Supplemental Material For *Personalized Regression Enables Sample-Specific Pan-Cancer Analysis*

Table 1. Prediction Errors By Primary Site

Model	Err.
Stomach	288/118
Subtype-Population	0.682
Population LogReg with Lasso	0.427
VC (Logistic/Linear)	0.712
Mixture of Logistic Regressions	1.419
Personalized	0.433
Head and Neck	374/170
Subtype-Population	0.671
Population LogReg with Lasso	0.229
VC (Logistic/Linear)	0.761
Mixture of Logistic Regressions	0.383
Personalized	0.207
Ovary	258/110
Subtype-Population	0.684
Population LogReg with Lasso	0.495
VC (Logistic/Linear)	0.706
Mixture of Logistic Regressions	1.773
Personalized	0.511
Uterus	451/189
Subtype-Population	0.668
Population LogReg with Lasso	0.166
VC (Logistic/Linear)	0.798
Mixture of Logistic Regressions	0.049
Personalized	0.134
Bladder	318/115
Subtype-Population	0.669
Population LogReg with Lasso	0.187
VC (Logistic/Linear)	0.782
Mixture of Logistic Regressions	0.162
Personalized	0.159
Skin	330/139
Subtype-Population	0.671
Population LogReg with Lasso	0.207
VC (Logistic/Linear)	0.791
Mixture of Logistic Regressions	0.268
Personalized	0.182
Eye	50/30
Subtype-Population	0.669
Population LogReg with Lasso	0.156
VC (Logistic/Linear)	0.605
Mixture of Logistic Regressions	0.000
Personalized	0.154
Lymph Nodes	32/16
Subtype-Population	0.668
Population LogReg with Lasso	0.156
VC (Logistic/Linear)	0.610
Mixture of Logistic Regressions	0.000
Personalized	0.166
Breast	848/371
Subtype-Population	0.670
Population LogReg with Lasso	0.194
VC (Logistic/Linear)	0.582
Mixture of Logistic Regressions	0.201
Personalized	0.173

Model	Err.
Bile Duct	33/12
Subtype-Population	0.681
Population LogReg with Lasso	0.452
VC (Logistic/Linear)	0.658
Mixture of Logistic Regressions	1.545
Personalized	0.496
Kidney	713/299
Subtype-Population	0.675
Population LogReg with Lasso	0.322
VC (Logistic/Linear)	0.621
Mixture of Logistic Regressions	0.871
Personalized	0.314
Thyroid	391/177
Subtype-Population	0.686
Population LogReg with Lasso	0.557
VC (Logistic/Linear)	0.725
Mixture of Logistic Regressions	2.101
Personalized	0.582
Liver	286/135
Subtype-Population	0.668
Population LogReg with Lasso	0.156
VC (Logistic/Linear)	0.766
Mixture of Logistic Regressions	0.000
Personalized	0.123
Pancreas	125/57
Subtype-Population	0.669
Population LogReg with Lasso	0.218
VC (Logistic/Linear)	0.408
Mixture of Logistic Regressions	0.326
Personalized	0.197
Prostate	391/159
Subtype-Population	0.668
Population LogReg with Lasso	0.156
VC (Logistic/Linear)	0.793
Mixture of Logistic Regressions	0.000
Personalized	0.124
Brain	470/200
Subtype-Population	0.682
Population LogReg with Lasso	0.476
VC (Logistic/Linear)	0.767
Mixture of Logistic Regressions	1.672
Personalized	0.490
Colorectal	490/204
Subtype-Population	0.683
Population LogReg with Lasso	0.487
VC (Logistic/Linear)	0.780
Mixture of Logistic Regressions	1.731
Personalized	0.502
Esophagus	120/51
Subtype-Population	0.669
Population LogReg with Lasso	0.156
VC (Logistic/Linear)	0.429
Mixture of Logistic Regressions	0.000
Personalized	0.127
Lung	789/345
Subtype-Population	0.670
Population LogReg with Lasso	0.218
VC (Logistic/Linear)	0.579
Mixture of Logistic Regressions	0.323
Personalized	0.195

Table 2. Overlap of Variables Selection with known Oncogenes

Disease Type	Selection Count	Overlap Count	Overlap Pct.
Uveal Melanoma	44843	22810	50.866
Lung Squamous Cell Carcinoma	313674	160965	51.316
Colon Adenocarcinoma	269829	139462	51.685
Brain Lower Grade Glioma	296138	152186	51.390
Kidney Renal Clear Cell Carcinoma	315072	162758	51.657
Prostate Adenocarcinoma	327942	168377	51.344
Cholangiocarcinoma	27584	14116	51.175
Uterine Corpus Endometrial Carcinoma	378767	192707	50.877
Bladder Urothelial Carcinoma	270442	138425	51.185
Ovarian Serous Cystadenocarcinoma	180908	93646	51.764
Kidney Chromophobe	54220	27744	51.169
Head and Neck Squamous Cell Carcinoma	304486	156524	51.406
Thyroid Carcinoma	329565	168411	51.101
Glioblastoma Multiforme	82181	42466	51.674
Lung Adenocarcinoma	321078	164878	51.351
Skin Cutaneous Melanoma	292049	148832	50.961
Esophageal Carcinoma	108556	55635	51.250
Rectum Adenocarcinoma	89444	46175	51.624
Lymphoid Neoplasm Diffuse Large B-cell Lymphoma	30881	15777	51.090
Kidney Renal Papillary Cell Carcinoma	175504	90033	51.300
Liver Hepatocellular Carcinoma	253235	129083	50.974
Pancreatic Adenocarcinoma	114173	58517	51.253
Breast Invasive Carcinoma	767341	392363	51.133
Uterine Carcinosarcoma	35997	18303	50.846
Stomach Adenocarcinoma	226532	116662	51.499