Results of logistic quadratic models

**Gain**

1. Scale=False

logist\_quad\_list <- map(rr\_points13, run\_logist\_regression, poly\_xy\_degree=2)

0 1

285195 396

0 1

281330 3889

0 1

281208 12

0 1

280849 1133

0 1

279229 1882

> tidy\_quad\_list

$`1987`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) 2.45e+4 2849. 8.59 8.45e- 18

2 aspect -2.08e-2 0.0318 -0.653 5.14e- 1

3 slope -1.81e+1 6.35 -2.86 4.28e- 3

4 prop\_erg\_nbrs 5.34e+0 0.262 20.3 5.54e- 92

5 prop\_veg\_nbrs 3.60e+0 0.160 22.5 6.94e-112

6 prop\_riveg\_nbrs -2.72e+0 0.916 -2.97 3.00e- 3

7 prop\_settle\_nbrs -9.04e+1 2770. -0.0326 9.74e- 1

8 prop\_agri\_nbrs -1.04e+2 18238. -0.00570 9.95e- 1

9 precipchange 9.94e+1 21.1 4.70 2.58e- 6

10 averagetemchange -7.62e+4 10062. -7.58 3.51e- 14

11 windchange 2.07e+4 4602. 4.49 7.09e- 6

12 poly(x, y, degree = poly\_xy\_degree)1.0 -2.05e+5 31535. -6.49 8.84e- 11

13 poly(x, y, degree = poly\_xy\_degree)2.0 -6.22e+4 7400. -8.40 4.43e- 17

14 poly(x, y, degree = poly\_xy\_degree)0.1 4.66e+5 63275. 7.36 1.83e- 13

15 poly(x, y, degree = poly\_xy\_degree)1.1 -1.86e+7 1740945. -10.7 1.02e- 26

16 poly(x, y, degree = poly\_xy\_degree)0.2 5.14e+3 2054. 2.50 1.24e- 2

$`1997`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -3483. 435. -8.00 1.25e- 15

2 aspect 0.0128 0.0111 1.14 2.52e- 1

3 slope 10.0 1.45 6.91 4.90e- 12

4 prop\_erg\_nbrs 6.97 0.138 50.4 0.

5 prop\_veg\_nbrs 7.15 0.114 62.8 0.

6 prop\_riveg\_nbrs 0.437 0.179 2.44 1.46e- 2

7 prop\_settle\_nbrs -84.8 1038. -0.0817 9.35e- 1

8 prop\_agri\_nbrs -89.9 6539. -0.0137 9.89e- 1

9 precipchange -27.8 0.608 -45.7 0.

10 averagetemchange -8334. 482. -17.3 4.25e- 67

11 windchange 3300. 1462. 2.26 2.40e- 2

12 poly(x, y, degree = poly\_xy\_degree)1.0 70578. 2306. 30.6 9.81e-206

13 poly(x, y, degree = poly\_xy\_degree)2.0 7879. 622. 12.7 9.75e- 37

14 poly(x, y, degree = poly\_xy\_degree)0.1 -99560. 5921. -16.8 1.88e- 63

15 poly(x, y, degree = poly\_xy\_degree)1.1 -617621. 56401. -11.0 6.61e- 28

16 poly(x, y, degree = poly\_xy\_degree)0.2 -1485. 274. -5.41 6.15e- 8

$`2003`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -2.45e+5 97939. -2.50 0.0124

2 aspect 1.80e-1 0.193 0.933 0.351

3 slope -6.47e+0 37.9 -0.171 0.865

4 prop\_erg\_nbrs 7.43e+0 1.35 5.49 0.0000000399

5 prop\_veg\_nbrs -5.15e+1 1280. -0.0403 0.968

6 prop\_riveg\_nbrs -7.85e+1 3320. -0.0236 0.981

7 prop\_settle\_nbrs -6.65e+0 2621. -0.00254 0.998

8 prop\_agri\_nbrs 1.36e+1 1489. 0.00915 0.993

9 precipchange 5.42e+2 237. 2.29 0.0220

10 averagetemchange -6.01e+5 253924. -2.37 0.0179

11 windchange 9.59e+4 41637. 2.30 0.0213

12 poly(x, y, degree = poly\_xy\_degree)1.0 -2.96e+6 1193163. -2.48 0.0133

13 poly(x, y, degree = poly\_xy\_degree)2.0 -6.95e+5 278144. -2.50 0.0124

14 poly(x, y, degree = poly\_xy\_degree)0.1 4.87e+6 2124004. 2.29 0.0217

15 poly(x, y, degree = poly\_xy\_degree)1.1 -2.57e+8 92125994. -2.79 0.00524

16 poly(x, y, degree = poly\_xy\_degree)0.2 -2.41e+4 51812. -0.464 0.642

$`2008`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -7007. 1470. -4.77 1.88e- 6

2 aspect -0.0138 0.0188 -0.735 4.62e- 1

3 slope 0.132 2.21 0.0596 9.52e- 1

4 prop\_erg\_nbrs 8.57 0.167 51.2 0.

5 prop\_veg\_nbrs 4.00 0.123 32.6 2.25e-233

6 prop\_riveg\_nbrs -0.364 0.509 -0.715 4.74e- 1

7 prop\_settle\_nbrs -1.89 0.809 -2.34 1.92e- 2

8 prop\_agri\_nbrs -64.2 1302. -0.0494 9.61e- 1

9 precipchange -15.1 3.01 -5.00 5.72e- 7

10 averagetemchange 10423. 2280. 4.57 4.84e- 6

11 windchange 5066. 929. 5.45 4.99e- 8

12 poly(x, y, degree = poly\_xy\_degree)1.0 39145. 11287. 3.47 5.24e- 4

13 poly(x, y, degree = poly\_xy\_degree)2.0 4947. 1050. 4.71 2.44e- 6

14 poly(x, y, degree = poly\_xy\_degree)0.1 -1883. 257. -7.32 2.47e- 13

15 poly(x, y, degree = poly\_xy\_degree)1.1 -487076. 56207. -8.67 4.49e- 18

16 poly(x, y, degree = poly\_xy\_degree)0.2 416. 282. 1.47 1.41e- 1

$`2014`

# A tibble: 17 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -4609. 372. -12.4 3.38e- 35

2 aspect -0.0537 0.0161 -3.33 8.75e- 4

3 slope -2.24 1.28 -1.76 7.92e- 2

4 prop\_erg\_nbrs 4.98 0.149 33.4 6.64e-245

5 prop\_build\_nbrs -7.57 0.811 -9.33 1.08e- 20

6 prop\_veg\_nbrs 1.53 0.172 8.93 4.17e- 19

7 prop\_riveg\_nbrs -1.45 0.309 -4.70 2.59e- 6

8 prop\_settle\_nbrs -3.31 0.383 -8.66 4.70e- 18

9 prop\_agri\_nbrs -56.2 952. -0.0591 9.53e- 1

10 precipchange 11.7 1.46 8.00 1.29e- 15

11 averagetemchange 9760. 935. 10.4 1.65e- 25

12 windchange 6283. 653. 9.62 6.80e- 22

13 poly(x, y, degree = poly\_xy\_degree)1.0 2596. 1755. 1.48 1.39e- 1

14 poly(x, y, degree = poly\_xy\_degree)2.0 7244. 845. 8.57 1.01e- 17

15 poly(x, y, degree = poly\_xy\_degree)0.1 -130091. 12396. -10.5 9.11e- 26

16 poly(x, y, degree = poly\_xy\_degree)1.1 -659101. 193254. -3.41 6.48e- 4

17 poly(x, y, degree = poly\_xy\_degree)0.2 -3113. 426. -7.31 2.73e- 13

**Loss**

1. Scale=False

> logist\_quad\_list\_lost <- map(rr\_points13, run\_logist\_regression, poly\_xy\_degree=2, direction = "loss")

0

17261

0 1

17664 17

0 1

20679 873

0 1

20524 169

0 1

20221 1443

> tidy\_quad\_list\_lost

$`1987`

# A tibble: 14 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -2.66e+ 1 62204815. -4.27e- 7 1.00

2 aspect -1.88e-14 1660. -1.14e-17 1

3 slope 6.90e-11 241207. 2.86e-16 1.00

4 prop\_erg\_nbrs -2.19e-12 17025. -1.28e-16 1.00

5 prop\_veg\_nbrs -1.72e-12 51484. -3.33e-17 1

6 prop\_riveg\_nbrs -1.69e-12 94028. -1.80e-17 1

7 precipchange -4.66e-11 719493. -6.47e-17 1

8 averagetemchange 1.46e- 8 154872990. 9.44e-17 1.00

9 windchange -9.68e- 9 159842740. -6.05e-17 1

10 poly(x, y, degree = poly\_xy\_degree)1.0 3.67e- 9 72692346. 5.05e-17 1

11 poly(x, y, degree = poly\_xy\_degree)2.0 3.29e- 9 33637578. 9.78e-17 1.00

12 poly(x, y, degree = poly\_xy\_degree)0.1 -1.92e- 8 202530222. -9.48e-17 1.00

13 poly(x, y, degree = poly\_xy\_degree)1.1 4.32e- 8 427206438. 1.01e-16 1.00

14 poly(x, y, degree = poly\_xy\_degree)0.2 -5.77e-10 5527304. -1.04e-16 1.00

$`1997`

# A tibble: 14 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) 1.97e18 10050284555. 195992025. 0

2 aspect -3.22e12 308573. -10441741. 0

3 slope 6.82e14 45139026. 15103849. 0

4 prop\_erg\_nbrs 1.02e15 3188565. 319690008. 0

5 prop\_veg\_nbrs 1.57e15 12237634. 128065598. 0

6 prop\_riveg\_nbrs -9.40e14 17179909. -54689814. 0

7 precipchange 8.51e14 10138377. 83959031. 0

8 averagetemchange -7.45e18 14916062739. -499690707. 0

9 windchange -1.14e18 32333833575. -35219919. 0

10 poly(x, y, degree = poly\_xy\_degree)1.0 7.95e18 12666278731. 627300368. 0

11 poly(x, y, degree = poly\_xy\_degree)2.0 2.80e18 6050664704. 462562475. 0

12 poly(x, y, degree = poly\_xy\_degree)0.1 -1.86e19 37068188455. -502212538. 0

13 poly(x, y, degree = poly\_xy\_degree)1.1 2.13e19 79100943207. 268822936. 0

14 poly(x, y, degree = poly\_xy\_degree)0.2 -5.78e17 1028276112. -562456678. 0

$`2003`

# A tibble: 15 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) 31659. 2654. 11.9 8.38e-33

2 aspect 0.0130 0.0220 0.592 5.54e- 1

3 slope 16.5 4.26 3.88 1.06e- 4

4 prop\_erg\_nbrs -3.27 0.186 -17.6 1.66e-69

5 prop\_veg\_nbrs -95.6 1652. -0.0579 9.54e- 1

6 prop\_riveg\_nbrs -1.48 0.709 -2.09 3.64e- 2

7 prop\_settle\_nbrs 1.82 1.09 1.67 9.47e- 2

8 precipchange -444. 31.8 -14.0 2.98e-44

9 averagetemchange -60868. 4261. -14.3 2.74e-46

10 windchange -75358. 5429. -13.9 8.18e-44

11 poly(x, y, degree = poly\_xy\_degree)1.0 18547. 3265. 5.68 1.34e- 8

12 poly(x, y, degree = poly\_xy\_degree)2.0 -24770. 1692. -14.6 1.65e-48

13 poly(x, y, degree = poly\_xy\_degree)0.1 126877. 8866. 14.3 1.89e-46

14 poly(x, y, degree = poly\_xy\_degree)1.1 -615659. 47780. -12.9 5.45e-38

15 poly(x, y, degree = poly\_xy\_degree)0.2 3668. 242. 15.2 4.30e-52

$`2008`

# A tibble: 15 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -455015. 138905. -3.28 1.05e- 3

2 aspect 0.138 0.0946 1.46 1.43e- 1

3 slope 5.01 28.3 0.177 8.59e- 1

4 prop\_erg\_nbrs -0.422 2.20 -0.192 8.48e- 1

5 prop\_veg\_nbrs -1.37 2.85 -0.482 6.30e- 1

6 prop\_riveg\_nbrs -96.7 44912. -0.00215 9.98e- 1

7 prop\_settle\_nbrs 60.5 52641. 0.00115 9.99e- 1

8 precipchange -6244. 866. -7.21 5.74e-13

9 averagetemchange -73355. 250768. -0.293 7.70e- 1

10 windchange 627416. 94531. 6.64 3.20e-11

11 poly(x, y, degree = poly\_xy\_degree)1.0 -2206308. 592668. -3.72 1.97e- 4

12 poly(x, y, degree = poly\_xy\_degree)2.0 -71597. 36661. -1.95 5.08e- 2

13 poly(x, y, degree = poly\_xy\_degree)0.1 68493. 11393. 6.01 1.83e- 9

14 poly(x, y, degree = poly\_xy\_degree)1.1 -44505211. 5750779. -7.74 1.00e-14

15 poly(x, y, degree = poly\_xy\_degree)0.2 -123840. 16428. -7.54 4.75e-14

$`2014`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) 4.87e18 3884415846. 1253995039. 0

2 aspect -1.06e13 272719. -38967667. 0

3 slope -6.43e14 41179501. -15625912. 0

4 prop\_erg\_nbrs 1.62e15 3385791. 478407983. 0

5 prop\_build\_nbrs 1.67e14 11575538. 14424962. 0

6 prop\_veg\_nbrs -4.97e15 13000508. -382244875. 0

7 prop\_riveg\_nbrs -4.48e15 14173927. -316114830. 0

8 prop\_settle\_nbrs -1.21e15 19225988. -63102205. 0

9 precipchange -1.32e16 11106033. -1187040255. 0

10 averagetemchange -1.22e19 8685453674. -1401599422. 0

11 windchange 6.75e17 10092269622. 66921205. 0

12 poly(x, y, degree = poly\_xy\_degree)1.0 5.35e18 10101268764. 530026477. 0

13 poly(x, y, degree = poly\_xy\_degree)2.0 -3.52e18 2732884456. -1289036127. 0

14 poly(x, y, degree = poly\_xy\_degree)0.1 3.89e19 27817019774. 1397375161. 0

15 poly(x, y, degree = poly\_xy\_degree)1.1 -5.95e19 65928679586. -901840509. 0

16 poly(x, y, degree = poly\_xy\_degree)0.2 1.27e18 1008861211. 1254095618. 0

**Gain**

1. Scale=True

> logist\_quad\_listS <- map(rr\_points13, ~run\_logist\_regression2(., poly\_xy\_degree=2))

0 1

285195 396

0 1

281330 3889

0 1

281208 12

0 1

280849 1133

0 1

279229 1882

> tidy\_quad\_listS

$`1987`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -6.07e+1 21.1 -2.87 4.08e- 3

2 aspect -7.15e-2 0.109 -0.653 5.14e- 1

3 slope -7.15e-1 0.250 -2.86 4.28e- 3

4 prop\_erg\_nbrs 5.12e-1 0.0252 20.3 5.54e- 92

5 prop\_veg\_nbrs 2.01e+0 0.0893 22.5 6.94e-112

6 prop\_riveg\_nbrs -1.40e+0 0.472 -2.97 3.00e- 3

7 prop\_settle\_nbrs -1.47e+1 452. -0.0326 9.74e- 1

8 prop\_agri\_nbrs -2.31e+0 405. -0.00570 9.95e- 1

9 precipchange 1.11e+3 235. 4.70 2.58e- 6

10 averagetemchange -2.15e+3 283. -7.58 3.51e- 14

11 windchange 9.53e+2 212. 4.49 7.09e- 6

12 poly(x, y, degree = poly\_xy\_degree)1.0 -2.05e+5 31535. -6.49 8.84e- 11

13 poly(x, y, degree = poly\_xy\_degree)2.0 -6.22e+4 7400. -8.40 4.43e- 17

14 poly(x, y, degree = poly\_xy\_degree)0.1 4.66e+5 63275. 7.36 1.83e- 13

15 poly(x, y, degree = poly\_xy\_degree)1.1 -1.86e+7 1740945. -10.7 1.02e- 26

16 poly(x, y, degree = poly\_xy\_degree)0.2 5.14e+3 2054. 2.50 1.24e- 2

$`1997`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -16.0 8.02 -1.99 4.64e- 2

2 aspect 0.0439 0.0383 1.14 2.52e- 1

3 slope 0.396 0.0573 6.91 4.90e- 12

4 prop\_erg\_nbrs 0.654 0.0130 50.4 0.

5 prop\_veg\_nbrs 3.97 0.0633 62.8 0.

6 prop\_riveg\_nbrs 0.223 0.0915 2.44 1.46e- 2

7 prop\_settle\_nbrs -14.1 173. -0.0817 9.35e- 1

8 prop\_agri\_nbrs -2.07 151. -0.0137 9.89e- 1

9 precipchange -128. 2.79 -45.7 0.

10 averagetemchange -437. 25.3 -17.3 4.25e- 67

11 windchange 13.9 6.17 2.26 2.40e- 2

12 poly(x, y, degree = poly\_xy\_degree)1.0 70578. 2306. 30.6 9.81e-206

13 poly(x, y, degree = poly\_xy\_degree)2.0 7879. 622. 12.7 9.75e- 37

14 poly(x, y, degree = poly\_xy\_degree)0.1 -99560. 5921. -16.8 1.88e- 63

15 poly(x, y, degree = poly\_xy\_degree)1.1 -617621. 56401. -11.0 6.61e- 28

16 poly(x, y, degree = poly\_xy\_degree)0.2 -1485. 274. -5.41 6.15e- 8

$`2003`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -1.07e+3 418. -2.56 0.0106

2 aspect 6.20e-1 0.664 0.933 0.351

3 slope -2.56e-1 1.50 -0.171 0.865

4 prop\_erg\_nbrs 6.88e-1 0.125 5.49 0.0000000399

5 prop\_veg\_nbrs -2.51e+1 624. -0.0403 0.968

6 prop\_riveg\_nbrs -3.17e+1 1338. -0.0236 0.981

7 prop\_settle\_nbrs -1.22e+0 480. -0.00254 0.998

8 prop\_agri\_nbrs 3.77e-1 41.3 0.00915 0.993

9 precipchange 4.93e+3 2153. 2.29 0.0220

10 averagetemchange -2.33e+4 9862. -2.37 0.0179

11 windchange 4.01e+3 1743. 2.30 0.0213

12 poly(x, y, degree = poly\_xy\_degree)1.0 -2.96e+6 1193163. -2.48 0.0133

13 poly(x, y, degree = poly\_xy\_degree)2.0 -6.95e+5 278144. -2.50 0.0124

14 poly(x, y, degree = poly\_xy\_degree)0.1 4.87e+6 2124004. 2.29 0.0217

15 poly(x, y, degree = poly\_xy\_degree)1.1 -2.57e+8 92125998. -2.79 0.00524

16 poly(x, y, degree = poly\_xy\_degree)0.2 -2.41e+4 51812. -0.464 0.642

$`2008`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -10.6 12.9 -0.825 4.09e- 1

2 aspect -0.0474 0.0646 -0.735 4.62e- 1

3 slope 0.00522 0.0875 0.0596 9.52e- 1

4 prop\_erg\_nbrs 0.781 0.0152 51.2 0.

5 prop\_veg\_nbrs 2.18 0.0667 32.6 2.25e-233

6 prop\_riveg\_nbrs -0.171 0.239 -0.715 4.74e- 1

7 prop\_settle\_nbrs -0.383 0.164 -2.34 1.92e- 2

8 prop\_agri\_nbrs -12.0 243. -0.0494 9.61e- 1

9 precipchange -25.0 5.00 -5.00 5.72e- 7

10 averagetemchange 384. 83.9 4.57 4.84e- 6

11 windchange 252. 46.3 5.45 4.99e- 8

12 poly(x, y, degree = poly\_xy\_degree)1.0 39145. 11287. 3.47 5.24e- 4

13 poly(x, y, degree = poly\_xy\_degree)2.0 4947. 1050. 4.71 2.44e- 6

14 poly(x, y, degree = poly\_xy\_degree)0.1 -1883. 257. -7.32 2.47e- 13

15 poly(x, y, degree = poly\_xy\_degree)1.1 -487076. 56207. -8.67 4.49e- 18

16 poly(x, y, degree = poly\_xy\_degree)0.2 416. 282. 1.47 1.41e- 1

$`2014`

# A tibble: 17 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -27.7 98.3 -0.282 7.78e- 1

2 aspect -0.184 0.0554 -3.33 8.75e- 4

3 slope -0.0887 0.0505 -1.76 7.92e- 2

4 prop\_erg\_nbrs 0.461 0.0138 33.4 6.64e-245

5 prop\_build\_nbrs -0.781 0.0837 -9.33 1.08e- 20

6 prop\_veg\_nbrs 0.681 0.0763 8.93 4.17e- 19

7 prop\_riveg\_nbrs -0.672 0.143 -4.70 2.59e- 6

8 prop\_settle\_nbrs -0.710 0.0819 -8.66 4.70e- 18

9 prop\_agri\_nbrs -33.3 564. -0.0591 9.53e- 1

10 precipchange 176. 22.0 8.00 1.29e- 15

11 averagetemchange 519. 49.8 10.4 1.65e- 25

12 windchange 30.3 3.15 9.62 6.80e- 22

13 poly(x, y, degree = poly\_xy\_degree)1.0 2596. 1755. 1.48 1.39e- 1

14 poly(x, y, degree = poly\_xy\_degree)2.0 7244. 845. 8.57 1.01e- 17

15 poly(x, y, degree = poly\_xy\_degree)0.1 -130091. 12396. -10.5 9.11e- 26

16 poly(x, y, degree = poly\_xy\_degree)1.1 -659101. 193254. -3.41 6.48e- 4

17 poly(x, y, degree = poly\_xy\_degree)0.2 -3113. 426. -7.31 2.73e- 13

**Loss**

1. Scale=True

> logist\_quad\_list\_lostS <- map(rr\_points13, run\_logist\_regression2,poly\_xy\_degree=2,direction="loss")

0

17261

0 1

17664 17

0 1

20679 873

0 1

20524 169

0 1

20221 1443

> tidy\_quad\_list\_lostS

$`1987`

# A tibble: 14 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -2.66e+ 1 19353. -1.37e- 3 0.999

2 aspect 4.74e-15 5429. 8.74e-19 1

3 slope -1.39e-13 6019. -2.32e-17 1

4 prop\_erg\_nbrs 6.56e-14 5910. 1.11e-17 1

5 prop\_veg\_nbrs 1.79e-14 5794. 3.09e-18 1

6 prop\_riveg\_nbrs 7.53e-15 5516. 1.37e-18 1

7 precipchange 4.65e-11 8856699. 5.25e-18 1

8 averagetemchange -3.17e-11 4244712. -7.48e-18 1

9 windchange 3.99e-11 8113920. 4.91e-18 1

10 poly(x, y, degree = poly\_xy\_degree)1.0 -2.84e-10 72692346. -3.90e-18 1

11 poly(x, y, degree = poly\_xy\_degree)2.0 -2.61e-10 33637578. -7.75e-18 1

12 poly(x, y, degree = poly\_xy\_degree)0.1 1.52e- 9 202530222. 7.50e-18 1

13 poly(x, y, degree = poly\_xy\_degree)1.1 -3.40e- 9 427206438. -7.97e-18 1

14 poly(x, y, degree = poly\_xy\_degree)0.2 4.58e-11 5527304. 8.29e-18 1

$`1997`

# A tibble: 14 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -4.92e14 3504594. -140382941. 0

2 aspect -1.14e13 1010544. -11265759. 0

3 slope 1.74e13 1122441. 15520807. 0

4 prop\_erg\_nbrs 3.46e14 1081049. 320175503. 0

5 prop\_veg\_nbrs 1.36e14 1058159. 128231110. 0

6 prop\_riveg\_nbrs -5.61e13 1027859. -54585646. 0

7 precipchange 4.28e15 51120477. 83735873. 0

8 averagetemchange -3.72e17 746379406. -498649336. 0

9 windchange -5.43e15 153248506. -35460492. 0

10 poly(x, y, degree = poly\_xy\_degree)1.0 7.93e18 12666278731. 626224177. 0

11 poly(x, y, degree = poly\_xy\_degree)2.0 2.79e18 6050664704. 461556107. 0

12 poly(x, y, degree = poly\_xy\_degree)0.1 -1.86e19 37068188455. -501170287. 0

13 poly(x, y, degree = poly\_xy\_degree)1.1 2.12e19 79100943206. 267711250. 0

14 poly(x, y, degree = poly\_xy\_degree)0.2 -5.77e17 1028276112. -561506661. 0

$`2003`

# A tibble: 15 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -32.3 2.21 -14.6 1.70e-48

2 aspect 0.0437 0.0738 0.592 5.54e- 1

3 slope 0.410 0.106 3.88 1.06e- 4

4 prop\_erg\_nbrs -0.992 0.0563 -17.6 1.66e-69

5 prop\_veg\_nbrs -0.815 14.1 -0.0579 9.54e- 1

6 prop\_riveg\_nbrs -0.0840 0.0401 -2.09 3.64e- 2

7 prop\_settle\_nbrs 0.0568 0.0340 1.67 9.47e- 2

8 precipchange -4716. 338. -14.0 2.98e-44

9 averagetemchange -2368. 166. -14.3 2.74e-46

10 windchange -3663. 264. -13.9 8.18e-44

11 poly(x, y, degree = poly\_xy\_degree)1.0 18547. 3265. 5.68 1.34e- 8

12 poly(x, y, degree = poly\_xy\_degree)2.0 -24770. 1692. -14.6 1.65e-48

13 poly(x, y, degree = poly\_xy\_degree)0.1 126877. 8866. 14.3 1.89e-46

14 poly(x, y, degree = poly\_xy\_degree)1.1 -615659. 47780. -12.9 5.45e-38

15 poly(x, y, degree = poly\_xy\_degree)0.2 3668. 242. 15.2 4.30e-52

$`2008`

# A tibble: 15 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -2365. 323. -7.33 2.39e-13

2 aspect 0.464 0.317 1.46 1.43e- 1

3 slope 0.122 0.690 0.177 8.59e- 1

4 prop\_erg\_nbrs -0.129 0.671 -0.192 8.48e- 1

5 prop\_veg\_nbrs -0.147 0.305 -0.482 6.30e- 1

6 prop\_riveg\_nbrs -5.77 2682. -0.00215 9.98e- 1

7 prop\_settle\_nbrs 2.11 1835. 0.00115 9.99e- 1

8 precipchange -10533. 1462. -7.21 5.74e-13

9 averagetemchange -3090. 10563. -0.293 7.70e- 1

10 windchange 36782. 5542. 6.64 3.20e-11

11 poly(x, y, degree = poly\_xy\_degree)1.0 -2206308. 592668. -3.72 1.97e- 4

12 poly(x, y, degree = poly\_xy\_degree)2.0 -71597. 36661. -1.95 5.08e- 2

13 poly(x, y, degree = poly\_xy\_degree)0.1 68493. 11393. 6.01 1.83e- 9

14 poly(x, y, degree = poly\_xy\_degree)1.1 -44505211. 5750779. -7.74 1.00e-14

15 poly(x, y, degree = poly\_xy\_degree)0.2 -123840. 16428. -7.54 4.75e-14

$`2014`

# A tibble: 16 x 5

term estimate std.error statistic p.value

*<chr>* *<dbl>* *<dbl>* *<dbl>* *<dbl>*

1 (Intercept) -3.98e15 2467579. -1612392706. 0

2 aspect -3.57e13 917128. -38967667. 0

3 slope -1.58e13 1010719. -15625913. 0

4 prop\_erg\_nbrs 4.85e14 1014527. 478407983. 0

5 prop\_build\_nbrs 1.50e13 1039221. 14424962. 0

6 prop\_veg\_nbrs -3.64e14 952802. -382244875. 0

7 prop\_riveg\_nbrs -2.98e14 942600. -316114845. 0

8 prop\_settle\_nbrs -5.97e13 945983. -63102205. 0

9 precipchange -2.31e17 194183839. -1187040255. 0

10 averagetemchange -3.24e17 231488061. -1401599424. 0

11 windchange 2.95e15 44139105. 66921203. 0

12 poly(x, y, degree = poly\_xy\_degree)1.0 5.35e18 10101268764. 530026478. 0

13 poly(x, y, degree = poly\_xy\_degree)2.0 -3.52e18 2732884456. -1289036129. 0

14 poly(x, y, degree = poly\_xy\_degree)0.1 3.89e19 27817019774. 1397375162. 0

15 poly(x, y, degree = poly\_xy\_degree)1.1 -5.95e19 65928679586. -901840509. 0

16 poly(x, y, degree = poly\_xy\_degree)0.2 1.27e18 1008861211. 1254095618. 0