

Supplemental Results

The multiclass confusion matrices were resolved into a series of binary matrices in order to calculate precision, sensitivity (recall), and specificity for each of the reasons for selection or rejection. Thus, for the confusion matrix presented in Table 7, reproduced herein, for AAM-1 (mNSCLC), new binary confusion matrices for the individual exclusion reasons (ER) of “Population” (Supplemental Tables 1), “Intervention” (Supplemental Table 2), “Outcome” (Supplemental Table 3), and “Study Design” (Supplemental Table 4) were constructed, using the parameters outlined in red in Table 7. The element in the “Accept” row and “Accept” column was omitted (i.e.; corresponding to the “True Positive” in Table 4) as it did not represent an ER value. The elements in the “Accept” row across all “Reject” columns were omitted as these contained no predicted ER, only observed ER values (i.e.; corresponding to the “False Positive” in Table 4). The elements in the “Accept” column across all “Reject” were omitted since they contained only predicted ER values, no observed ER values (i.e.; corresponding to the “False Negative” in Table 4). Only those elements that had predicted and observed ER values were used in constructing the binary matrices.

Table 7. AAM-1 (mNSCLC): Confusion Matrix for multiclass classification: Accept / Reject with Reason for Exclusion.

	Human classification						
Automatic classification		Accept	Reject - Population	Reject - Intervention	Reject - Outcome	Reject - Study Design	Total
	Accept	377	470	29	42	213	1131
	Reject - Population	14	1671	15	0	732	2432
	Reject - Intervention	37	704	185	2	29	957
	Reject - Outcome	11	200	74	137	2	424
	Reject - Study Design	1	2	0	0	873	876
	Total	440	3047	303	181	1849	5820

Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.

Supplemental Table 1. AAM-1 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Population					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	1671	747	2418	0.69
	Reject	906	1302	2208	
	Total	2577	2049	4626	
		Sensitivity	Specificity		
		0.65	0.64		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 2. AAM-1 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Intervention					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	185	735	920	0.2
	Reject	89	3617	3706	
	Total	274	4362	4626	
		Sensitivity	Specificity		
		0.68	0.83		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 3. AAM-1 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Outcome					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	137	276	413	0.33
	Reject	2	4211	4213	
	Total	139	4487	4626	
		Sensitivity	Specificity		
		0.99	0.94		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 4. AAM-1 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Study Design					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	873	2	875	1.
	Reject	763	2988	3751	
	Total	1636	2990	4626	
		Sensitivity	Specificity		
		0.53	1.		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

For the confusion matrix presented in Table 8, reproduced herein, for AAM-2 (mNSCLC), new binary confusion matrices for the individual exclusion reasons (ER) of “Population” (Supplemental Tables 5), “Intervention” (Supplemental Table 6), “Outcome” (Supplemental Table 7), and “Study Design” (Supplemental Table 8) were constructed, using the parameters outlined in red in Table 8. The element in the “Accept” row and “Accept” column was omitted (i.e.; corresponding to the “True Positive” in Table 5) as it did not represent an ER value. The elements in the “Accept” row across all “Reject” columns were omitted as these contained no predicted ER, only observed ER values (i.e.; corresponding to the “False Positive” in Table 5). The elements in the “Accept” column across all “Reject” were omitted since they contained only predicted ER values, no observed ER values (i.e.; corresponding to the “False Negative” in Table 5). Only those elements that had predicted and observed ER values were used in constructing the binary matrices.

Table 8. AAM-2 (mNSCLC): Confusion Matrix for multiclass classification: Accept / Reject with Reason for Exclusion.

	Human classification						
Automatic classification		Accept	Reject - Population	Reject - Intervention	Reject - Outcome	Reject - Study Design	Total
	Accept	361	283	47	48	216	955
	Reject - Population	60	1627	85	39	208	2019
	Reject - Intervention	1	42	75	2	19	139
	Reject - Outcome	1	19	2	22	18	62
	Reject - Study Design	17	1076	94	70	1388	2645
	Total	440	3047	303	181	1849	5820

Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.

Supplemental Table 5. AAM-2 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Population					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	1627	332	1959	0.83
	Reject	1137	1690	2827	
	Total	2764	2022	4786	
		Sensitivity	Specificity		
		0.59	0.84		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 6. AAM-2 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Intervention					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	75	63	138	0.54
	Reject	181	4467	4648	
	Total	256	4530	4786	
		Sensitivity	Specificity		
		0.29	0.99		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 7. AAM-2 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Outcome					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	22	39	61	0.36
	Reject	111	4614	4725	
	Total	133	4653	4786	
		Sensitivity	Specificity		
		0.17	0.99		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 8. AAM-2 (mNSCLC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Study Design					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	1388	1240	2628	0.53
	Reject	245	1913	2158	
	Total	1633	3153	4786	
		Sensitivity	Specificity		
		0.85	0.61		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

For the confusion matrix presented in Table 13, reproduced herein, for AAM-1 (mCRPC), new binary confusion matrices for the individual exclusion reasons (ER) of “Population” (Supplemental Tables 9), “Intervention” (Supplemental Table 10), and “Study Design” (Supplemental Table 11) were constructed, using the parameters outlined in red in Table 13. The element in the “Accept” row and “Accept” column was omitted (i.e.; corresponding to the “True Positive” in Table 10) as it did not represent an ER value. The elements in the “Accept” row across all “Reject” columns were omitted as these contained no predicted ER, only observed ER values (i.e.; corresponding to the “False Positive” in Table 10). The elements in the “Accept” column across all “Reject” were omitted since they contained only predicted ER values, no observed ER values (i.e.; corresponding to the “False Negative” in Table 10). Only those elements that had predicted and observed ER values were used in constructing the binary matrices.

Table 13. Confusion Matrix for multiclass classification for mCRPC: AAM-1: Accept / Reject with Reason for Exclusion.

		Human classification				
Automatic classification		Accept	Reject - Population	Reject - Intervention	Reject - Study Design	Total
	Accept	550	72	2	201	825
	Reject - Population	11	12	0	25	48
	Reject - Intervention	0	0	0	0	0
	Reject - Study Design	77	118	3	1363	1561
	Total	638	202	5	1589	2434

AAM = advanced analytic methods; mCRPC = metastatic castration-resistant prostate cancer.

Supplemental Table 9. AAM-1 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Population					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	12	25	37	0.32
	Reject	118	1366	1484	
	Total	130	1391	1521	
		Sensitivity	Specificity		
		0.09	0.98		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 10. AAM-1 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Intervention					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	0	0	0	n/a
	Reject	3	1518	1521	
	Total	3	1518	1521	
		Sensitivity	Specificity		
		0.	1.		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 11. AAM-1 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Study Design					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	1363	121	1484	0.92
	Reject	25	12	37	
	Total	1388	133	1521	
		Sensitivity	Specificity		
		0.98	0.09		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

For the confusion matrix presented in Table 14, reproduced herein, for AAM-2 (mCRPC), new binary confusion matrices for the individual exclusion reasons (ER) of “Population” (Supplemental Tables 12), “Intervention” (Supplemental Table 13), and “Study Design” (Supplemental Table 14) were constructed, using the parameters outlined in red in Table 13. The element in the “Accept” row and “Accept” column was omitted (i.e.; corresponding to the “True Positive” in Table 11) as it did not represent an ER value. The elements in the “Accept” row across all “Reject” columns were omitted as these contained no predicted ER, only observed ER values (i.e.; corresponding to the “False Positive” in Table 11). The elements in the “Accept” column across all “Reject” were omitted since they contained only predicted ER values, no observed ER values (i.e.; corresponding to the “False Negative” in Table 11). Only those elements that had predicted and observed ER values were used in constructing the binary matrices.

Table 14. Confusion Matrix for multiclass classification for mCRPC: AAM-2: Accept / Reject with Reason for Exclusion.						
		Human classification				
Automatic classification		Accept	Reject - Population	Reject - Intervention	Reject - Study Design	Total
	Accept	486	47	3	124	660
	Reject - Population	2	25	0	3	30
	Reject - Intervention	0	0	0	0	0
	Reject - Study Design	139	124	2	1454	1719
Total		627	196	5	1581	2409*

Abbreviations: AAM = advanced analytic methods; mCRPC = metastatic castration-resistant prostate cancer.

* AAM-2 was not able to classify 25 documents; therefore, the final sum is different from AAM-1

Supplemental Table 12. AAM-2 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Population					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	25	3	28	0.89
	Reject	124	1456	1580	
	Total	149	1459	1608	
		Sensitivity	Specificity		
		0.17	1.		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 13. AAM-2 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Intervention					
Human classification					
Automatic classification		Accept	Reject	Total	Precision
	Accept	0	0	0	n/a
	Reject	2	1606	1608	
	Total	2	1606	1608	
		Sensitivity	Specificity		
		0.	1.		
Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.					

Supplemental Table 14. AAM-2 (mCRPC): Confusion matrix for binary classification: Accept / Reject with Reason for Exclusion: Study Design

Human classification				
Automatic classification		Accept	Reject	Total
	Accept	1454	126	1580
	Reject	3	25	28
	Total	1457	151	1608
		Sensitivity	Specificity	
		1.	0.17	

Abbreviations: AAM = advanced analytic methods; mNSCLC = metastatic non-small cell lung cancer.