

**Model 2 for Kenya, extending model to include age and gender:**

$$\begin{aligned} \log(M_{i,j}) = & \beta_0 + \beta_1 K_1 + \beta_2 K_2 + \beta_3 K_3 + \beta_4 K_4 + \beta_5 \log(P_j) + \beta_6 K_1 \log(P_j) + \beta_7 K_2 \log(P_j) + \beta_8 K_3 \log(P_j) \\ & + \beta_9 K_4 \log(P_j) + \beta_{10} \log(D_{i,j}) + \beta_{11} K_1 \log(D_{i,j}) + \beta_{12} K_2 \log(D_{i,j}) + \beta_{13} K_3 \log(D_{i,j}) \\ & + \beta_{14} K_4 \log(D_{i,j}) + \beta_{15} K_1 A_a + \beta_{16} K_2 A_a + \beta_{17} K_3 A_a + \beta_{18} K_4 A_a + \beta_{19} K_1 G_g + \beta_{20} K_2 G_g + \beta_{21} K_3 G_g \\ & + \beta_{22} K_4 G_g + \varepsilon_{i,j} \end{aligned}$$

$A_a$ : malaria-relevant age categories;  $a=8$ ; 1: < 5 years; 2: 5-9 years; 3: 10-19 years; 4: 20-29 years; 5: 30-39 years; 6: 40-49 years; 7: 50-59 years; 8: 60 plus

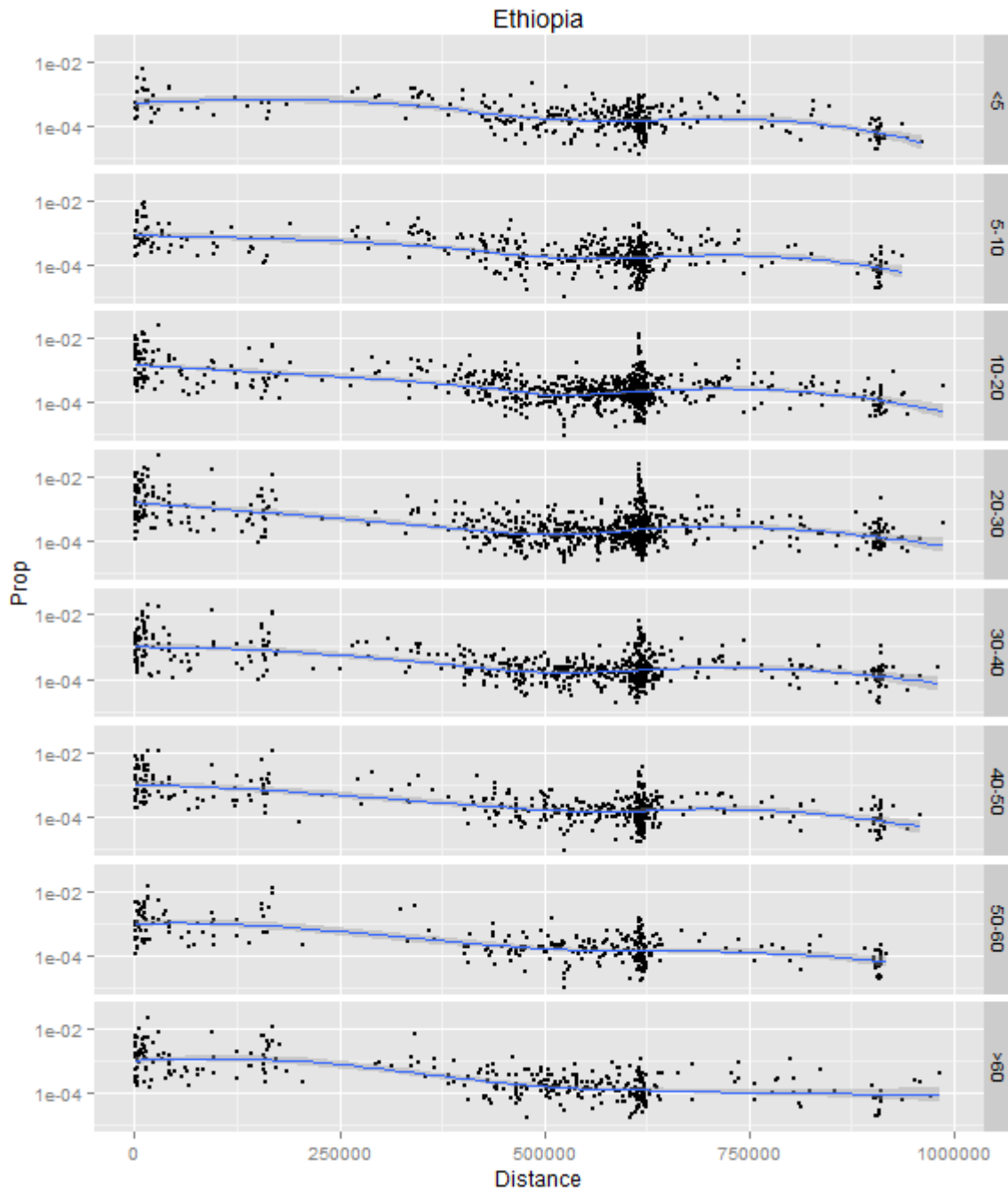
$G_g$ : gender categories;  $g=2$ ; 1: male, 2: female

Regression output:

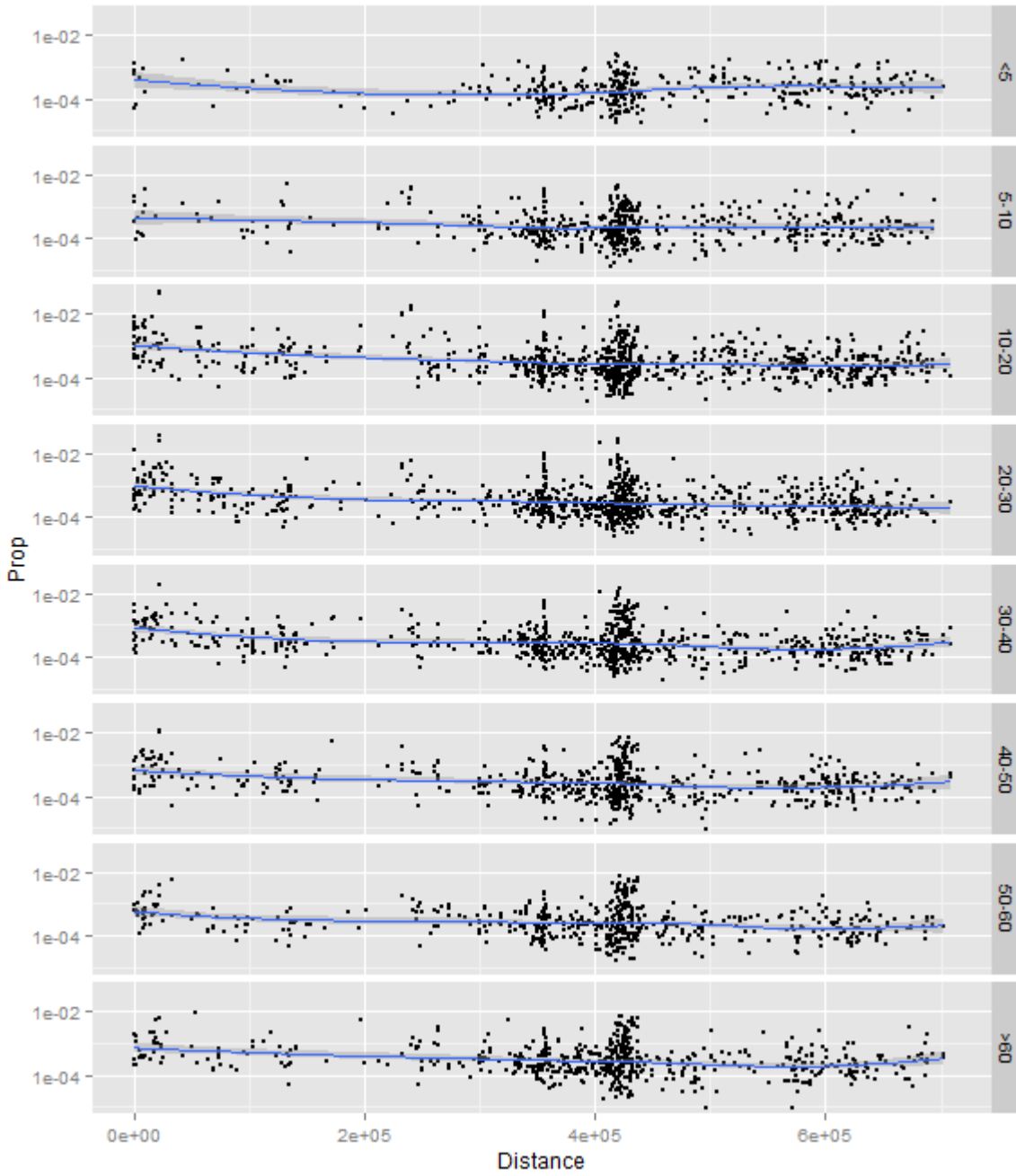
Explanatory variables	Regression Coefficient	Standard Error	t	p-value
logPop	0.3318945	0.0092155	36.015	< 2e-16
logDist	-0.3924936	0.0070194	-55.916	< 2e-16
factor(AGE)2	0.0491894	0.0365404	1.346	0.178255
factor(AGE)3	0.3969941	0.0317654	12.498	< 2e-16
factor(AGE)4	0.5879676	0.0310477	18.938	< 2e-16
factor(AGE)5	0.4560387	0.0317142	14.380	< 2e-16
factor(AGE)6	0.1964364	0.0339049	5.794	6.92e-09
factor(AGE)7	0.0479760	0.0380357	1.261	0.207191
factor(AGE)8	0.0280316	0.0389207	0.720	0.471392
factor(GENDER)M	0.0009421	0.0158129	0.060	0.952494
KE_ET:logPop	-0.0575988	0.0173310	-3.323	0.000890
KE_SM:logPop	0.0762631	0.0153896	4.956	7.24e-07
KE_SU:logPop	0.0836244	0.0142484	5.869	4.41e-09
KE_UG:logPop	-0.0801133	0.0122896	-6.519	7.15e-11
KE_ET:logDist	0.2292590	0.0124716	18.382	< 2e-16
KE_SM:logDist	0.2433380	0.0133431	18.237	< 2e-16
KE_SU:logDist	0.3116560	0.0254647	12.239	< 2e-16
KE_UG:logDist	0.5303973	0.0113675	46.659	< 2e-16
KE_ET:factor(AGE)2	-0.0038053	0.0699597	-0.054	0.956623
KE_ET:factor(AGE)3	-0.1433140	0.0625309	-2.292	0.021916
KE_ET:factor(AGE)4	-0.2848937	0.0616237	-4.623	3.79e-06
KE_ET:factor(AGE)5	-0.2495923	0.0646461	-3.861	0.000113
KE_ET:factor(AGE)6	-0.0773828	0.0701320	-1.103	0.269864
KE_ET:factor(AGE)7	0.0008427	0.0767247	0.011	0.991237
KE_ET:factor(AGE)8	0.0499196	0.0751771	0.664	0.506677
KE_SM:factor(AGE)2	0.0093038	0.0636394	0.146	0.883767
KE_SM:factor(AGE)3	-0.1397553	0.0570119	-2.451	0.014236
KE_SM:factor(AGE)4	-0.3212290	0.0567203	-5.663	1.49e-08
KE_SM:factor(AGE)5	-0.2887977	0.0581382	-4.967	6.81e-07
KE_SM:factor(AGE)6	-0.0198199	0.0622346	-0.318	0.750129
KE_SM:factor(AGE)7	0.0967190	0.0656521	1.473	0.140702
KE_SM:factor(AGE)8	0.1598639	0.0656984	2.433	0.014965
KE_SU:factor(AGE)2	0.0057587	0.0546070	0.105	0.916013
KE_SU:factor(AGE)3	-0.1539909	0.0489669	-3.145	0.001663
KE_SU:factor(AGE)4	-0.3438848	0.0491193	-7.001	2.57e-12
KE_SU:factor(AGE)5	-0.2580136	0.0510843	-5.051	4.42e-07

KE_SU:factor(AGE)6	-0.1144147	0.0542600	-2.109	0.034981
KE_SU:factor(AGE)7	-0.0157266	0.0600515	-0.262	0.793411
KE_SU:factor(AGE)8	-0.0059988	0.0591863	-0.101	0.919269
KE_UG:factor(AGE)2	-0.1316750	0.0458392	-2.873	0.004074
KE_UG:factor(AGE)3	-0.1069047	0.0416495	-2.567	0.010268
KE_UG:factor(AGE)4	-0.5140590	0.0413092	-12.444	< 2e-16
KE_UG:factor(AGE)5	-0.6951047	0.0421692	-16.484	< 2e-16
KE_UG:factor(AGE)6	-0.8076488	0.0443712	-18.202	< 2e-16
KE_UG:factor(AGE)7	-0.9628390	0.0484411	-19.876	< 2e-16
KE_UG:factor(AGE)8	-0.8576411	0.0491423	-17.452	< 2e-16
KE_ET:factor(GENDER)M	0.0442031	0.0321400	1.375	0.169036
KE_SM:factor(GENDER)M	0.0080601	0.0287825	0.280	0.779453
KE_SU:factor(GENDER)M	0.0455020	0.0258460	1.761	0.078329
KE_UG:factor(GENDER)M	-0.0218555	0.0213185	-1.025	0.305279

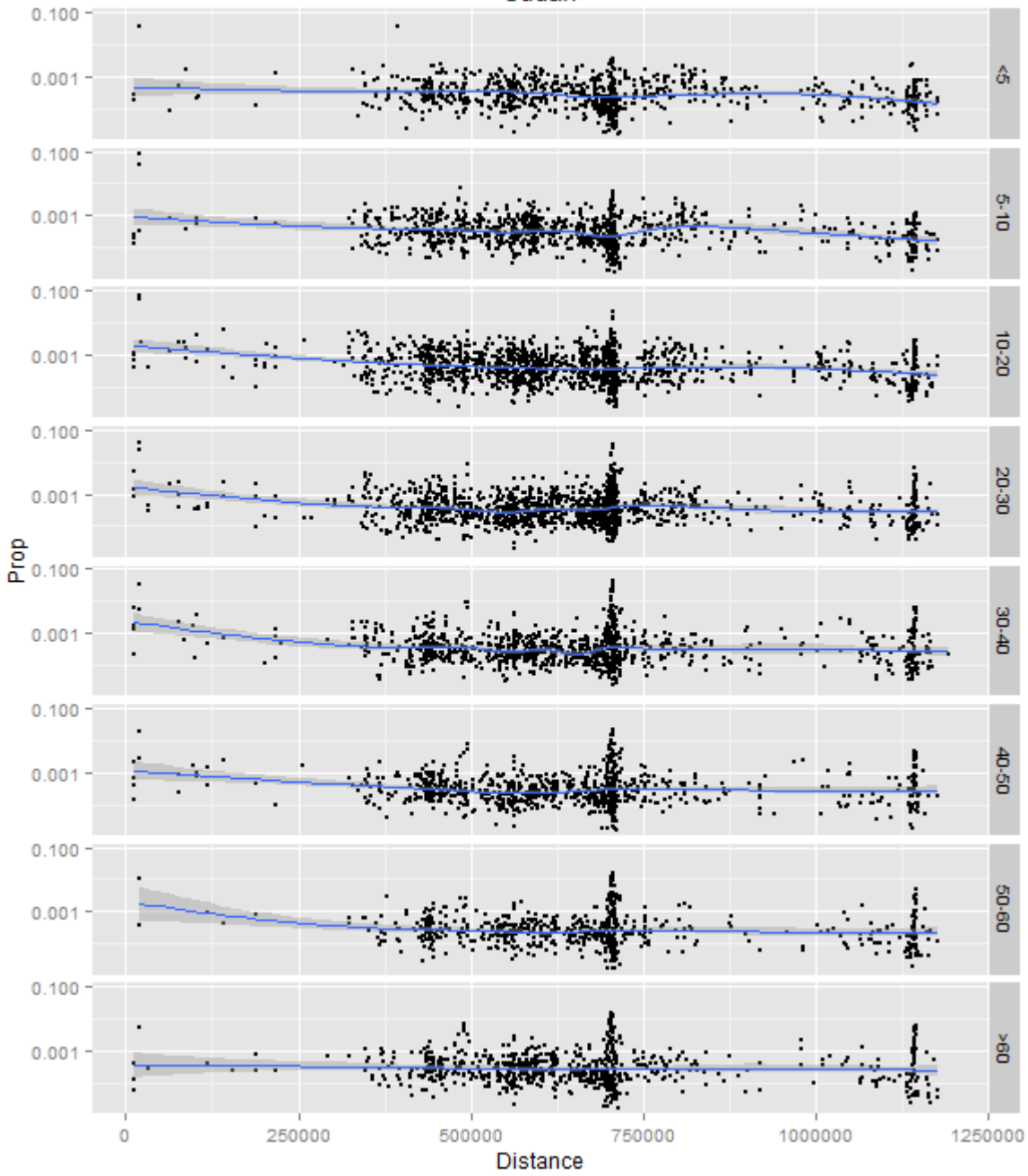
Age stratified origin-specific in-migrant occurrence plotted against Euclidean distance from shared border between origin countries and destination country, Kenya:



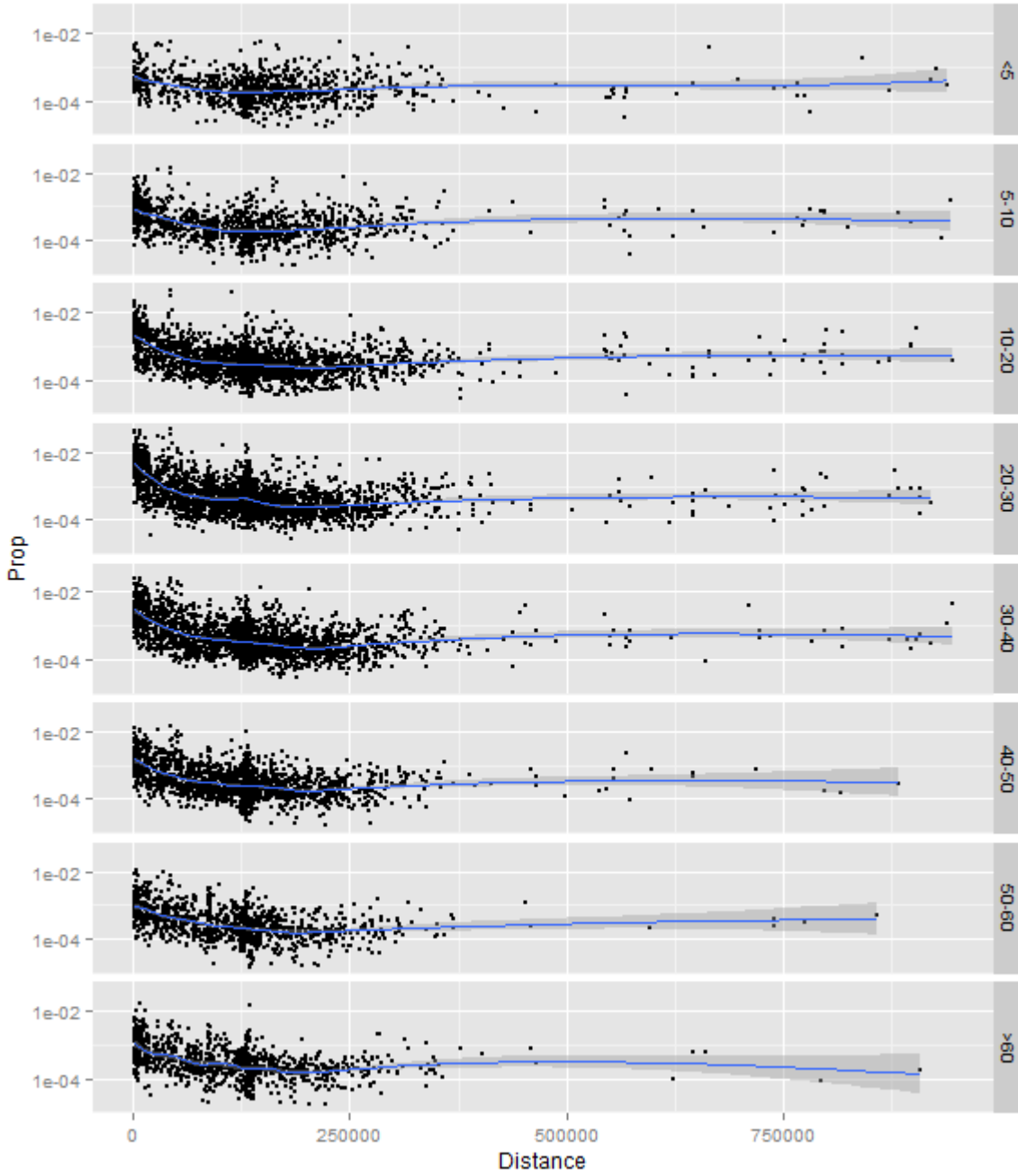
# Somalia



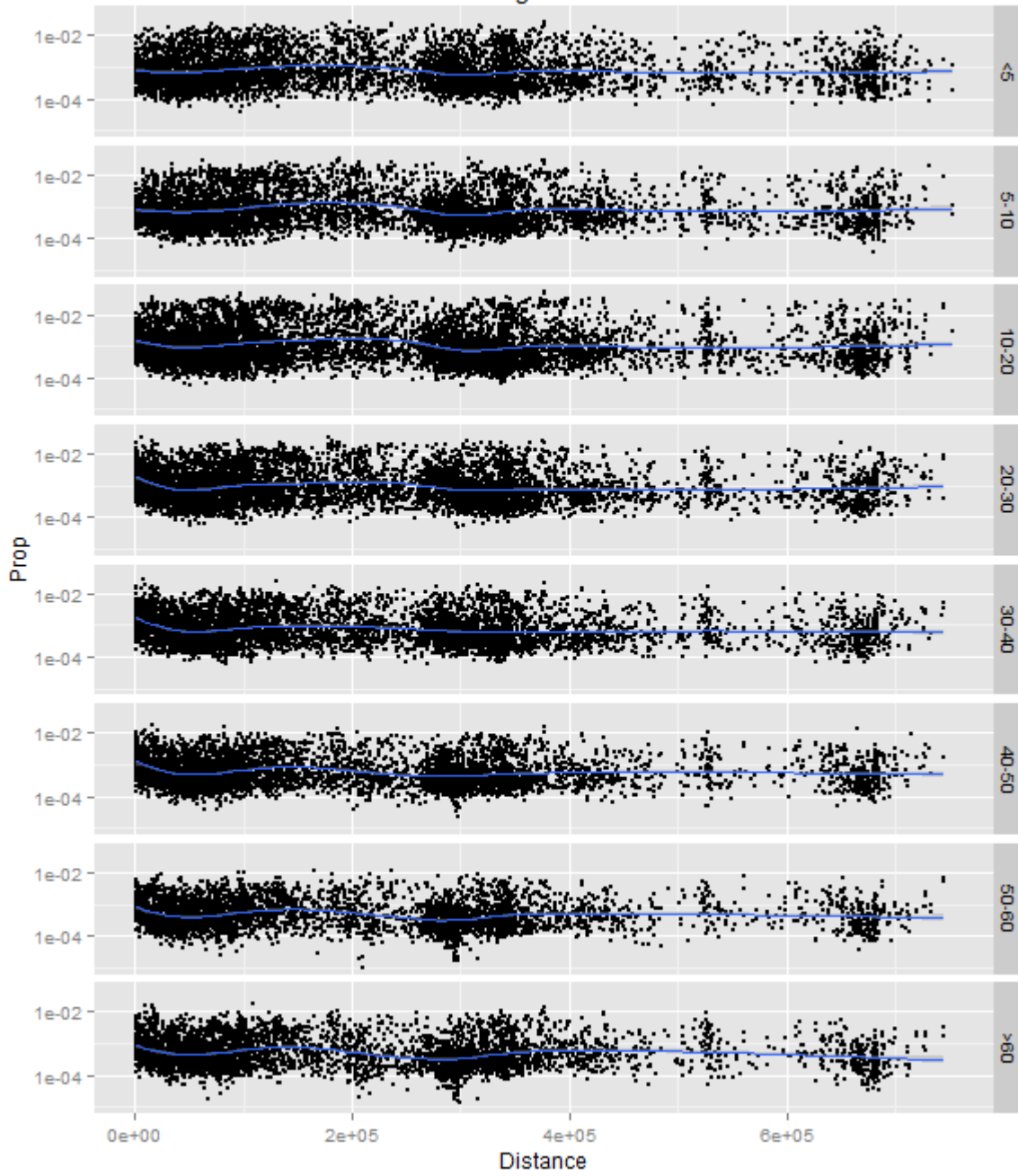
# Sudan



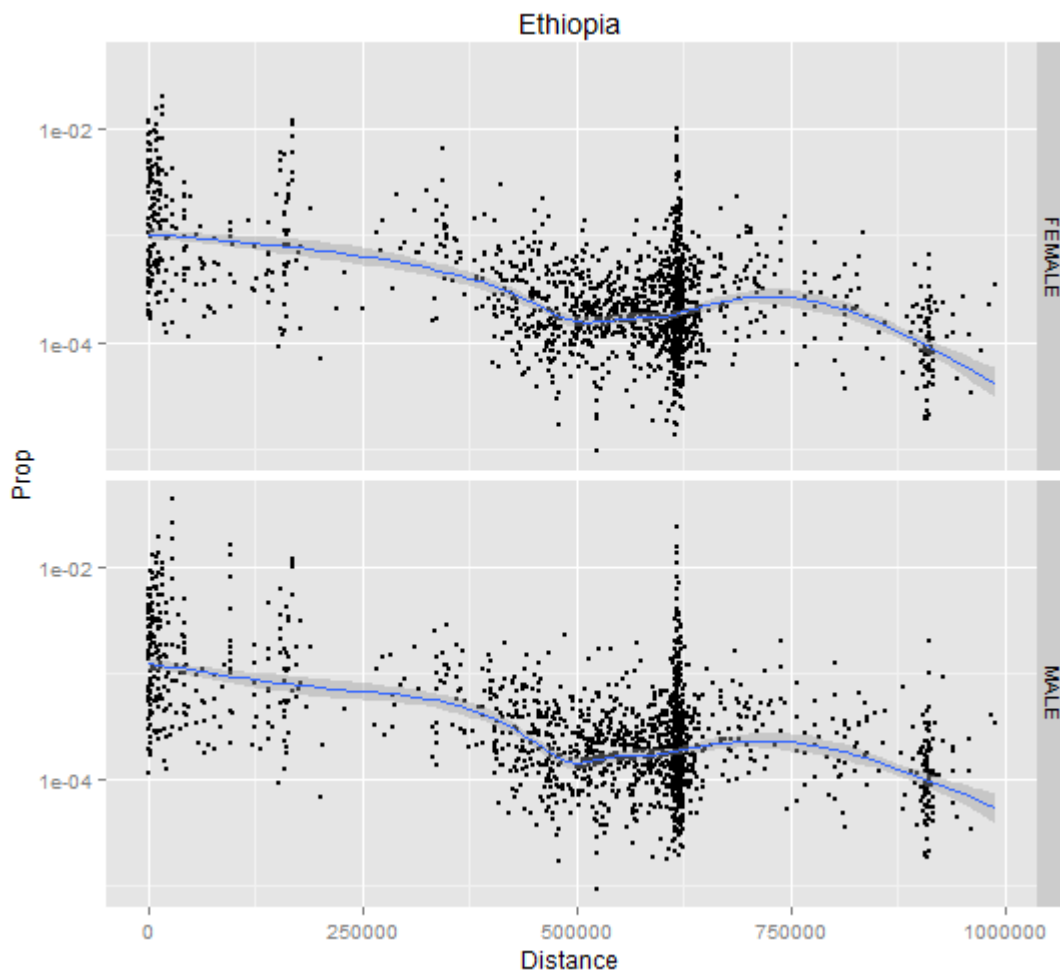
# Tanzania



# Uganda

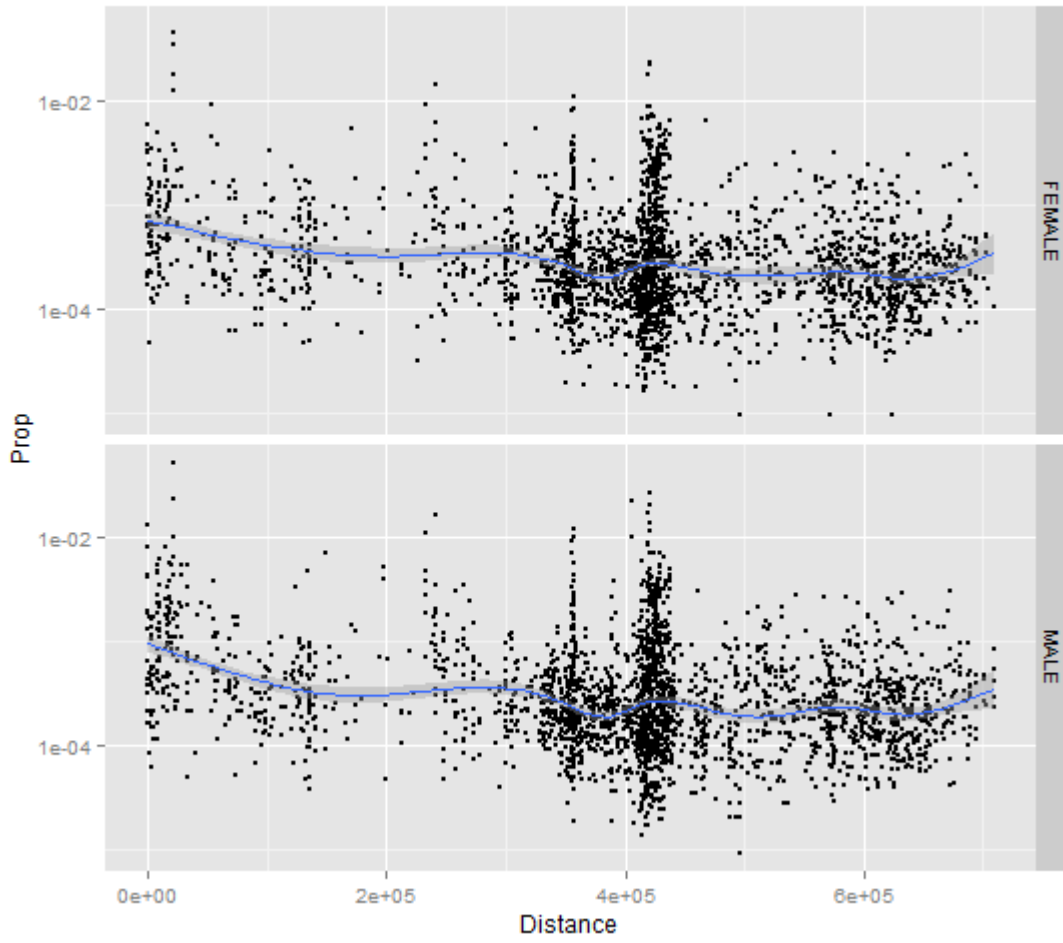


Gender stratified origin-specific in-migrant occurrence plotted against Euclidean distance from shared border between origin countries and destination country, Kenya:

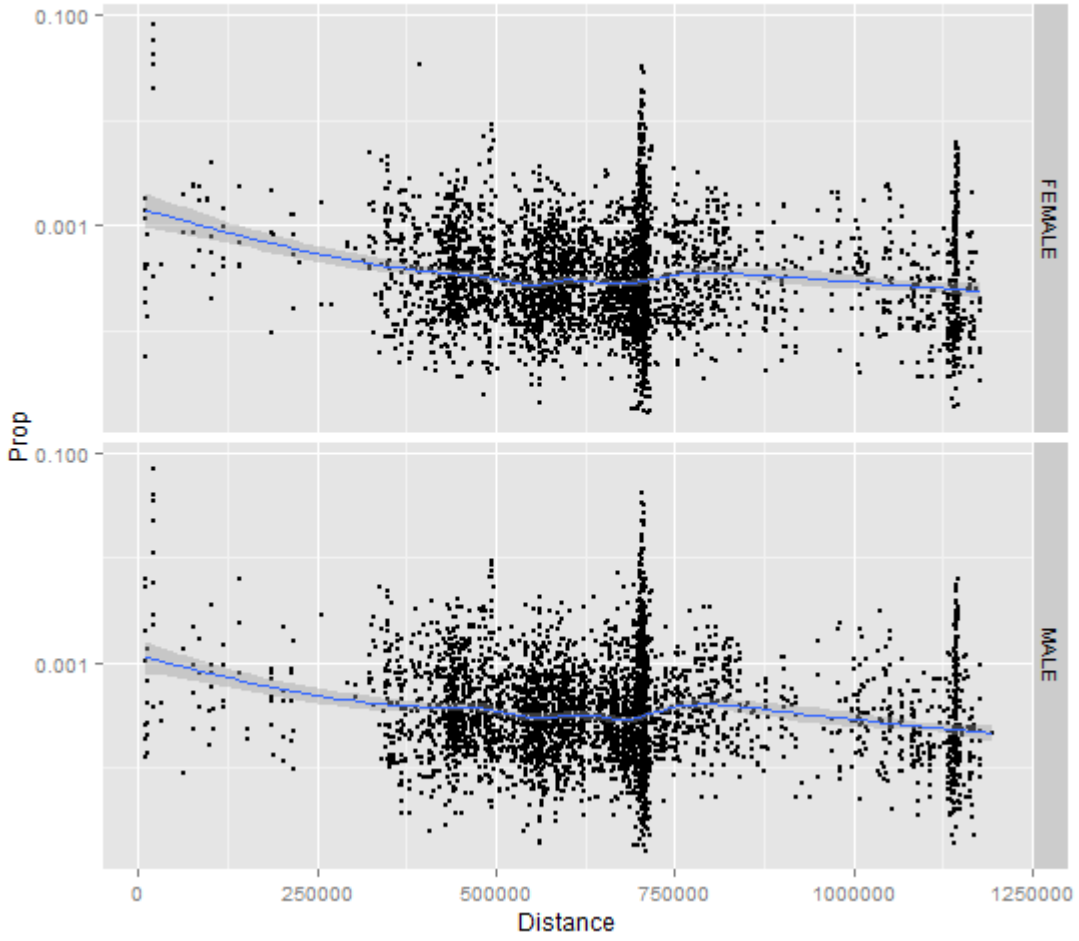




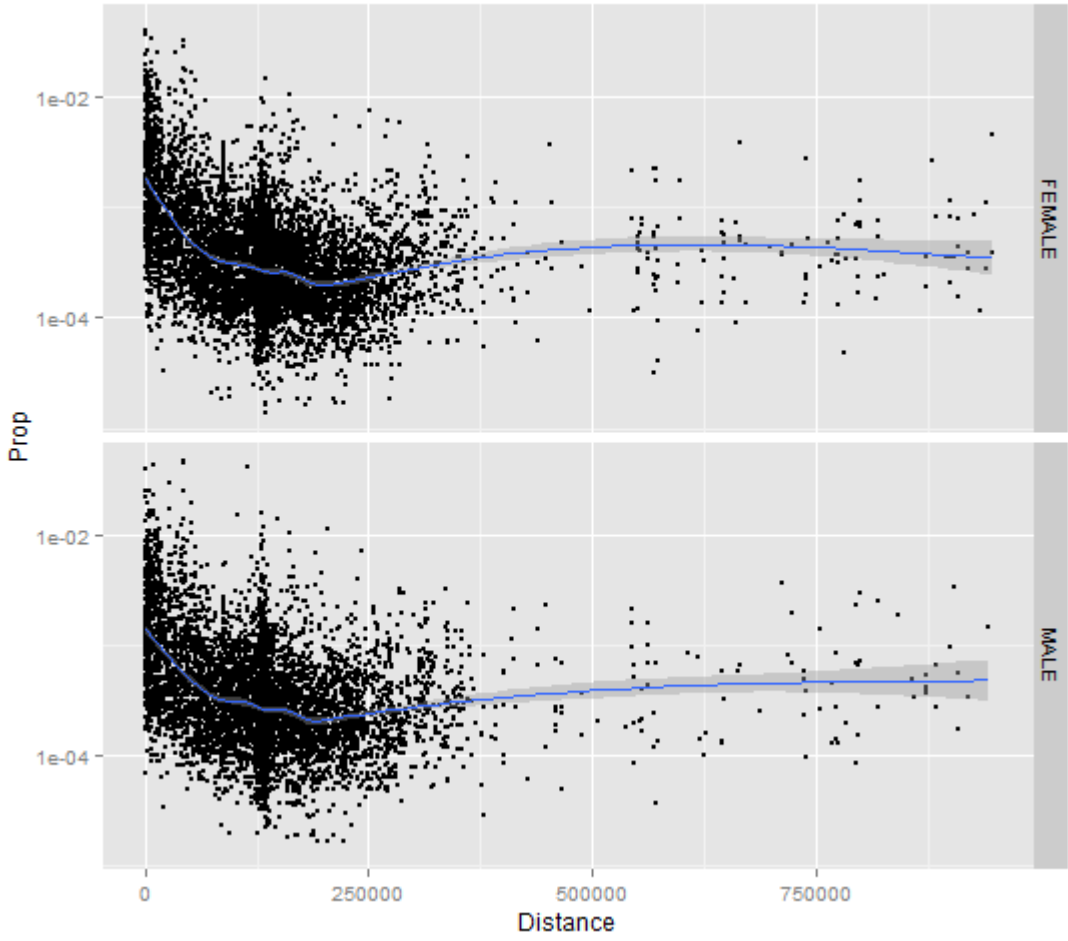
# Somalia



# Sudan



# Tanzania



# Uganda

