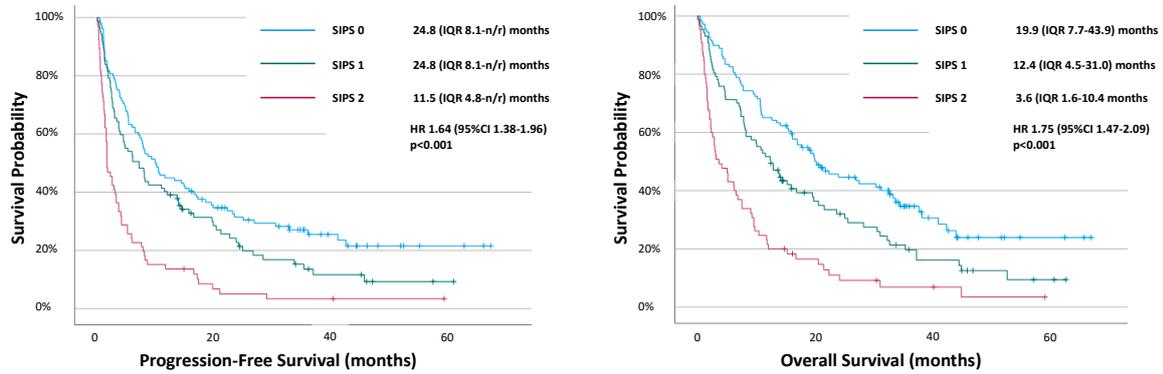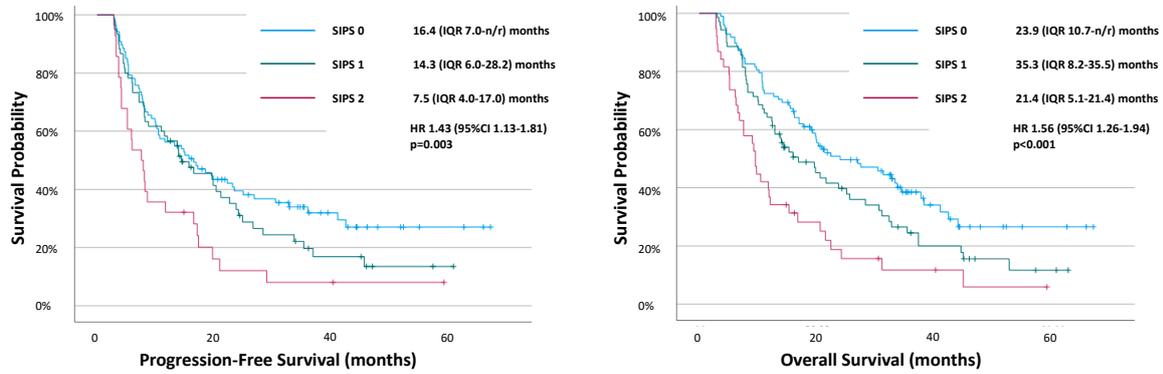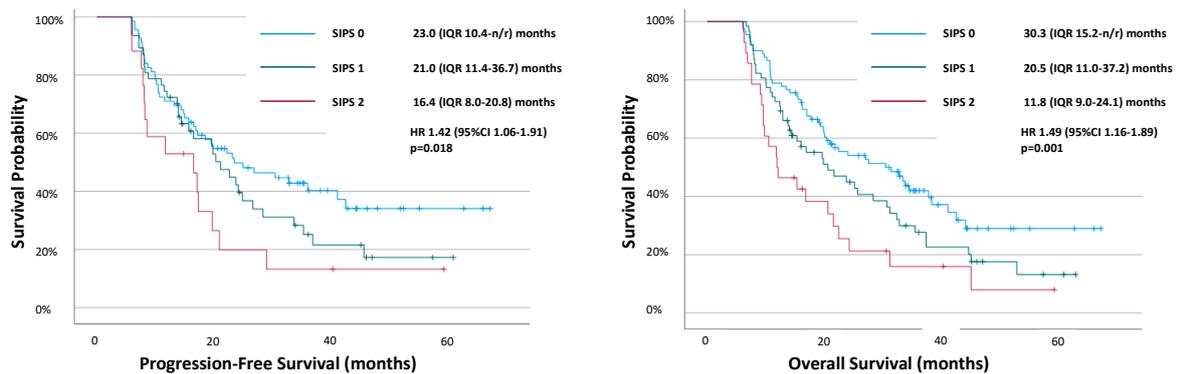
Supplementary Figure S5: Kaplan-Meier survival curves examining the relationship between the Scottish Inflammatory Prognostic Score (SIPS) and progression-free survival or overall survival in (A) all patients, (B) 12-week landmark and (C) 24-week landmark. n/r = not reached

A
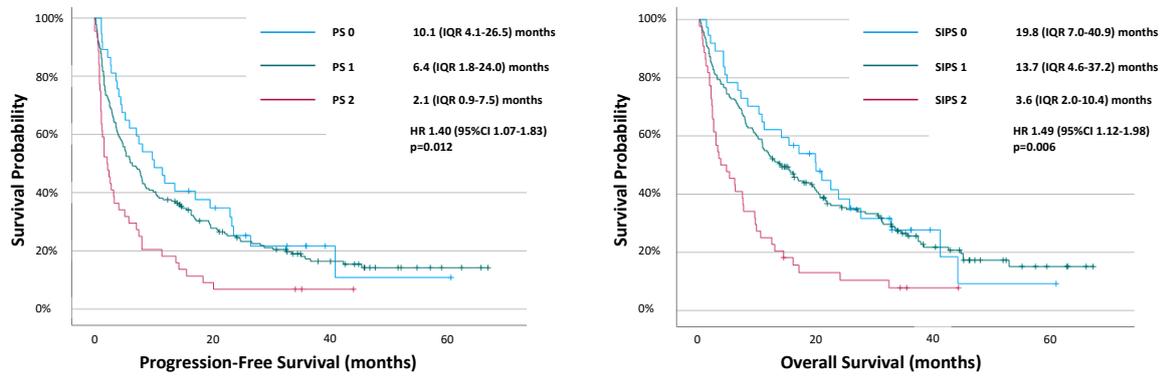
Supplementary Figure S6: Kaplan-Meier survival curves examining the relationship between performance status (PS) and progression-free survival or overall survival in all patients
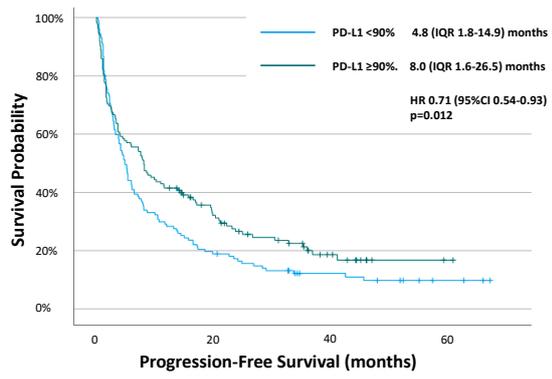
Supplementary Figure S7: Kaplan-Meier survival curves examining the relationship between PD-L1 status and progression-free survival