Table S1: Detailed summary of all the estimated parameters in the final model in section 3.1

| Model parameters                  | Baseline | Estimate (SD) | p value |
|-----------------------------------|----------|---------------|---------|
| **Fixed Effects**                 |          |               |         |
| Intercept                         | 300.0442 (5.4680) | 0.0000       |         |
| Indicator variable for spatial locations |          |               |         |
| SI                                | 56.9670 (1.0986) | 0.0000       |         |
| TI                                | 45.8307 (1.0986) | 0.0000       |         |
| II                                | 52.7216 (1.0986) | 0.0000       |         |
| NI                                | 59.5254 (1.0986) | 0.0000       |         |
| SO                                | 14.9707 (1.3451) | 0.0000       |         |
| TO                                | -3.0782 (1.2823) | 0.0165       |         |
| IO                                | 3.4038 (1.3136)  | 0.0096       |         |
| NO                                | 27.7981 (1.2823) | 0.0000       |         |
| **Diagnosis**                     |          |               |         |
| M1                                | 4.4969 (1.9584)  | 0.0235       |         |
| M0                                | -0.2678 (0.0965) | 0.0063       |         |
| **Age**                           |          |               |         |
| **Random effects**                |          |               |         |
| SD between individuals            | 16.0664  |               |         |
| SD between one individual’s two eyes | 7.9863  |               |         |
| **Spatial range**                 |          |               |         |
| Exponential correlation structure | 1.5081   |               |         |
| **Residuals**                     |          |               |         |
| SD                                | 22.5997  |               |         |
| **Heteroscedasticity scale among diagnosis group** |          |               |         |
| M1                                | 1.0000   |               |         |
| M0                                | 0.5792   |               |         |

Note that in this table, CS, SI, TI, II, NI, SO, TO, IO, NO represent the nine subfields in ETDRS grid (figure 1); M1, M0 represent maculopathy and no-maculopathy group, respectively; SD represents standard deviation.
Table S2: Detailed summary of all the estimated parameters in the final model in section 3.2

| Model parameters | Baseline | Estimate (SD) | p value |
|------------------|----------|---------------|---------|
| **Fixed Effects** |          |               |         |
| Intercept        |          | 295.7871 (4.1325) | 0.0000 |
| Indicator variable for spatial locations | CS | SI | 57.6132 (0.8545) | 0.0000 |
|                  |         | TI | 46.176 (0.8545)  | 0.0000 |
|                  |         | II | 53.3176 (0.8545) | 0.0000 |
|                  |         | NI | 60.4843 (0.8545) | 0.0000 |
|                  |         | SO | 14.8498 (1.0171) | 0.0000 |
|                  |         | TO | -2.9623 (0.9902)  | 0.0028 |
|                  |         | IO | 2.0268 (1.0041)   | 0.0436 |
|                  |         | NO | 28.8265 (0.9919)  | 0.0000 |
| Diagnosis        | M1 : M0 | 7.3989 (1.9293) | 0.0002 |
|                  | MH : M0 | -2.4351 (3.1261) | 0.4366 |
| Age              |          | -0.1984 (0.0727) | 0.0067 |
| Interaction term between spatial locations and diagnosis group | CS : M0 | SI : M1 | -4.7799 (2.1369) | 0.0253 |
|                  |         | TI : M1 | -5.1856 (2.1369) | 0.0153 |
|                  |         | II : M1 | -5.1748 (2.1369) | 0.0155 |
|                  |         | NI : M1 | -3.8509 (2.1369) | 0.0716 |
|                  |         | SO : M1 | -4.4757 (2.5294) | 0.0769 |
|                  |         | TO : M1 | -1.7996 (2.4763) | 0.4674 |
|                  |         | IO : M1 | -4.5821 (2.5092) | 0.0679 |
|                  |         | NO : M1 | -5.1170 (2.4770) | 0.0389 |
|                  |         | SI : MH | 6.2401 (1.5800) | 0.0001 |
|                  |         | TI : MH | 3.6781 (1.5800) | 0.0200 |
|                  |         | II : MH | 7.0782 (1.5800) | 0.0000 |
|                  |         | NI : MH | 5.4324 (1.5800) | 0.0006 |
|                  |         | SO : MH | 2.9523 (1.8456) | 0.1097 |
|                  |         | TO : MH | 2.9519 (1.8310) | 0.1070 |
|                  |         | IO : MH | 4.9837 (1.8385) | 0.0067 |
|                  |         | NO : MH | 6.1839 (1.8319) | 0.0007 |
| **Random effects** |          | SD between individuals | 18.3409 |
|                  |          | SD between one individual’s two eyes | 1.4544 |
| **Spatial range** |          | Exponential correlation structure | 1.4487 |
| **Residuals** |          | SD | 23.7962 |
| **Heteroscedasticity scale among diagnosis group** | M1 | 1.0000 |
|                  | M0 | 0.5369 |
|                  | MH | 0.4588 |

Note that in this table, CS, SI, TI, II, NI, SO, TO, IO, NO represent the nine subfields in ETDRS grid (figure 1); M1, M0, MH represent maculopathy, no-macularopathy and healthy group, respectively; SD represents standard deviation.