

## Supplementary Information

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**Supplementary Note 1.** Model specifications for candidate counterfactual models.

To predict the number of monthly patients expected for each diagnosis entity, ten candidate predictive generalized linear models (GLMs) were specified based on various combinations of terms for seasonality and yearly trend:

1.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)]$
2.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{3} + \beta_3 \cos \frac{2\pi t}{3}$
3.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{12} + \beta_3 \cos \frac{2\pi t}{12}$
4.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{6} + \beta_3 \cos \frac{2\pi t}{6}$
5.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{6} + \beta_3 \cos \frac{2\pi t}{6} + \beta_4 \sin \frac{2\pi t}{12} + \beta_5 \cos \frac{2\pi t}{12}$
6.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{6} + \beta_3 \cos \frac{2\pi t}{6} + \beta_4 \sin \frac{2\pi t}{3} + \beta_5 \cos \frac{2\pi t}{3}$
7.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{12} + \beta_3 \cos \frac{2\pi t}{12} + \beta_4 \sin \frac{2\pi t}{3} + \beta_5 \cos \frac{2\pi t}{3}$
8.  $Y_t \sim \beta_0 + \beta_1 \times year + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_2 \sin \frac{2\pi t}{3} + \beta_3 \cos \frac{2\pi t}{3} + \beta_4 \sin \frac{2\pi t}{6} + \beta_5 \cos \frac{2\pi t}{6} + \beta_6 \sin \frac{2\pi t}{12} + \beta_7 \cos \frac{2\pi t}{12}$
9.  $Y_t \sim \beta_0 + \beta_1 \times year + \beta_2 \sin \frac{2\pi t}{3} + \beta_3 \cos \frac{2\pi t}{3} + \beta_4 \sin \frac{2\pi t}{6} + \beta_5 \cos \frac{2\pi t}{6} + \beta_6 \sin \frac{2\pi t}{12} + \beta_7 \cos \frac{2\pi t}{12}$
10.  $Y_t \sim \beta_0 + \sum_{i=1}^{11} [\alpha_i \times I(month_i)] + \beta_1 \sin \frac{2\pi t}{3} + \beta_2 \cos \frac{2\pi t}{3} + \beta_3 \sin \frac{2\pi t}{6} + \beta_4 \cos \frac{2\pi t}{6} + \beta_5 \sin \frac{2\pi t}{12} + \beta_6 \cos \frac{2\pi t}{12}$

where:

$Y_t$  = number of patients reported with the diagnosis entity in month  $t$  since January 2017,  
for  $t \in (1, 2, \dots, 36)$

$year$  = continuous term on year

$I(month_i)$  = indicator of calendar month

All candidate counterfactual models initially assumed conditionally Poisson-distributed outcomes.

## **Supplementary Note 2.** Adjusting for overdispersion in Poisson GLMs.

An assumption of the Poisson generalized linear model (GLM) is that the variance of the data equals the mean; but in reality, the data often exhibit greater variability than its mean.<sup>1</sup> This phenomenon is known as overdispersion, and is commonly accounted for using one of two models closely related to the Poisson GLM: the negative binomial (NB) or the quasi-Poisson (QP) regression model. For the NB model, variance is quadratically related to the mean; whereas for the QP model, the variance is a linear function of the mean.<sup>2</sup>

Before undertaking steps to decide between the NB or QP model, we first conducted a two-sided dispersion test<sup>3</sup> to detect whether the data were overdispersed with statistical significance ( $\alpha = 0.05$ ). For diagnosis entities that were not overdispersed (**Supplementary Data 2**), we retained the mean predictions and standard error estimates from the initial Poisson GLM to establish the counterfactual expectations, and 95% prediction intervals associated with them.

For diagnosis entities that were overdispersed (**Supplementary Data 2**), to decide whether a NB or QP model would be more appropriate to adjust for overdispersion, we examined whether the residuals and their predictions varied quadratically or linearly. That is, following the recommendations of Ver Hoef and Boveng,<sup>2</sup> we regressed the squared predicted values and the predicted values against the residuals. If the regression with the quadratic term had a lower Akaike Information Criterion (AIC) than the regression with the linear term, we used a NB model; otherwise, we used a QP model to adjust for overdispersion.

**Supplementary Note 3.** Description and results of sensitivity analyses.

We performed sensitivity analyses to demonstrate no major changes in primary outcomes (the average deviations across all diagnosis entities at various time points) across different counterfactual model performance thresholds (minimum RMSPE cutoffs) or sets of inclusion criteria applied to determine which records or patients were eligible for inclusion in the study.

Across various combinations of inclusion criteria, we also found that requiring that (a) patients have a physician encounter (defined as having a valid procedure, ocular exam result, or visit record on the same date as that of the diagnosis documentation) documented on the same date of diagnosis documentation, *and* (b) excluding practices that did not contribute data for each month in the global study period, yielded the lowest counterfactual model errors. The final sets of inclusion and model performance criteria used for this study are highlighted in yellow.

| Inclusion Criteria  |                                      | Model Performance Criteria<br>(maximum allowable error, i.e., RMSPE) | Mean (SD) Deviations Across All Diagnosis Entities |   | Final Number of Diagnosis Entities Included |
|---------------------|--------------------------------------|--|--|---|---|
| (a): same-day visit | (b): complete data for all practices |  | April 2020   | Post-Hiatus (June 2020 - December 2021) |   |
| FALSE               | FALSE                                | 12.5%  | -0.676 (0.128)                                     | -0.148 (0.100)                          | 249   |
| FALSE               | FALSE                                | 10.0%  | -0.680 (0.123)                                     | -0.152 (0.075)                          | 218   |
| TRUE                | FALSE                                | 12.5%  | -0.682 (0.126)                                     | -0.146 (0.098)                          | 248   |
| TRUE                | FALSE                                | 10.0%  | -0.689 (0.122)                                     | -0.149 (0.073)                          | 218   |
| TRUE                | TRUE                                 | 12.5%  | -0.665 (0.138)                                     | -0.128 (0.088)                          | 261   |
| TRUE                | TRUE                                 | 10.0%  | -0.670 (0.136)                                     | -0.133 (0.068)                          | 224   |

| Inclusion Criteria  |                                      | Mean (SD) Counterfactual Model Error (RMSPE) |
|---------------------|--------------------------------------|--|
| (a): same-day visit | (b): complete data for all practices |  |
| FALSE               | FALSE                                | 10.8% (8.0%)                                 |
| TRUE                | FALSE                                | 10.7% (8.0%)                                 |
| TRUE                | TRUE                                 | 10.3% (7.3%)                                 |

#### Supplementary Note 4. Construction of diagnosis entities and categories.

To construct an inventory of clinically meaningful diagnosis entities to study, we adapted and refined existing categorizations of *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) codes organized by the US Agency for Healthcare Research and Quality Clinical Classifications Software Refined (CCSR) database, version 2020.2 ([https://hcup-us.ahrq.gov/toolssoftware/ccsr/ccsr\\_archive.jsp#ccsr](https://hcup-us.ahrq.gov/toolssoftware/ccsr/ccsr_archive.jsp#ccsr)). The full CCSR database contains groupings of more than 70,000 ICD-10-CM diagnosis codes into over 530 clinically meaningful categories; but for this study, we only considered ICD-10-CM codes that describe eye diseases and conditions by first examining the diagnosis codes attributed to the following 12 CCSR categories:

|        |  |
|--------|--|
| EYE001 | Cornea and external disease                      |
| EYE002 | Cataract and other lens disorders                |
| EYE003 | Glaucoma   |
| EYE004 | Uveitis and ocular inflammation                  |
| EYE005 | Retinal and vitreous conditions                  |
| EYE006 | Neuro-ophthalmology                              |
| EYE007 | Strabismus                                       |
| EYE008 | Oculofacial plastics and orbital conditions      |
| EYE009 | Refractive error                                 |
| EYE010 | Blindness and vision defects                     |
| EYE011 | Postprocedural or postoperative eye complication |
| EYE012 | Other specified eye disorders                    |

These CCSR categories are identical to 12 (out of 13 total) diagnosis categories used in this study; however, we created an additional diagnosis category of “ocular globe injuries/intraocular foreign bodies” (OGI/IOFB) to capture some eye injury diagnosis codes that were originally assigned to different (non-ophthalmic) categories of the CCSR than the ones listed above, as well as diagnosis codes that indicate the presence of a foreign body in the eye, which were previously assigned by the CCSR into the “Other specified eye disorders” (EYE012) category.

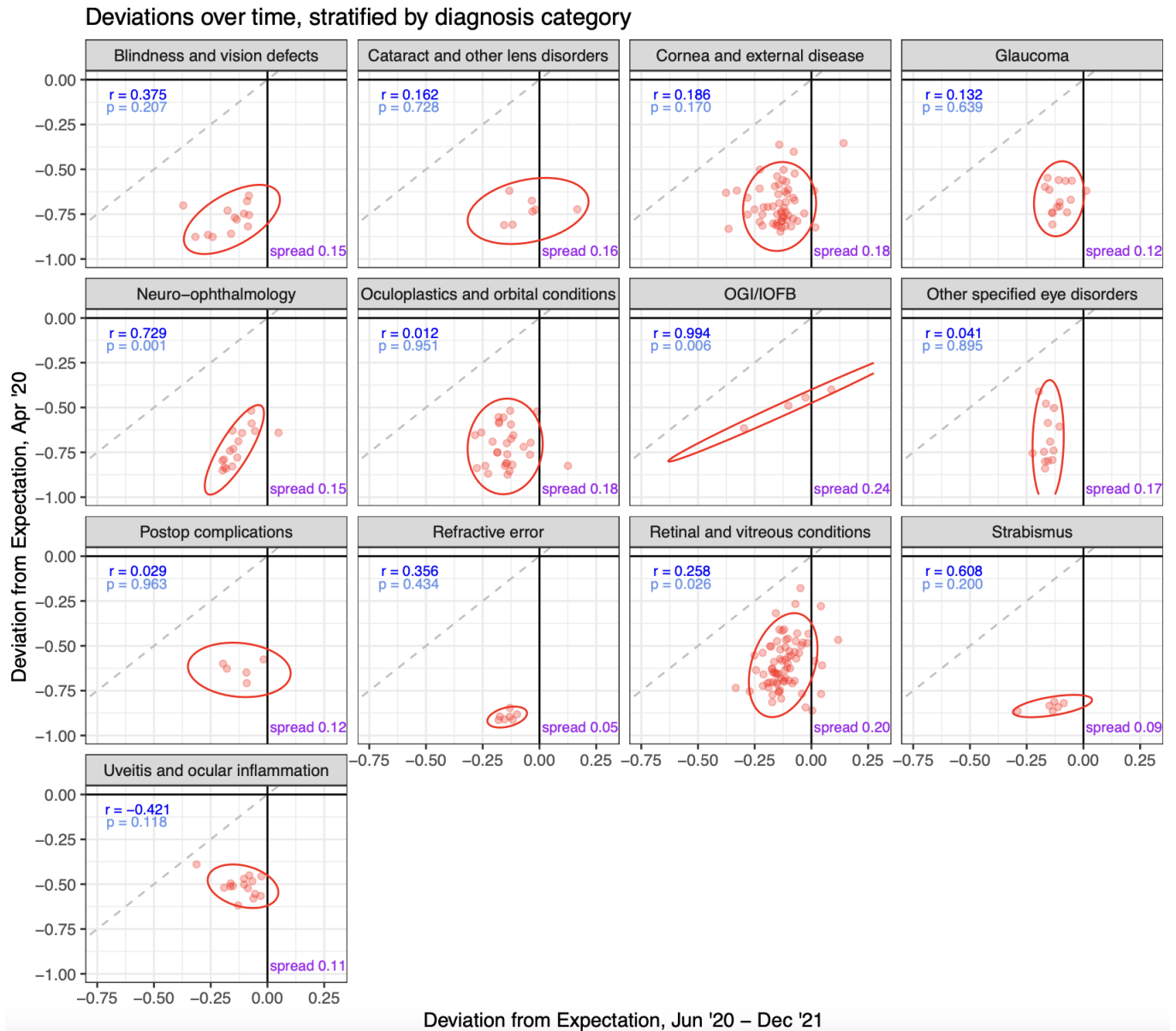
Because this study relied on a finer level of informational granularity about diagnoses than that provided by the broader categorizations of the CCSR, we further grouped the ICD-10-CM codes within each diagnosis category into clinically relevant diagnosis entities. The development and refinement of these entities were undertaken in consultation with board-certified ophthalmologists and clinical experts, and were guided by key principles and considerations:

- *Clinical Relevance.* We aimed to construct diagnosis entities that provided adequate granularity (e.g., allowing differentiation between less and more severe or urgent forms of the same disease) while minimizing redundancy (e.g., avoiding separate groupings for numerous types of clinically similar conditions). For instance, diabetic retinopathy (DR) is a disease that has many subtypes, represented by a wide array of ICD-10 codes that

encode various stages, manifestations, and etiologies. However, the most clinically relevant distinction that would influence the treatment or prognosis of DR is whether diabetic macular edema (DME) is present. Thus, instead of constructing a single coarse entity of “diabetic retinopathy” or several different diagnosis entities for all DR subtypes, we created four diagnosis entities that were most clinically relevant: non-proliferative DR without DME, non-proliferative DR with DME, proliferative DR without DME, proliferative DR with DME.

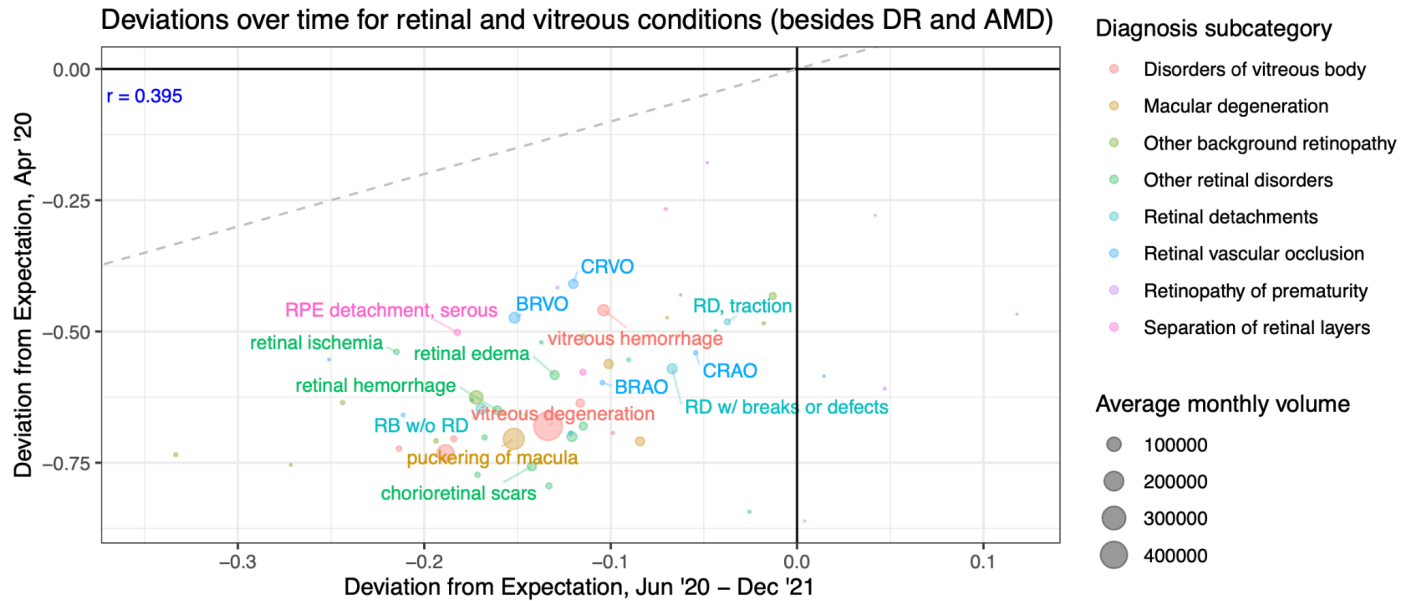
- *Sufficient Utilization Level.* Each diagnosis entity was required to have above single-digit patient counts for each month of our study period from January 2017 to December 2021, to avoid including conditions that were too rare to the point of introducing instability or noise into our analysis.
- *Mutually Exclusive Assignment to Diagnosis Categories.* To provide a precise framework for analysis, each ICD-10-CM code was mapped to exactly one diagnosis entity, and each diagnosis entity was mapped to exactly one diagnosis category. Unlike v2020.2 of the CCSR, which allows for individual ICD-10-CM codes to be mapped to more than one category, we adopted a mutually exclusive categorization scheme to ensure clarity in the interpretation of data by avoiding overlapping categorizations that can make comparisons across categories less meaningful. If an ICD-10-CM code was originally assigned to more than one category in the CCSR, its assignment to a single category for this study was made based on a consideration of its primary clinical significance.

**Supplementary Figure 1.** Hiatus vs. post-hiatus deviations for each diagnosis category.



Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for all diagnosis entities (red points) that belong to each diagnosis category. 95% normal data ellipses (red ovals) represent estimated probability contours expected to contain 95% of all plotted diagnosis entities within each category, and a line of equality (dashed gray line) represents no change in deviations over time (i.e., deviations during April 2020 are equal to the average post-hiatus deviations). For the distribution of points within each category, a Pearson's product moment correlation coefficient ( $r$ ) is reported in the upper left corner along with its  $p$ -value, as well as the average of all pairwise Euclidean distances between points in the distribution (*spread*; lower right corner). *Abbreviations:* OGI/IOFB = ocular globe injury/intraocular foreign body.

**Supplementary Figure 2.** Hiatus vs. post-hiatus deviations for retinal conditions (besides DR and AMD).

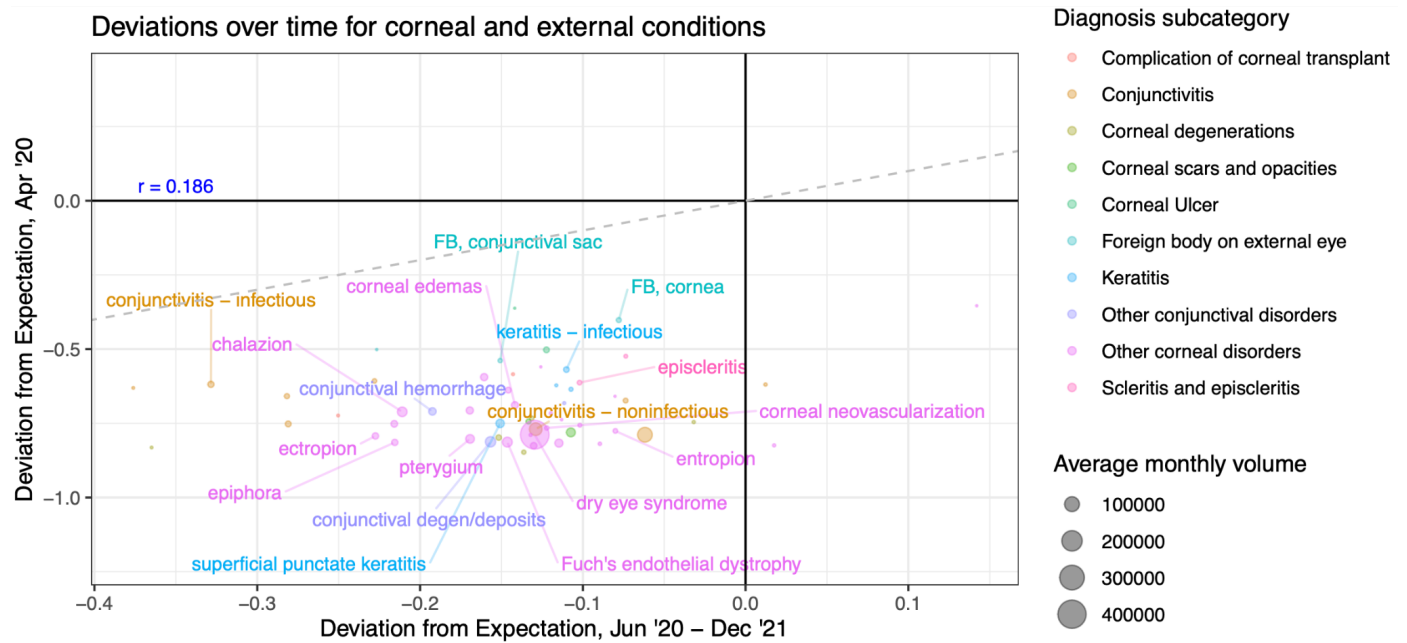


Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for diagnosis entities that correspond to retinal and vitreous conditions aside from the diagnoses of diabetic retinopathy (DR) and age-related macular degeneration (AMD) that are plotted in **Figure 3**. The size of each point corresponds to the average number of monthly patients for the diagnosis entity. Points were selectively labeled based on relevance (e.g., we excluded labels of diagnosis entities whose names contain key words like *other* or *unspecified*). A Pearson's product moment correlation coefficient ( $r$ ) is reported for the distribution of points in each plot (blue text; upper left corner), and a line of equality (dashed gray line) represents no change in deviations over time.

**Abbreviations:** CRVO = central retinal vein occlusion; BRVO = branch retinal vein occlusion; RD = retinal detachment; RPE = retinal pigment epithelium; RB = retinal break.

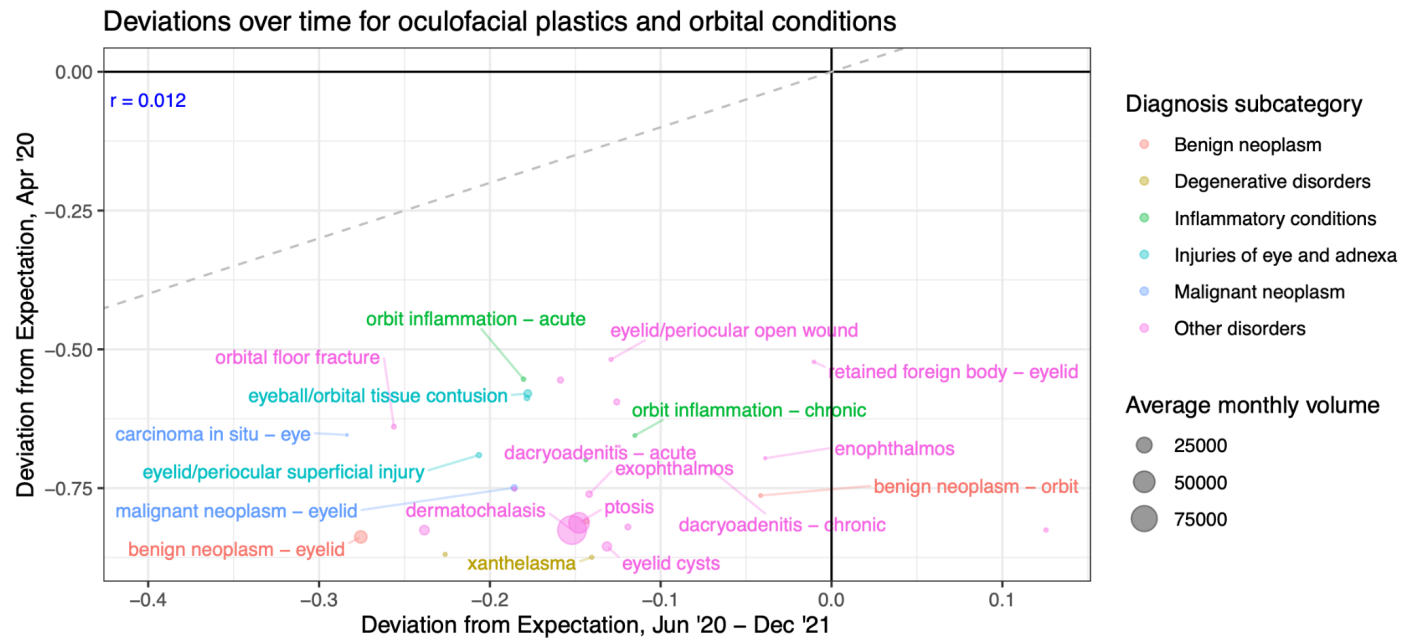


**Supplementary Figure 3.** Hiatus vs. post-hiatus deviations for corneal and external conditions.



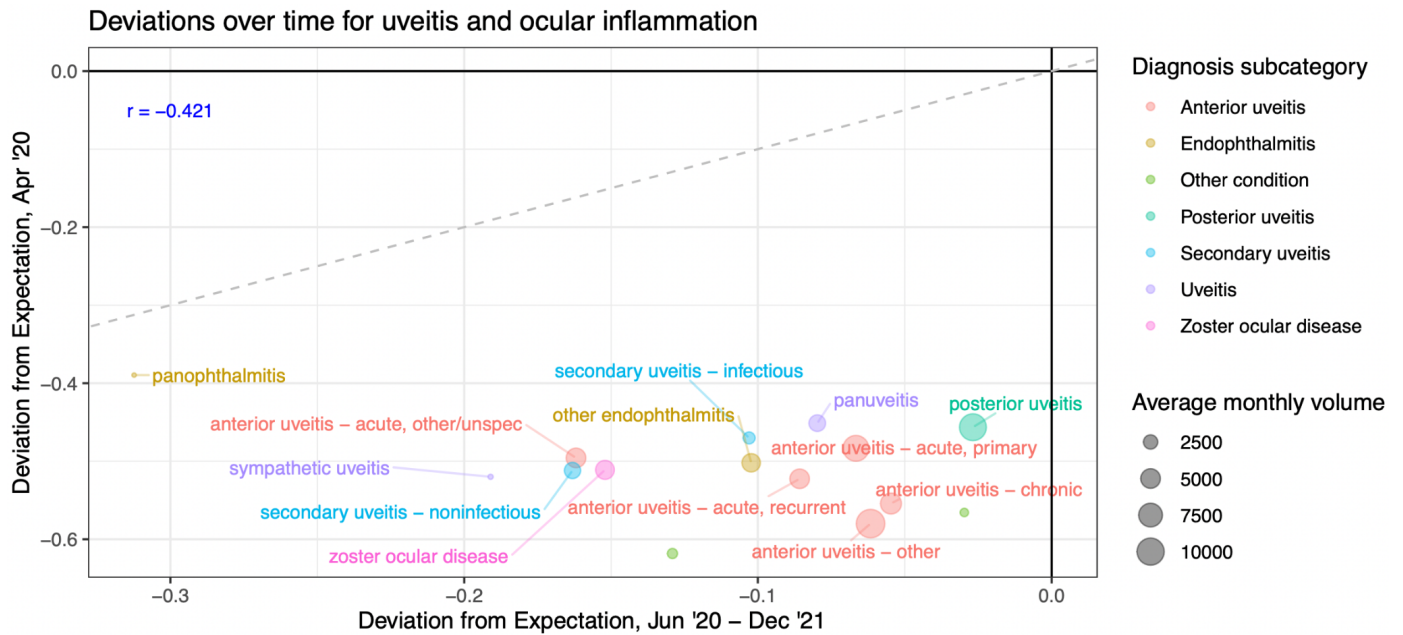
Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for diagnosis entities that correspond to corneal and external conditions. The size of each point corresponds to the average number of monthly patients for the diagnosis entity. Points were selectively labeled based on relevance (e.g., we excluded labels of diagnosis entities whose names contain key words like *other* or *unspecified*). A Pearson's product moment correlation coefficient ( $r$ ) is reported for the distribution of points in each plot (blue text; upper left corner), and a line of equality (dashed gray line) represents no change in deviations over time. *Abbreviations*: FB = foreign body.

**Supplementary Figure 4.** Hiatus vs. post-hiatus deviations for oculo-facial plastics and orbital conditions.



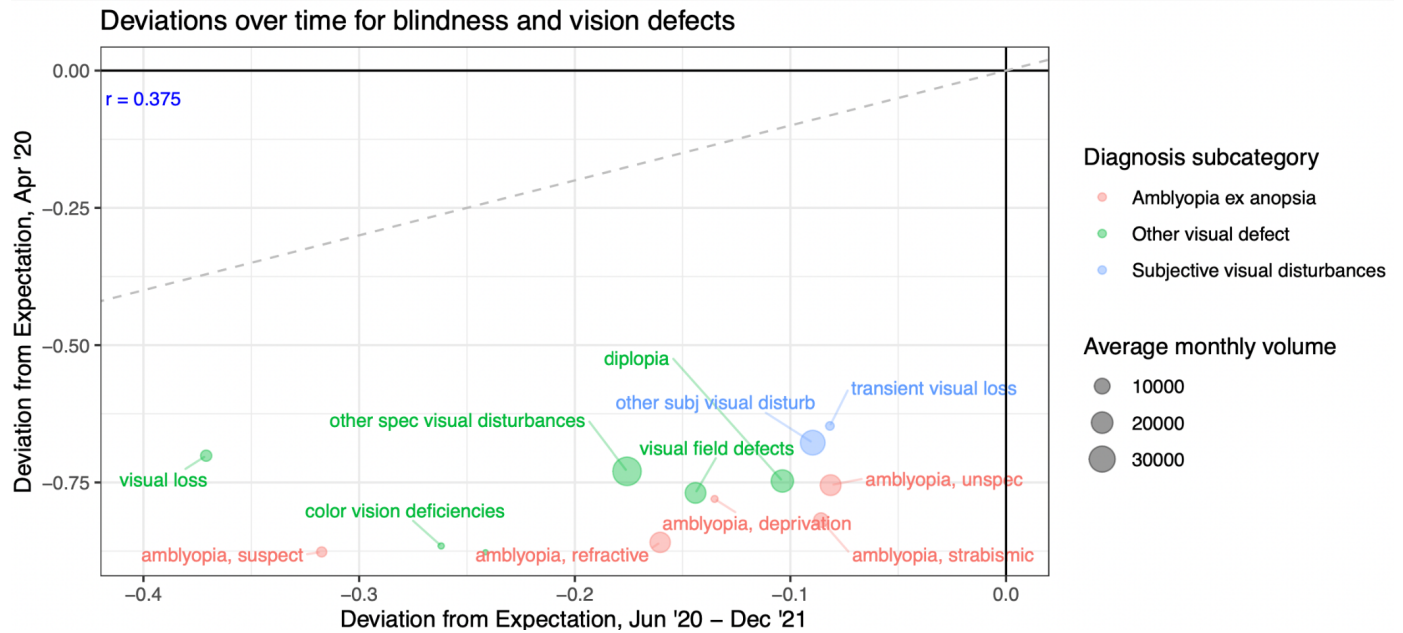
Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for diagnosis entities that correspond to oculo-facial plastics and orbital conditions. The size of each point corresponds to the average number of monthly patients for the diagnosis entity. Points were selectively labeled based on relevance (e.g., we excluded labels of diagnosis entities whose names contain key words like *other* or *unspecified*). A Pearson's product moment correlation coefficient ( $r$ ) is reported for the distribution of points in each plot (blue text; upper left corner), and a line of equality (dashed gray line) represents no change in deviations over time.

**Supplementary Figure 5.** Hiatus vs. post-hiatus deviations for uveitis and ocular inflammation.



Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for diagnosis entities that correspond to diagnoses of uveitis and ocular inflammation. The size of each point corresponds to the average number of monthly patients for the diagnosis entity. Points were selectively labeled based on relevance (e.g., we excluded labels of diagnosis entities whose names contain key words like *other* or *unspecified*). A Pearson's product moment correlation coefficient ( $r$ ) is reported for the distribution of points in each plot (blue text; upper left corner), and a line of equality (dashed gray line) represents no change in deviations over time.

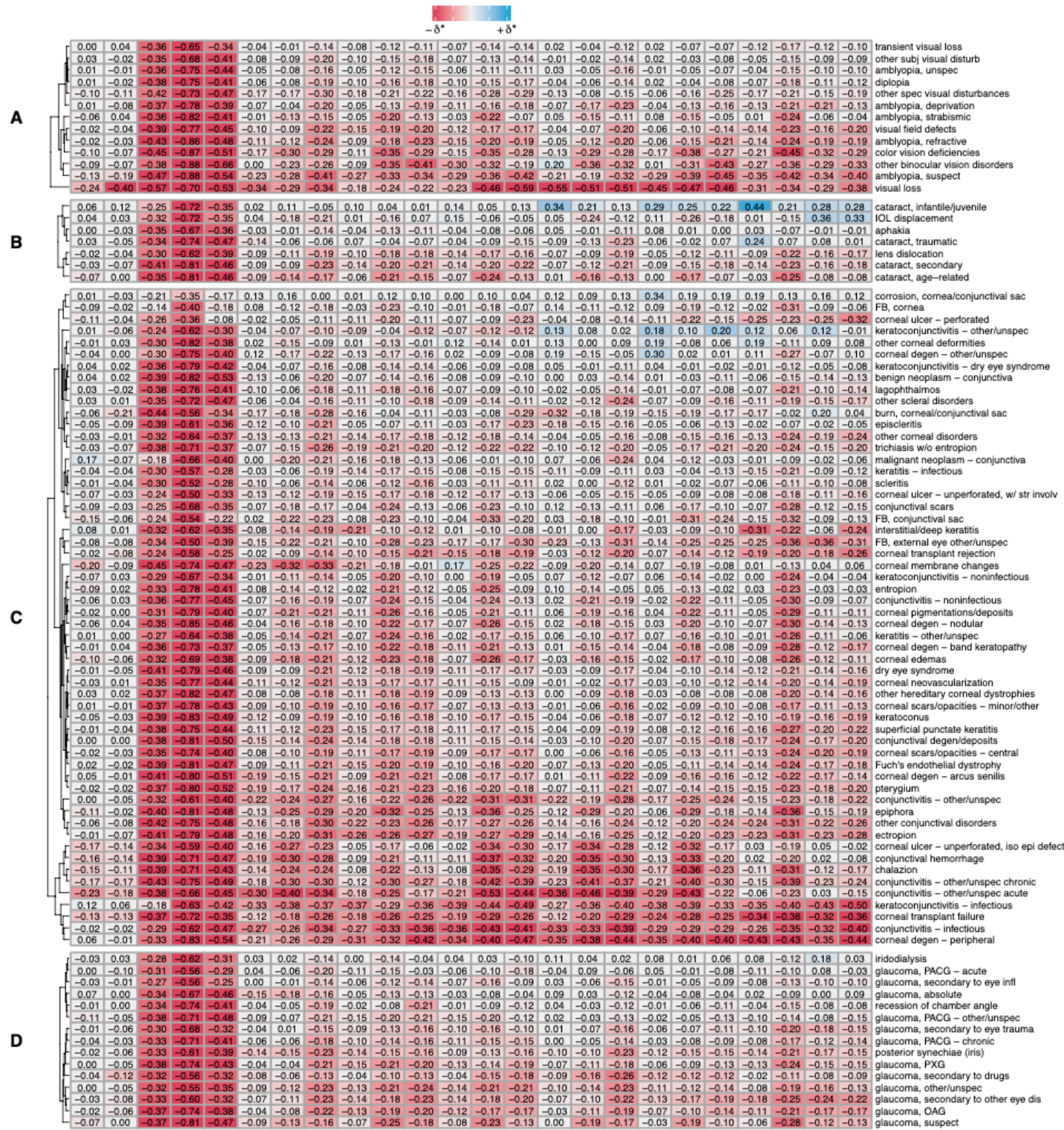
**Supplementary Figure 6.** Hiatus vs. post-hiatus deviations for blindness and vision defects.



Deviations during the nadir of the hiatus period (April 2020) are plotted against deviations in the post-hiatus period (June 2020 - December 2021), for diagnosis entities that correspond to diagnoses of blindness and vision defects. The size of each point corresponds to the average number of monthly patients for the diagnosis entity. A Pearson's product moment correlation coefficient ( $r$ ) is reported for the distribution of points in each plot (blue text; upper left corner), and a line of equality (dashed gray line) represents no change in deviations over time.

*Abbreviations:* subj = subjective; spec = specified; unspec = unspecified.

**Supplementary Figure 7.** Heatmap of monthly deviations for all 261 diagnosis entities included for analysis.



|       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |                                       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---------------------------------------|
| E     | 0.20  | 0.01  | -0.34 | -0.64 | -0.30 | 0.01  | 0.13  | -0.07 | 0.09  | -0.07 | -0.17 | 0.00  | -0.01 | -0.06 | 0.16  | 0.02  | 0.00  | 0.24  | 0.16  | 0.08  | 0.20  | 0.09  | 0.05  | 0.01                                      | optic chiasm disorders                |
|       | -0.03 | -0.03 | -0.31 | -0.59 | -0.26 | 0.04  | -0.01 | -0.15 | -0.09 | -0.11 | -0.10 | -0.05 | -0.10 | -0.13 | -0.04 | -0.04 | -0.09 | 0.08  | -0.04 | -0.08 | -0.12 | -0.15 | -0.07 | -0.09                                     | abducens nerve palsy                  |
|       | 0.02  | 0.00  | -0.35 | -0.63 | -0.35 | 0.01  | 0.00  | -0.16 | -0.09 | -0.14 | -0.12 | -0.07 | -0.03 | -0.12 | -0.02 | -0.09 | 0.12  | 0.03  | -0.06 | -0.07 | -0.15 | -0.06 | -0.10 | -0.10                                     | optic neuritis                        |
|       | 0.00  | -0.05 | -0.34 | -0.52 | -0.22 | 0.07  | -0.05 | -0.20 | -0.09 | -0.13 | -0.03 | -0.07 | -0.10 | -0.21 | -0.09 | 0.01  | -0.02 | 0.10  | -0.13 | -0.20 | -0.12 | -0.19 | 0.00  | -0.08                                     | oculomotor nerve palsy                |
|       | 0.17  | -0.07 | -0.24 | -0.69 | -0.34 | -0.14 | -0.08 | -0.23 | -0.14 | -0.05 | -0.08 | -0.15 | 0.00  | -0.09 | 0.18  | 0.08  | -0.14 | -0.15 | -0.20 | -0.23 | -0.22 | -0.27 | -0.36 | -0.28                                     | optic nerve/pathway injury            |
|       | -0.08 | -0.06 | -0.32 | -0.63 | -0.38 | -0.12 | -0.10 | -0.20 | -0.12 | -0.19 | -0.22 | -0.13 | -0.20 | -0.17 | -0.08 | -0.07 | -0.19 | -0.10 | -0.14 | -0.16 | -0.15 | -0.25 | -0.22 | -0.23                                     | papilledema                           |
|       | 0.00  | -0.03 | -0.32 | -0.64 | -0.36 | -0.01 | -0.04 | -0.16 | -0.10 | -0.19 | -0.21 | -0.10 | -0.16 | -0.15 | -0.02 | -0.09 | -0.18 | -0.05 | -0.04 | -0.11 | -0.08 | -0.19 | -0.14 | -0.14                                     | optic nerve/retinopathy               |
|       | -0.04 | 0.01  | -0.38 | -0.74 | -0.35 | -0.10 | -0.20 | -0.22 | -0.16 | -0.25 | -0.23 | -0.15 | -0.25 | -0.20 | -0.06 | -0.12 | -0.17 | -0.05 | -0.10 | -0.15 | -0.11 | -0.24 | -0.20 | -0.22                                     | blepharospasm                         |
|       | -0.04 | -0.04 | -0.38 | -0.73 | -0.42 | -0.08 | -0.13 | -0.24 | -0.11 | -0.19 | -0.23 | -0.13 | -0.20 | -0.19 | -0.07 | -0.06 | -0.18 | -0.04 | -0.14 | -0.17 | -0.13 | -0.25 | -0.19 | -0.20                                     | trochlear nerve palsy                 |
|       | -0.09 | -0.10 | -0.45 | -0.84 | -0.49 | -0.16 | -0.16 | -0.31 | -0.16 | -0.20 | -0.22 | -0.17 | -0.26 | -0.27 | -0.11 | -0.15 | -0.16 | -0.06 | -0.16 | -0.26 | -0.19 | -0.25 | -0.17 | -0.15                                     | other binocular eye mvmt dis          |
|       | -0.12 | -0.14 | -0.43 | -0.80 | -0.49 | -0.16 | -0.12 | -0.24 | -0.13 | -0.17 | -0.20 | -0.14 | -0.24 | -0.26 | -0.16 | -0.14 | -0.23 | -0.17 | -0.25 | -0.33 | -0.27 | -0.30 | -0.17 | -0.17                                     | other optic nerve disorders           |
|       | -0.05 | 0.05  | -0.45 | -0.79 | -0.53 | -0.15 | -0.12 | -0.30 | -0.15 | -0.23 | -0.26 | -0.12 | -0.11 | -0.21 | -0.09 | -0.07 | -0.24 | -0.18 | -0.20 | -0.25 | -0.21 | -0.34 | -0.26 | -0.23                                     | visual cortex disorders               |
|       | -0.01 | -0.04 | -0.39 | -0.78 | -0.46 | -0.08 | -0.08 | -0.21 | -0.11 | -0.17 | -0.16 | -0.07 | -0.14 | -0.17 | -0.03 | -0.12 | -0.20 | -0.08 | -0.10 | -0.14 | -0.11 | -0.23 | -0.18 | -0.19                                     | optic atrophy                         |
|       | -0.05 | -0.14 | -0.45 | -0.83 | -0.52 | -0.22 | -0.20 | -0.32 | -0.25 | -0.27 | -0.23 | -0.16 | -0.20 | -0.26 | -0.16 | -0.13 | -0.16 | -0.04 | -0.11 | -0.22 | -0.22 | -0.28 | -0.13 | -0.15                                     | pupillary function anomalies          |
|       | -0.10 | 0.00  | -0.40 | -0.83 | -0.45 | -0.07 | -0.18 | -0.21 | -0.14 | -0.24 | -0.19 | -0.09 | -0.27 | -0.14 | 0.05  | -0.20 | -0.16 | -0.02 | -0.25 | -0.15 | -0.12 | -0.32 | -0.14 | -0.13                                     | nystagmus / other irregular eye mvmts |
|       | -0.16 | -0.14 | -0.49 | -0.85 | -0.55 | -0.17 | -0.22 | -0.25 | -0.09 | -0.23 | -0.10 | -0.04 | -0.31 | -0.28 | -0.23 | -0.39 | -0.33 | -0.16 | -0.32 | -0.21 | -0.10 | -0.27 | -0.05 | -0.10                                     | other optic disc disorders            |
| F     | -0.03 | -0.11 | -0.40 | -0.83 | -0.44 | -0.01 | -0.03 | 0.02  | 0.28  | 0.06  | 0.04  | 0.03  | -0.24 | -0.06 | 0.28  | 0.08  | 0.22  | 0.34  | 0.01  | 0.35  | 0.59  | 0.05  | 0.15  | 0.07                                      | other eyelid function disorders       |
|       | 0.08  | 0.14  | -0.27 | -0.52 | -0.24 | -0.01 | -0.08 | -0.16 | -0.04 | -0.14 | -0.11 | -0.05 | -0.04 | 0.12  | 0.12  | 0.17  | -0.04 | 0.09  | 0.06  | -0.07 | 0.05  | -0.09 | 0.00  | -0.04                                     | retained foreign body – eyelid        |
|       | 0.14  | 0.09  | -0.25 | -0.70 | -0.40 | -0.12 | -0.07 | -0.07 | -0.10 | -0.13 | -0.13 | 0.04  | -0.17 | 0.04  | 0.11  | -0.01 | 0.05  | -0.06 | -0.02 | -0.03 | -0.01 | -0.15 | 0.01  | -0.02                                     | enophthalmos                          |
|       | -0.02 | -0.01 | -0.29 | -0.72 | -0.43 | -0.13 | -0.21 | -0.29 | 0.05  | -0.09 | -0.13 | 0.01  | -0.01 | -0.13 | 0.08  | -0.03 | -0.05 | 0.05  | -0.13 | -0.17 | -0.06 | -0.09 | -0.11 | 0.07                                      | dacryoadenitis – chronic              |
|       | -0.13 | 0.02  | -0.44 | -0.67 | -0.47 | -0.12 | -0.23 | -0.22 | -0.22 | -0.24 | -0.22 | -0.20 | -0.16 | 0.08  | -0.07 | -0.04 | -0.17 | -0.07 | -0.18 | -0.11 | -0.19 | -0.18 | 0.03  | -0.07                                     | dacryoadenitis – acute                |
|       | -0.07 | -0.07 | -0.29 | -0.52 | -0.24 | -0.04 | -0.10 | -0.17 | -0.15 | -0.14 | -0.18 | -0.14 | -0.15 | -0.10 | -0.11 | -0.12 | -0.16 | -0.09 | -0.10 | -0.12 | -0.11 | -0.18 | -0.17 | -0.24                                     | eyelid/periorbital open wound         |
|       | -0.05 | -0.08 | -0.29 | -0.56 | -0.36 | -0.14 | -0.19 | -0.18 | -0.17 | -0.19 | -0.26 | -0.20 | -0.15 | -0.22 | -0.02 | -0.10 | -0.17 | -0.09 | -0.19 | -0.08 | -0.15 | -0.17 | -0.21 | -0.27                                     | eyelid edema                          |
|       | 0.03  | -0.08 | -0.19 | -0.55 | -0.32 | -0.14 | -0.12 | -0.17 | -0.17 | -0.16 | -0.21 | -0.24 | -0.20 | -0.20 | -0.24 | -0.01 | -0.05 | -0.22 | -0.21 | -0.26 | -0.14 | -0.21 | -0.28 | -0.19                                     | orbital inflammation – acute          |
|       | -0.03 | -0.05 | -0.35 | -0.66 | -0.29 | -0.06 | -0.18 | -0.07 | -0.01 | -0.35 | -0.18 | -0.17 | -0.20 | -0.11 | 0.02  | -0.22 | 0.01  | -0.02 | -0.20 | 0.03  | -0.04 | -0.31 | -0.08 | -0.10                                     | orbital inflammation – chronic        |
|       | -0.01 | -0.10 | -0.47 | -0.82 | -0.47 | -0.08 | -0.12 | -0.23 | -0.12 | -0.14 | -0.12 | -0.09 | -0.16 | -0.24 | -0.21 | -0.20 | -0.21 | 0.00  | -0.11 | -0.02 | -0.07 | -0.11 | -0.02 | -0.11                                     | eyelid retraction                     |
|       | -0.03 | -0.03 | -0.41 | -0.86 | -0.55 | -0.13 | -0.10 | -0.23 | -0.13 | -0.20 | -0.22 | -0.14 | -0.22 | -0.15 | 0.01  | -0.05 | -0.17 | -0.02 | -0.11 | -0.11 | -0.09 | -0.21 | -0.16 | -0.17                                     | eyelid cysts                          |
|       | -0.02 | -0.03 | -0.44 | -0.81 | -0.60 | -0.18 | -0.09 | -0.24 | -0.14 | -0.20 | -0.20 | -0.08 | -0.18 | -0.13 | -0.02 | -0.13 | -0.23 | -0.08 | -0.07 | -0.12 | -0.11 | -0.21 | -0.14 | -0.10                                     | benign neoplasm – unspec              |
|       | 0.00  | 0.02  | -0.40 | -0.87 | -0.57 | -0.21 | -0.17 | -0.29 | -0.14 | -0.17 | -0.29 | -0.10 | -0.17 | -0.13 | -0.05 | -0.07 | -0.12 | -0.01 | -0.10 | -0.09 | -0.10 | -0.21 | -0.18 | -0.15                                     | xanthelasma                           |
|       | -0.02 | -0.07 | -0.40 | -0.76 | -0.45 | -0.12 | -0.16 | -0.25 | -0.16 | -0.18 | -0.18 | -0.11 | -0.19 | -0.21 | -0.10 | -0.14 | -0.02 | -0.11 | -0.16 | -0.16 | -0.20 | -0.09 | -0.13 | -0.10                                     | exophthalmos                          |
|       | 0.00  | -0.05 | -0.40 | -0.81 | -0.51 | -0.14 | -0.14 | -0.26 | -0.20 | -0.22 | -0.21 | -0.13 | -0.20 | -0.20 | -0.06 | -0.08 | -0.17 | -0.03 | -0.10 | -0.15 | -0.12 | -0.20 | -0.13 | -0.14                                     | ptosis                                |
|       | -0.11 | 0.03  | -0.30 | -0.76 | -0.46 | -0.19 | -0.30 | -0.24 | -0.02 | -0.17 | -0.06 | 0.06  | -0.14 | -0.09 | 0.00  | -0.16 | -0.09 | -0.02 | -0.18 | -0.04 | -0.22 | -0.06 | 0.34  | 0.26                                      | benign neoplasm – orbit               |
| -0.01 | -0.10 | -0.40 | -0.69 | -0.52 | -0.35 | -0.33 | -0.39 | -0.24 | -0.24 | -0.14 | -0.12 | -0.17 | -0.26 | -0.18 | -0.25 | -0.31 | -0.25 | -0.30 | -0.16 | -0.16 | 0.09  | 0.01  | 0.17  | eyelid/periorbital superficial injury     |                                       |
| -0.10 | -0.13 | -0.31 | -0.64 | -0.38 | -0.19 | -0.24 | -0.27 | -0.30 | -0.27 | -0.32 | -0.25 | -0.29 | -0.28 | -0.15 | -0.25 | -0.25 | -0.19 | -0.27 | -0.20 | -0.28 | -0.37 | -0.32 | -0.35 | orbital floor fracture                    |                                       |
| 0.08  | -0.14 | -0.38 | -0.65 | -0.42 | 0.00  | -0.23 | -0.35 | -0.37 | -0.26 | -0.43 | -0.14 | -0.13 | -0.31 | -0.20 | -0.22 | -0.43 | -0.37 | -0.24 | -0.36 | -0.36 | -0.43 | -0.31 | -0.40 | carcinoma in situ – eye                   |                                       |
| 0.00  | -0.04 | -0.38 | -0.70 | -0.43 | -0.12 | -0.12 | -0.13 | -0.13 | -0.26 | -0.22 | -0.11 | -0.17 | -0.20 | -0.07 | -0.22 | -0.11 | -0.14 | -0.10 | -0.14 | -0.14 | -0.23 | -0.06 | -0.18 | lacrimal passage infl – chronic           |                                       |
| -0.02 | -0.09 | -0.38 | -0.75 | -0.49 | -0.18 | -0.24 | -0.26 | -0.14 | -0.21 | -0.22 | -0.09 | -0.23 | -0.15 | -0.10 | -0.10 | -0.27 | -0.15 | -0.22 | -0.17 | -0.19 | -0.24 | -0.19 | -0.23 | other orbital disorders                   |                                       |
| -0.01 | -0.04 | -0.38 | -0.83 | -0.48 | -0.13 | -0.14 | -0.24 | -0.18 | -0.19 | -0.20 | -0.12 | -0.17 | -0.17 | -0.03 | -0.11 | -0.20 | -0.06 | -0.11 | -0.12 | -0.14 | -0.23 | -0.14 | -0.19 | dermatohalosis                            |                                       |
| -0.07 | -0.07 | -0.31 | -0.58 | -0.40 | -0.17 | -0.13 | -0.22 | -0.15 | -0.21 | -0.24 | -0.16 | -0.23 | -0.22 | -0.13 | -0.15 | -0.25 | -0.11 | -0.13 | -0.17 | -0.14 | -0.24 | -0.17 | -0.20 | eyeball/orbital tissue contusion          |                                       |
| 0.03  | -0.08 | -0.29 | -0.59 | -0.41 | -0.12 | -0.12 | -0.27 | -0.17 | -0.19 | -0.23 | -0.18 | -0.20 | -0.20 | -0.07 | -0.11 | -0.23 | -0.15 | -0.12 | -0.19 | -0.17 | -0.22 | -0.21 | -0.25 | other/unspec eye injuries                 |                                       |
| 0.08  | -0.09 | -0.31 | -0.59 | -0.34 | -0.05 | -0.06 | -0.15 | -0.03 | -0.12 | -0.14 | -0.08 | -0.19 | -0.19 | -0.13 | -0.16 | -0.22 | -0.08 | -0.11 | -0.16 | -0.07 | -0.16 | -0.15 | -0.14 | prosthetic/implant/graft other mech compl |                                       |
| 0.00  | -0.20 | -0.58 | -0.87 | -0.59 | -0.24 | -0.19 | -0.22 | -0.04 | -0.12 | -0.21 | -0.14 | -0.24 | -0.25 | -0.31 | -0.28 | -0.42 | -0.22 | -0.16 | -0.20 | -0.09 | -0.26 | -0.32 | -0.30 | other eyelid degenerative disorders       |                                       |
| -0.04 | -0.05 | -0.40 | -0.83 | -0.53 | -0.21 | -0.21 | -0.31 | -0.24 | -0.27 | -0.30 | -0.24 | -0.29 | -0.28 | -0.17 | -0.18 | -0.28 | -0.16 | -0.19 | -0.21 | -0.21 | -0.29 | -0.25 | -0.29 | lacrimal passage stenosis/insufficiency   |                                       |
| -0.01 | -0.04 | -0.41 | -0.84 | -0.56 | -0.26 | -0.24 | -0.34 | -0.30 | -0.34 | -0.34 | -0.30 | -0.31 | -0.30 | -0.19 | -0.22 | -0.32 | -0.18 | -0.23 | -0.27 | -0.28 | -0.33 | -0.27 | -0.33 | benign neoplasm – eyelid                  |                                       |
| -0.15 | -0.09 | -0.38 | -0.75 | -0.46 | -0.14 | -0.19 | -0.18 | -0.10 | -0.24 | -0.14 | -0.11 | -0.34 | -0.26 | -0.18 | -0.36 | -0.28 | -0.12 | -0.24 | -0.05 | -0.02 | -0.27 | -0.10 | -0.20 | malignant neoplasm – eyelid               |                                       |
| G     | -0.07 | 0.06  | -0.07 | -0.40 | -0.18 | 0.14  | -0.11 | 0.00  | 0.13  | -0.08 | -0.07 | 0.19  | -0.11 | 0.06  | 0.33  | 0.08  | 0.01  | 0.28  | -0.12 | 0.14  | 0.30  | -0.04 | 0.21  | 0.17                                      | ocular laceration w/o prolapse        |
|       | 0.10  | -0.02 | -0.21 | -0.44 | -0.25 | 0.15  | -0.07 | 0.03  | -0.09 | -0.09 | 0.01  | -0.03 | 0.01  | 0.04  | -0.02 | 0.19  | 0.13  | -0.04 | -0.17 | -0.07 | -0.16 | -0.14 | -0.23 | orbit penetrating wound w/ FB             |                                       |
|       | -0.01 | -0.01 | -0.31 | -0.49 | -0.30 | -0.08 | -0.07 | -0.17 | -0.07 | -0.11 | -0.12 | -0.13 | -0.11 | -0.07 | -0.07 | -0.16 | 0.00  | -0.13 | -0.06 | -0.05 | -0.20 | -0.11 | -0.17 | ocular laceration w/ prolapse             |                                       |
|       | -0.26 | -0.27 | -0.40 | -0.62 | -0.38 | -0.25 | -0.26 | -0.35 | -0.26 | -0.31 | -0.25 | -0.23 | -0.43 | -0.32 | -0.17 | -0.35 | -0.31 | -0.22 | -0.33 | -0.32 | -0.22 | -0.44 | -0.34 | -0.30                                     | retained IOFB, nonmagnetic            |
| H     | -0.12 | -0.14 | -0.28 | -0.48 | -0.27 | -0.12 | -0.17 | -0.29 | -0.19 | -0.18 | -0.19 | -0.10 | -0.23 | -0.23 | -0.14 | -0.09 | -0.10 | -0.08 | -0.18 | -0.23 | -0.21 | -0.22 | -0.15 | -0.16                                     | hypHEMA                               |
|       | -0.06 | -0.05 | -0.30 | -0.50 | -0.27 | 0.02  | -0.08 | -0.18 | -0.08 | -0.18 | -0.18 | -0.07 | -0.18 | -0.19 | -0.06 | -0.13 | -0.20 | -0.06 | -0.17 | -0.19 | -0.12 | -0.19 | -0.15 | -0.14                                     | malignant neoplasm – choroid          |
|       | -0.06 | -0.09 | -0.36 | -0.59 | -0.37 | -0.14 | -0.13 | -0.25 | -0.15 | -0.21 | -0.21 | -0.12 | -0.19 | -0.20 | -0.08 | -0.11 | -0.19 | -0.08 | -0.14 | -0.17 | -0.12 | -0.23 | -0.18 | -0.19                                     | ocular pain                           |
|       | -0.01 | 0.00  | -0.38 | -0.79 | -0.51 | -0.12 | -     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |                                       |

|  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |       |       |  |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|--|
|  | 0.17  | 0.13  | -0.21 | -0.51 | -0.28 | 0.16  | 0.11  | -0.07 | 0.07  | 0.26  | 0.32  | 0.51  | 0.34  | 0.33  | 0.54  | 0.66  | 0.46  | 0.71  | 0.61  | 0.62  | 0.58  | 0.53    | 0.73  | 0.62  | unspec DR w/ DME                             |
|  | 0.07  | 0.14  | -0.08 | -0.47 | -0.25 | 0.00  | 0.43  | 0.04  | 0.14  | -0.02 | 0.10  | 0.20  | 0.07  | 0.14  | 0.23  | 0.09  | -0.15 | 0.23  | 0.20  | 0.00  | 0.09  | 0.04    | 0.12  | 0.07  | ROP stage 3                                  |
|  | 0.12  | 0.20  | -0.15 | -0.61 | -0.32 | 0.02  | 0.02  | -0.06 | 0.02  | -0.09 | -0.07 | 0.03  | 0.00  | 0.30  | 0.32  | 0.06  | 0.02  | 0.14  | 0.02  | 0.09  | 0.11  | -0.17   | 0.00  | 0.00  | ROP stage unspec                             |
|  | -0.06 | 0.02  | -0.20 | -0.43 | -0.24 | 0.01  | -0.07 | -0.09 | 0.01  | -0.13 | -0.08 | 0.04  | -0.13 | -0.02 | 0.10  | -0.09 | -0.08 | 0.11  | -0.03 | 0.05  | 0.13  | -0.12   | 0.02  | 0.00  | retinal neovascularization                   |
|  | -0.19 | 0.13  | -0.04 | -0.43 | -0.26 | -0.08 | -0.26 | -0.12 | 0.11  | -0.22 | -0.01 | -0.15 | -0.34 | -0.07 | 0.34  | -0.01 | -0.03 | -0.16 | -0.33 | 0.04  | 0.06  | -0.18   | 0.20  | -0.13 | malignant neoplasm - retina                  |
|  | -0.27 | -0.08 | -0.08 | -0.28 | -0.14 | 0.01  | -0.05 | 0.09  | 0.01  | -0.06 | 0.08  | 0.25  | -0.28 | 0.07  | -0.04 | -0.27 | 0.00  | 0.36  | -0.14 | 0.20  | 0.22  | -0.01   | 0.06  | 0.05  | ROP stage 2                                  |
|  | -0.11 | -0.12 | -0.17 | -0.18 | -0.18 | 0.07  | -0.10 | -0.19 | 0.02  | -0.04 | -0.21 | -0.10 | -0.07 | -0.16 | -0.07 | -0.22 | -0.15 | 0.12  | 0.00  | -0.07 | 0.09  | 0.07    | 0.04  | -0.05 | ROP stage 1                                  |
|  | 0.00  | -0.04 | -0.14 | -0.27 | -0.09 | 0.03  | -0.05 | -0.12 | 0.02  | -0.05 | -0.08 | 0.03  | -0.19 | -0.09 | -0.03 | -0.06 | -0.14 | -0.01 | -0.09 | -0.14 | -0.07 | -0.18   | -0.11 | -0.10 | RPE detachment, hemorrhagic                  |
|  | 0.03  | -0.04 | -0.38 | -0.84 | -0.35 | 0.28  | 0.00  | 0.00  | 0.05  | -0.18 | -0.16 | -0.02 | -0.27 | -0.17 | 0.13  | -0.10 | 0.02  | 0.23  | -0.12 | -0.07 | 0.09  | -0.23   | -0.11 | 0.02  | hereditary choroidal dystrophies             |
|  | -0.04 | 0.03  | -0.33 | -0.70 | -0.32 | 0.00  | -0.05 | -0.10 | 0.03  | -0.18 | -0.12 | -0.02 | -0.21 | -0.10 | 0.04  | -0.14 | -0.12 | 0.03  | -0.13 | -0.06 | 0.05  | -0.22   | -0.07 | -0.04 | PDR, stable                                  |
|  | 0.20  | 0.07  | -0.35 | -0.77 | -0.46 | -0.05 | 0.01  | -0.12 | -0.07 | -0.09 | -0.04 | 0.14  | 0.10  | 0.03  | 0.11  | 0.02  | -0.09 | 0.16  | 0.28  | 0.21  | 0.11  | 0.00    | 0.12  | 0.13  | unspec DR w/ DME                             |
|  | -0.05 | -0.05 | -0.34 | -0.69 | -0.40 | -0.10 | -0.16 | -0.16 | -0.08 | -0.17 | -0.17 | -0.10 | -0.20 | -0.19 | 0.01  | -0.10 | -0.10 | 0.03  | -0.07 | -0.06 | -0.02 | -0.12   | -0.10 | -0.09 | vitreous prolapse                            |
|  | -0.05 | -0.02 | -0.43 | -0.86 | -0.48 | 0.00  | 0.13  | -0.08 | -0.18 | -0.16 | -0.32 | -0.14 | -0.19 | -0.01 | 0.09  | -0.03 | -0.16 | 0.16  | 0.29  | 0.05  | 0.23  | 0.17    | 0.06  | -0.03 | retrolental fibroplasia                      |
|  | 0.07  | 0.02  | -0.37 | -0.77 | -0.50 | -0.12 | -0.09 | -0.21 | -0.09 | -0.19 | -0.19 | -0.08 | -0.14 | -0.15 | 0.06  | 0.02  | -0.09 | 0.11  | 0.09  | 0.06  | 0.12  | -0.03   | 0.04  | 0.12  | unspec macular degeneration                  |
|  | -0.03 | 0.00  | -0.20 | -0.48 | -0.27 | -0.07 | -0.06 | -0.14 | 0.04  | -0.13 | -0.14 | 0.04  | -0.13 | -0.08 | 0.17  | -0.09 | -0.09 | 0.19  | -0.04 | -0.02 | 0.14  | -0.10   | -0.05 | 0.07  | retinal vasculitis                           |
|  | 0.05  | 0.08  | -0.31 | -0.58 | -0.31 | -0.06 | 0.01  | -0.09 | -0.11 | -0.09 | -0.25 | 0.05  | 0.02  | 0.04  | 0.10  | -0.03 | -0.04 | 0.16  | 0.16  | 0.11  | 0.03  | 0.01    | 0.13  | 0.04  | TRAO   |
|  | 0.03  | -0.06 | -0.23 | -0.50 | -0.37 | -0.09 | -0.12 | -0.21 | -0.07 | -0.06 | -0.16 | -0.05 | -0.01 | -0.01 | 0.14  | -0.01 | -0.03 | 0.01  | -0.08 | 0.01  | 0.00  | -0.06   | 0.01  | -0.10 | choroidal hemorrhage                         |
|  | 0.03  | 0.01  | -0.27 | -0.54 | -0.29 | 0.00  | 0.00  | -0.12 | -0.04 | -0.12 | -0.14 | -0.06 | -0.08 | -0.08 | 0.06  | -0.01 | -0.10 | 0.01  | -0.03 | -0.03 | -0.01 | -0.13   | -0.08 | -0.12 | CRAO   |
|  | 0.01  | -0.02 | -0.29 | -0.53 | -0.30 | -0.01 | -0.03 | -0.16 | -0.07 | -0.14 | -0.13 | -0.04 | -0.11 | -0.14 | -0.03 | -0.04 | -0.11 | 0.03  | -0.02 | -0.09 | -0.05 | -0.14   | -0.07 | -0.07 | PDR w/ DME                                   |
|  | 0.02  | 0.01  | -0.25 | -0.47 | -0.28 | 0.03  | -0.01 | -0.09 | 0.03  | -0.13 | -0.09 | -0.06 | -0.16 | 0.00  | -0.05 | -0.07 | -0.18 | 0.00  | -0.11 | -0.04 | -0.03 | -0.16   | -0.10 | -0.07 | angioid streaks of macula                    |
|  | -0.06 | -0.03 | -0.23 | -0.48 | -0.26 | 0.02  | -0.05 | -0.11 | 0.02  | -0.12 | -0.09 | 0.04  | -0.15 | -0.06 | 0.06  | -0.09 | -0.09 | 0.06  | -0.07 | -0.02 | 0.08  | -0.14   | -0.02 | 0.01  | RD, traction                                 |
|  | 0.02  | -0.04 | -0.29 | -0.47 | -0.25 | -0.02 | -0.05 | -0.18 | -0.08 | -0.18 | -0.09 | -0.17 | -0.19 | -0.19 | -0.05 | -0.08 | -0.15 | -0.03 | -0.09 | -0.15 | -0.08 | -0.18   | -0.11 | -0.11 | wet AMD, inactive scar                       |
|  | -0.03 | -0.05 | -0.26 | -0.41 | -0.25 | -0.06 | -0.08 | -0.19 | -0.09 | -0.15 | -0.16 | -0.07 | -0.18 | -0.18 | -0.07 | -0.08 | -0.16 | -0.04 | -0.10 | -0.15 | -0.10 | -0.19   | -0.13 | -0.13 | CRVO   |
|  | -0.11 | -0.07 | -0.31 | -0.58 | -0.37 | -0.06 | -0.15 | -0.20 | -0.09 | -0.22 | -0.17 | -0.05 | -0.23 | -0.15 | -0.05 | -0.21 | -0.21 | -0.02 | -0.17 | -0.13 | -0.03 | -0.23   | -0.10 | -0.14 | retinal edema                                |
|  | -0.07 | 0.00  | -0.25 | -0.57 | -0.31 | 0.02  | -0.07 | -0.10 | 0.00  | -0.16 | -0.13 | -0.02 | -0.19 | -0.08 | 0.05  | -0.15 | -0.13 | 0.05  | -0.11 | -0.04 | 0.04  | -0.17   | -0.06 | -0.02 | RD w/ breaks or defects                      |
|  | -0.09 | -0.04 | -0.23 | -0.46 | -0.27 | -0.04 | -0.13 | -0.15 | -0.03 | -0.18 | -0.14 | -0.04 | -0.22 | -0.13 | -0.01 | -0.15 | -0.15 | -0.01 | -0.16 | -0.08 | 0.01  | -0.23   | -0.10 | -0.10 | vitreous hemorrhage                          |
|  | -0.14 | -0.10 | -0.25 | -0.52 | -0.35 | -0.10 | -0.20 | -0.21 | -0.06 | -0.22 | -0.20 | -0.02 | -0.26 | -0.16 | 0.00  | -0.19 | -0.22 | -0.02 | -0.24 | -0.14 | 0.01  | -0.25   | -0.14 | -0.05 | choroidal detachment                         |
|  | -0.04 | -0.02 | -0.32 | -0.60 | -0.35 | 0.01  | -0.07 | -0.16 | -0.06 | -0.16 | -0.20 | -0.08 | -0.17 | -0.18 | -0.03 | -0.06 | -0.16 | -0.03 | -0.08 | -0.12 | -0.07 | -0.17   | -0.11 | -0.12 | BRAO   |
|  | 0.03  | -0.03 | -0.36 | -0.62 | -0.35 | -0.01 | -0.03 | -0.17 | -0.11 | -0.22 | -0.21 | -0.11 | -0.15 | -0.18 | -0.03 | -0.09 | -0.15 | 0.00  | -0.05 | -0.11 | -0.07 | -0.18   | -0.09 | -0.09 | dry AMD, adv stage w/ subfov involv          |
|  | 0.03  | 0.02  | -0.35 | -0.65 | -0.39 | -0.15 | 0.00  | -0.24 | -0.15 | -0.22 | -0.21 | -0.07 | -0.15 | -0.07 | -0.21 | -0.20 | 0.21  | 0.03  | -0.09 | -0.14 | -0.20 | -0.26   | -0.18 | -0.12 | choroidal rupture                            |
|  | -0.03 | -0.05 | -0.31 | -0.56 | -0.34 | -0.07 | -0.09 | -0.18 | -0.09 | -0.16 | -0.19 | -0.08 | -0.15 | -0.14 | -0.02 | -0.06 | -0.15 | -0.03 | -0.05 | -0.09 | -0.03 | -0.13   | -0.11 | -0.11 | cystoid macular degeneration                 |
|  | -0.02 | -0.02 | -0.33 | -0.58 | -0.38 | -0.09 | -0.09 | -0.19 | -0.09 | -0.18 | -0.19 | -0.11 | -0.18 | -0.14 | -0.04 | -0.06 | -0.17 | -0.02 | -0.06 | -0.09 | -0.04 | -0.16   | -0.13 | -0.14 | central serous chorioretinopathy             |
|  | -0.03 | -0.05 | -0.34 | -0.64 | -0.40 | -0.08 | -0.07 | -0.18 | -0.09 | -0.18 | -0.20 | -0.10 | -0.17 | -0.16 | -0.04 | -0.09 | -0.19 | -0.05 | -0.08 | -0.11 | -0.05 | -0.17   | -0.15 | -0.13 | vitreomacular adhesion                       |
|  | -0.06 | 0.03  | -0.32 | -0.63 | -0.33 | 0.00  | -0.10 | -0.14 | -0.06 | -0.23 | -0.18 | -0.06 | -0.23 | -0.11 | 0.05  | -0.14 | -0.12 | -0.01 | -0.14 | -0.03 | 0.02  | -0.23   | -0.04 | -0.06 | dry AMD, adv stage w/ subfov involv          |
|  | -0.09 | -0.03 | -0.32 | -0.65 | -0.37 | -0.03 | -0.13 | -0.20 | -0.11 | -0.27 | -0.21 | -0.13 | -0.28 | -0.15 | -0.07 | -0.21 | -0.16 | -0.06 | -0.21 | -0.17 | -0.11 | -0.29   | -0.11 | -0.19 | retinal telangiectasis                       |
|  | -0.06 | 0.02  | -0.31 | -0.71 | -0.39 | -0.01 | -0.08 | -0.12 | -0.01 | -0.21 | -0.14 | -0.04 | -0.22 | -0.11 | 0.05  | -0.17 | -0.13 | 0.04  | -0.13 | -0.04 | 0.03  | -0.23   | -0.07 | -0.06 | macular cyst, hole, or pseudohole            |
|  | -0.04 | 0.01  | -0.29 | -0.53 | -0.27 | 0.01  | -0.13 | -0.16 | -0.04 | -0.22 | -0.16 | -0.04 | -0.21 | -0.09 | 0.03  | -0.15 | -0.14 | 0.00  | -0.15 | -0.05 | 0.01  | -0.22   | -0.07 | -0.05 | wet AMD, inactive CNV                        |
|  | -0.08 | 0.00  | -0.29 | -0.63 | -0.39 | 0.04  | -0.22 | -0.18 | -0.12 | -0.29 | -0.22 | -0.13 | -0.32 | -0.16 | -0.05 | -0.26 | -0.19 | -0.10 | -0.27 | -0.13 | -0.08 | -0.30   | -0.21 | -0.17 | other choroid disorders                      |
|  | -0.11 | -0.05 | -0.24 | -0.55 | -0.30 | 0.00  | -0.13 | -0.13 | 0.00  | -0.16 | -0.14 | -0.02 | -0.23 | -0.12 | 0.03  | -0.18 | -0.15 | 0.03  | -0.16 | -0.07 | 0.06  | -0.23   | -0.09 | -0.04 | RD, serous                                   |
|  | -0.06 | -0.07 | -0.35 | -0.65 | -0.42 | -0.10 | -0.11 | -0.22 | -0.13 | -0.20 | -0.22 | -0.18 | -0.24 | -0.24 | -0.11 | -0.14 | -0.22 | -0.11 | -0.17 | -0.21 | -0.15 | -0.22   | -0.18 | -0.22 | retinal breaks or defects w/ RD              |
|  | -0.06 | -0.06 | -0.36 | -0.70 | -0.45 | -0.08 | -0.08 | -0.19 | -0.12 | -0.19 | -0.23 | -0.17 | -0.26 | -0.25 | -0.12 | -0.14 | -0.23 | -0.11 | -0.17 | -0.19 | -0.15 | -0.21   | -0.20 | -0.23 | retinoschisis / retinal cysts                |
|  | 0.03  | 0.01  | -0.33 | -0.68 | -0.44 | -0.09 | -0.04 | -0.14 | -0.05 | -0.16 | -0.17 | -0.10 | -0.17 | -0.15 | -0.04 | -0.09 | -0.18 | -0.06 | -0.08 | -0.10 | -0.09 | -0.20   | -0.15 | -0.16 | other/unspec peripheral retinal degeneration |
|  | -0.05 | -0.07 | -0.42 | -0.77 | -0.51 | -0.15 | -0.12 | -0.24 | -0.12 | -0.18 | -0.21 | -0.15 | -0.21 | -0.20 | -0.10 | -0.12 | -0.23 | -0.10 | -0.15 | -0.21 | -0.15 | -0.24   | -0.22 | -0.24 | other/unspec retinal disorders               |
|  | -0.03 | -0.07 | -0.39 | -0.73 | -0.46 | -0.14 | -0.14 | -0.26 | -0.17 | -0.22 | -0.23 | -0.16 | -0.23 | -0.26 | -0.12 | -0.15 | -0.23 | -0.11 | -0.18 | -0.23 | -0.21 | -0.26   | -0.20 | -0.23 | other vitreous opacities                     |
|  | 0.00  | -0.02 | -0.39 | -0.75 | -0.53 | -0.20 | -0.13 | -0.17 | -0.12 | -0.25 | -0.17 | -0.13 | -0.24 | -0.20 | -0.08 | -0.12 | -0.18 | -0.02 | -0.09 | -0.11 | -0.08 | -0.18   | -0.12 | -0.10 | choroidal degenerations                      |
|  | 0.01  | -0.04 | -0.38 | -0.75 | -0.43 | -0.07 | -0.07 | -0.20 | -0.12 | -0.21 | -0.20 | -0.12 | -0.18 | -0.21 | -0.05 | -0.13 | -0.21 | -0.07 | -0.11 | -0.16 | -0.13 | -0.23   | -0.15 | -0.17 | dry AMD, early stage                         |
|  | 0.00  | -0.05 | -0.37 | -0.71 | -0.43 | -0.09 | -0.09 | -0.20 | -0.13 | -0.21 | -0.20 | -0.12 | -0.17 | -0.22 | -0.08 | -0.13 | -0.21 | -0.09 | -0.13 | -0.18 | -0.14 | -0.22</ |       |       |  |

Cluster heatmap of deviations for each month of the pandemic study period for all 261 diagnosis entities, partitioned by 13 diagnosis categories. A diverging color scale in the heatmap is used to illustrate the direction, magnitude, and statistical significance of each monthly deviation, with the darkness of each cell a function of the product between the magnitude of the deviation and the negative log of its adjusted p-value. Clusters of diagnosis entities within each partition were identified using a hierarchical clustering algorithm applied to the rows of the heatmap (i.e., to the vectors of monthly deviations), and are represented by the dendrograms to the left of the heatmap, and the subsequent ordering of the diagnosis entities within each partition.

*Legend for partitions:*

| Code | Diagnosis Category                               |
|------|--|
| A    | Blindness and vision defects                     |
| B    | Cataract and other lens disorders                |
| C    | Cornea and external disease                      |
| D    | Glaucoma   |
| E    | Neuro-ophthalmology                              |
| F    | Oculofacial plastics and orbital conditions      |
| G    | OGI/IOFB   |
| H    | Other specified eye disorders                    |
| I    | Postprocedural or postoperative eye complication |
| J    | Refractive error                                 |
| K    | Retinal and vitreous conditions                  |
| L    | Strabismus                                       |
| M    | Uveitis and ocular inflammation                  |

*Abbreviations:* Where necessary, please refer to the codebook in **Supplementary Data 1** for the full diagnosis names of the 261 diagnosis entities visualized in this heatmap.



**Supplementary Table 1.** Mapping of diagnosis entities in this study to the ocular emergencies surveyed by Bourges et al.

Adapted from Table 2 of *Bourges et al.*<sup>4</sup>

| Category          | Subcategory                     | Item   | Severity | Diagnosis Entity Name                        |
|-------------------|---------------------------------|--|----------|--|
| anterior segment  | conjunctivitis                  | noninfectious                                    | 1        | conjunctivitis - noninfectious               |
| anterior segment  | keratitis                       | superficial punctate keratitis                   | 1        | superficial punctate keratitis               |
| anterior segment  | pterygia                        | inflamed pterygia                                | 1        | pterygium                                    |
| anterior segment  | conjunctivitis                  | viral conjunctivitis                             | 2        | conjunctivitis - infectious                  |
| anterior segment  | scleral/episcleral inflammation | episcleritis (regardless of the cause)           | 2        | episcleritis                                 |
| anterior segment  | corneal ulcer (not infected)    | unperforated, isolated epithelial defect         | 2        | corneal ulcer - unperforated, iso epi defect |
| anterior segment  | conjunctivitis                  | bacterial conjunctivitis                         | 2        | conjunctivitis - infectious                  |
| anterior segment  | anterior acute uveitis          | iterative (regardless of the cause)              | 3        | anterior uveitis - acute, recurrent          |
| anterior segment  | scleral/episcleral inflammation | scleritis (regardless of the cause)              | 3        | scleritis                                    |
| anterior segment  | corneal ulcer (not infected)    | unperforated, with stromal involvement           | 3        | corneal ulcer - unperforated, w/ str involv  |
| anterior segment  | keratitis                       | infectious keratitis                             | 3        | keratitis - infectious                       |
| anterior segment  | ocular surface burn             | <9 clock hours of limbus and <75% of conjunctiva | 3        | burn, corneal/conjunctival sac               |
| anterior segment  | glaucoma                        | acute angle-closure glaucoma                     | 4        | glaucoma, PACG - acute                       |
| anterior segment  | corneal ulcer (not infected)    | perforating ulcer                                | 5        | corneal ulcer - perforated                   |
| posterior segment | nonspecific visual symptoms     | vitreous floaters                                | 1        | other vitreous opacities                     |
| posterior segment | macula                          | macular edema                                    | 3        | retinal edema                                |
| posterior segment | retinal peripheral tear         | no detached edges, no RD associated              | 3        | retinal breaks or defects w/o RD             |
| posterior segment | macula                          | macular hole                                     | 3        | macular cyst, hole, or pseudohole            |
| posterior segment | retinal vein occlusion          | branch (BRVO)                                    | 3        | BRVO   |
| posterior segment | retinal peripheral tear         | detached edges, no RD associated                 | 3        | retinal breaks or defects w/o RD             |
| posterior segment | posterior segment inflammation  | retinal vasculitis                               | 4        | retinal vasculitis                           |
| posterior segment | retinal artery occlusion        | branch (BRAO)                                    | 4        | BRAO   |
| posterior segment | retinal vein occlusion          | central (CRVO)                                   | 4        | CRVO   |
| posterior segment | ischemic optic neuropathy       | isolated   | 4        | ischemic optic neuropathy                    |
| posterior segment | retinal artery occlusion        | central (CRAO)                                   | 5        | CRAO   |

| Category              | Subcategory                         | Item   | Severity | Diagnosis Entity Name                |
|-----------------------|-------------------------------------|--|----------|--------------------------------------|
| traumatisms           | conjunctiva                         | subconjunctival hemorrhage                       | 1        | conjunctival hemorrhage              |
| traumatisms           | other injuries                      | eyelid skin injury                               | 2        | eyelid/periocular superficial injury |
| traumatisms           | blunt injuries with impaired vision | hyphema (isolated)                               | 3        | hyphema                              |
| traumatisms           | other injuries                      | eyelid-margin injury                             | 3        | eyelid/periocular open wound         |
| traumatisms           | blunt injuries with impaired vision | iridodialysis (avulsion of the iris root)        | 3        | iridodialysis                        |
| traumatisms           | blunt injuries with impaired vision | choroidal rupture                                | 4        | choroidal rupture                    |
| traumatisms           | blunt injuries with impaired vision | lens dislocation                                 | 4        | lens dislocation                     |
| traumatisms           | corneal injury                      | perforating and leaking laceration               | 5        | ocular laceration w/ prolapse        |
| traumatisms           | penetrating eye injury              | with intraocular foreign body, eye not collapsed | 5        | orbit penetrating wound w/ FB        |
| traumatisms           | blunt injuries with impaired vision | scleral rupture                                  | 5        | ocular laceration w/ prolapse        |
| traumatisms           | other injuries                      | optic nerve injury                               | 5        | optic nerve/pathway injury           |
| traumatisms           | penetrating eye injury              | with intraocular foreign body, eye collapsed     | 5        | orbit penetrating wound w/ FB        |
| post-op complications | keratoplasty                        | acute rejection                                  | 4        | corneal transplant rejection         |
| post-op complications | infection following surgery         | blebitis   | 5        | blebitis                             |
| post-op complications | infection following surgery         | panophthalmitis                                  | 5        | panophthalmitis                      |

**Supplementary Table 2.** Vision-threatening (VT) and non-vision threatening (NVT) diagnosis entities related to diabetic retinopathy, age-related macular degeneration, and glaucoma.

| Diagnosis Entity                     | Category | Classification |
|--------------------------------------|----------|----------------|
| PDR w/ DME                           | DR       | VT             |
| PDR w/o DME                          | DR       | VT             |
| unspec DR w/ DME                     | DR       | VT             |
| NPDR w/ DME                          | DR       | VT             |
| PDR, stable                          | DR       | NVT            |
| DME resolved after tx                | DR       | NVT            |
| unspec DR w/o DME                    | DR       | NVT            |
| NPDR w/o DME                         | DR       | NVT            |
| dry AMD, adv stage w/o subfov involv | AMD      | VT             |
| dry AMD, adv stage w/ subfov involv  | AMD      | VT             |
| wet AMD, active CNV                  | AMD      | VT             |
| wet AMD, inactive CNV                | AMD      | VT             |
| wet AMD, inactive scar               | AMD      | VT             |
| unspec macular degeneration          | AMD      | NVT            |
| drusen of macula                     | AMD      | NVT            |
| dry AMD, early stage                 | AMD      | NVT            |
| dry AMD, intermediate stage          | AMD      | NVT            |
| glaucoma, absolute                   | Glaucoma | VT             |
| glaucoma, PACG - acute               | Glaucoma | VT             |
| glaucoma, PACG - chronic             | Glaucoma | VT             |
| glaucoma, PACG - other/unspec        | Glaucoma | VT             |
| glaucoma, secondary to drugs         | Glaucoma | VT             |
| glaucoma, secondary to eye infl      | Glaucoma | VT             |
| glaucoma, secondary to eye trauma    | Glaucoma | VT             |
| glaucoma, secondary to other eye dis | Glaucoma | VT             |
| glaucoma, OAG                        | Glaucoma | NVT            |
| glaucoma, PXG                        | Glaucoma | NVT            |
| glaucoma, suspect                    | Glaucoma | NVT            |

**Supplementary Table 3.** Extreme deviations from expectation in the post-hiatus period.

**A**

| Entity Name                               | Post-hiatus Mean Deviation | 95% CI          | p-value | Recovery Month | Recovery Type | RMSPE |
|---|----------------------------|-----------------|---------|----------------|---------------|-------|
| keratoconjunctivitis – infectious         | -0.376                     | (-0.405,-0.346) | < 0.001 | No recovery    | N/A           | 0.120 |
| visual loss                               | -0.371                     | (-0.395,-0.346) | < 0.001 | No recovery    | N/A           | 0.115 |
| corneal degen – peripheral                | -0.365                     | (-0.388,-0.341) | < 0.001 | No recovery    | N/A           | 0.090 |
| retinal microaneurysms                    | -0.333                     | (-0.353,-0.313) | < 0.001 | No recovery    | N/A           | 0.076 |
| conjunctivitis – infectious               | -0.328                     | (-0.35,-0.306)  | < 0.001 | No recovery    | N/A           | 0.076 |
| amblyopia, suspect                        | -0.317                     | (-0.347,-0.287) | < 0.001 | No recovery    | N/A           | 0.097 |
| panophthalmitis                           | -0.312                     | (-0.342,-0.281) | < 0.001 | No recovery    | N/A           | 0.078 |
| retained IOFB, nonmagnetic                | -0.297                     | (-0.318,-0.275) | < 0.001 | No recovery    | N/A           | 0.056 |
| other/unspec strabismus                   | -0.290                     | (-0.309,-0.27)  | < 0.001 | No recovery    | N/A           | 0.068 |
| carcinoma in situ – eye                   | -0.284                     | (-0.32,-0.245)  | < 0.001 | No recovery    | N/A           | 0.113 |
| conjunctivitis – other/unspec acute       | -0.282                     | (-0.303,-0.26)  | < 0.001 | No recovery    | N/A           | 0.065 |
| conjunctivitis – other/unspec chronic     | -0.281                     | (-0.308,-0.253) | < 0.001 | No recovery    | N/A           | 0.092 |
| benign neoplasm – eyelid                  | -0.276                     | (-0.3,-0.25)    | < 0.001 | No recovery    | N/A           | 0.088 |
| background retinopathy, unspec            | -0.272                     | (-0.29,-0.252)  | < 0.001 | No recovery    | N/A           | 0.064 |
| color vision deficiencies                 | -0.262                     | (-0.291,-0.232) | < 0.001 | No recovery    | N/A           | 0.090 |
| orbital floor fracture                    | -0.256                     | (-0.291,-0.22)  | < 0.001 | No recovery    | N/A           | 0.114 |
| venous engorgement                        | -0.251                     | (-0.267,-0.235) | < 0.001 | No recovery    | N/A           | 0.065 |
| corneal transplant failure                | -0.250                     | (-0.263,-0.238) | < 0.001 | No recovery    | N/A           | 0.047 |
| other retinal microvascular abnormalities | -0.244                     | (-0.262,-0.225) | < 0.001 | No recovery    | N/A           | 0.070 |
| other binocular vision disorders          | -0.241                     | (-0.275,-0.206) | < 0.001 | No recovery    | N/A           | 0.123 |
| lacrimonal passage stenosis/insufficiency | -0.238                     | (-0.261,-0.215) | < 0.001 | No recovery    | N/A           | 0.085 |
| conjunctivitis – other/unspec             | -0.228                     | (-0.25,-0.206)  | < 0.001 | No recovery    | N/A           | 0.054 |
| FB, external eye other/unspec             | -0.227                     | (-0.256,-0.196) | < 0.001 | No recovery    | N/A           | 0.121 |
| ectropion                                 | -0.227                     | (-0.249,-0.205) | < 0.001 | No recovery    | N/A           | 0.059 |
| other eyelid degenerative disorders       | -0.226                     | (-0.256,-0.195) | < 0.001 | No recovery    | N/A           | 0.123 |
| anterior synechiae (iris)                 | -0.224                     | (-0.247,-0.2)   | < 0.001 | No recovery    | N/A           | 0.081 |
| other conjunctival disorders              | -0.216                     | (-0.238,-0.193) | < 0.001 | No recovery    | N/A           | 0.076 |
| epiphora                                  | -0.216                     | (-0.239,-0.191) | < 0.001 | No recovery    | N/A           | 0.063 |
| retinal ischemia                          | -0.215                     | (-0.229,-0.201) | < 0.001 | No recovery    | N/A           | 0.051 |
| vitreous membranes/strands                | -0.214                     | (-0.232,-0.194) | < 0.001 | No recovery    | N/A           | 0.047 |
| PRAO                                      | -0.211                     | (-0.226,-0.196) | < 0.001 | No recovery    | N/A           | 0.050 |
| chalazion                                 | -0.211                     | (-0.23,-0.192)  | < 0.001 | No recovery    | N/A           | 0.068 |
| eyelid/periorcular superficial injury     | -0.206                     | (-0.24,-0.172)  | < 0.001 | Nov 2020       | Partial       | 0.072 |

**Diagnosis Category**

|                 |
|-----------------|
| Blind           |
| Cataract        |
| Cornea/External |
| Glaucoma        |
| Neuro           |
| Oculoplastics   |
| OGI             |
| Other           |
| Retina/Vitreous |
| Strab           |
| Uveitis         |

**B**

| Entity Name                         | Post-hiatus Mean Deviation | 95% CI         | p-value | Recovery Month | Recovery Type | RMSPE |
|-------------------------------------|----------------------------|----------------|---------|----------------|---------------|-------|
| unspec DR w/ DME                    | 0.459                      | (0.373,0.552)  | < 0.001 | Jun 2020       | Full          | 0.102 |
| cataract, infantile/juvenile        | 0.167                      | (0.122,0.213)  | < 0.001 | Jun 2020       | Full          | 0.114 |
| corrosion, cornea/conjunctival sac  | 0.142                      | (0.082,0.205)  | < 0.001 | Jun 2020       | Full          | 0.115 |
| other eyelid function disorders     | 0.125                      | (0.065,0.189)  | < 0.001 | Jun 2020       | Full          | 0.102 |
| ROP, stage 3                        | 0.118                      | (0.064,0.175)  | < 0.001 | Jun 2020       | Full          | 0.082 |
| ocular laceration w/o prolapse      | 0.088                      | (0.037,0.141)  | < 0.001 | Jun 2020       | Full          | 0.120 |
| optic chiasm disorders              | 0.049                      | (0.017,0.082)  | 0.00144 | Jun 2020       | Partial       | 0.116 |
| ROP, stage unspec                   | 0.047                      | (-0.004,0.101) | 0.06543 | Jun 2020       | Full          | 0.108 |
| unspec DR w/o DME                   | 0.043                      | (-0.005,0.094) | 0.06818 | Jun 2020       | Full          | 0.108 |
| ROP, stage 2                        | 0.042                      | (-0.019,0.108) | 0.17133 | Jun 2020       | Full          | 0.080 |
| other corneal deformities           | 0.018                      | (-0.011,0.047) | 0.21815 | Nov 2020       | Full          | 0.064 |
| TRAO                                | 0.014                      | (-0.015,0.045) | 0.33402 | Jun 2020       | Partial       | 0.087 |
| iridodialysis                       | 0.013                      | (-0.016,0.042) | 0.37551 | Jun 2020       | Full          | 0.084 |
| keratoconjunctivitis – other/unspec | 0.012                      | (-0.001,0.026) | 0.0619  | Mar 2021       | Full          | 0.108 |
| retrolental fibroplasia             | 0.004                      | (-0.047,0.059) | 0.87671 | Jun 2020       | Partial       | 0.093 |

Diagnosis entities that (A) exhibited the largest suppressions in care utilization during the post-hiatus period (i.e., with a mean deviation  $\leq -20\%$ ), and (B) met or exceeded counterfactual expectations in the post-hiatus period (i.e., with a mean deviation  $\geq 0\%$ ). The order of the diagnosis entities in each panel is sorted by the value of their post-hiatus mean deviation, in descending order. Rows are colored by the diagnosis category that each entity belongs to.

*Abbreviations:* Blind = blindness and vision defects; Neuro = neuro-ophthalmology; Oculoplastics = oculofacial plastics and orbital conditions; OGI = ocular globe injury/intraocular foreign body; Strab = strabismus; RMSPE = root mean squared percentage error; CI =

confidence interval; IOFB = intraocular foreign body; unspec = unspecified; degen = degeneration; PRAO = partial retinal arterial occlusion; DR = diabetic retinopathy; DME = diabetic macular edema; ROP = retinopathy of prematurity; TRA0 = transient retinal artery occlusion.

**Supplementary Table 4.** Diagnosis entities exhibiting partial or sustained recovery in the post-hiatus period.

| Entity Name                                 | Post-hiatus Mean Deviation | 95% CI          | p-value | Recovery Month | Recovery Type | RMSPE |
|---|----------------------------|-----------------|---------|----------------|---------------|-------|
| unspec DR w/ DME                            | 0.459                      | (0.373,0.552)   | < 0.001 | Jun 2020       | Full          | 0.102 |
| cataract, infantile/juvenile                | 0.167                      | (0.122,0.213)   | < 0.001 | Jun 2020       | Full          | 0.114 |
| corrosion, cornea/conjunctival sac          | 0.142                      | (0.082,0.205)   | < 0.001 | Jun 2020       | Full          | 0.115 |
| other eyelid function disorders             | 0.125                      | (0.065,0.189)   | < 0.001 | Jun 2020       | Full          | 0.102 |
| ROP, stage 3                                | 0.118                      | (0.064,0.175)   | < 0.001 | Jun 2020       | Full          | 0.082 |
| ocular laceration w/o prolapse              | 0.088                      | (0.037,0.141)   | < 0.001 | Jun 2020       | Full          | 0.120 |
| optic chiasm disorders                      | 0.049                      | (0.017,0.082)   | 0.00144 | Jun 2020       | Partial       | 0.116 |
| ROP, stage unspec                           | 0.047                      | (-0.004,0.101)  | 0.06543 | Jun 2020       | Full          | 0.108 |
| unspec DR w/o DME                           | 0.043                      | (-0.005,0.094)  | 0.06818 | Jun 2020       | Full          | 0.108 |
| ROP, stage 2                                | 0.042                      | (-0.019,0.108)  | 0.17133 | Jun 2020       | Full          | 0.080 |
| other corneal deformities                   | 0.018                      | (-0.011,0.047)  | 0.21815 | Nov 2020       | Full          | 0.064 |
| TRAO  | 0.014                      | (-0.015,0.045)  | 0.33402 | Jun 2020       | Partial       | 0.087 |
| iridodialysis                               | 0.013                      | (-0.016,0.042)  | 0.37551 | Jun 2020       | Full          | 0.084 |
| keratoconjunctivitis – other/unspec         | 0.012                      | (-0.001,0.026)  | 0.0619  | Mar 2021       | Full          | 0.108 |
| retrolental fibroplasia                     | 0.004                      | (-0.047,0.059)  | 0.87671 | Jun 2020       | Partial       | 0.093 |
| eyelid/periocular superficial injury        | -0.206                     | (-0.24,-0.172)  | < 0.001 | Nov 2020       | Partial       | 0.072 |
| sympathetic uveitis                         | -0.191                     | (-0.228,-0.152) | < 0.001 | Mar 2021       | Partial       | 0.087 |
| pupillary function anomalies                | -0.190                     | (-0.218,-0.161) | < 0.001 | Mar 2021       | Partial       | 0.076 |
| other orbital disorders                     | -0.186                     | (-0.212,-0.158) | < 0.001 | Feb 2021       | Partial       | 0.083 |
| other binocular eye mvmt dis                | -0.182                     | (-0.215,-0.147) | < 0.001 | Mar 2021       | Partial       | 0.100 |
| orbit inflammation – acute                  | -0.180                     | (-0.217,-0.143) | < 0.001 | Jun 2020       | Partial       | 0.092 |
| lens fragments post-cataract surg           | -0.179                     | (-0.215,-0.14)  | < 0.001 | Mar 2021       | Partial       | 0.091 |
| other spec visual disturbances              | -0.176                     | (-0.215,-0.135) | < 0.001 | Sep 2020       | Full          | 0.103 |
| hyphema                                     | -0.165                     | (-0.199,-0.13)  | < 0.001 | Sep 2020       | Full          | 0.090 |
| anterior uveitis – acute, other/unspec      | -0.162                     | (-0.189,-0.134) | < 0.001 | Dec 2020       | Partial       | 0.107 |
| eyelid edema                                | -0.159                     | (-0.2,-0.116)   | < 0.001 | Jun 2020       | Full          | 0.106 |
| ocular pain                                 | -0.157                     | (-0.186,-0.126) | < 0.001 | Jun 2021       | Partial       | 0.093 |
| papilledema                                 | -0.154                     | (-0.182,-0.124) | < 0.001 | Feb 2021       | Partial       | 0.078 |
| zoster ocular disease                       | -0.152                     | (-0.192,-0.111) | < 0.001 | Jun 2020       | Full          | 0.120 |
| FB, conjunctival sac                        | -0.151                     | (-0.183,-0.118) | < 0.001 | Feb 2021       | Partial       | 0.067 |
| choroidal rupture                           | -0.148                     | (-0.179,-0.116) | < 0.001 | Dec 2020       | Partial       | 0.121 |
| benign neoplasm – unspec                    | -0.144                     | (-0.168,-0.119) | < 0.001 | Feb 2021       | Partial       | 0.091 |
| corneal ulcer – perforated                  | -0.142                     | (-0.169,-0.113) | < 0.001 | Jun 2020       | Partial       | 0.084 |
| xanthelasma                                 | -0.141                     | (-0.169,-0.111) | < 0.001 | Dec 2020       | Partial       | 0.084 |
| choroidal degenerations                     | -0.138                     | (-0.16,-0.115)  | < 0.001 | Jun 2021       | Partial       | 0.064 |
| heterophoria                                | -0.135                     | (-0.167,-0.102) | < 0.001 | Dec 2020       | Partial       | 0.094 |
| lens dislocation                            | -0.133                     | (-0.153,-0.112) | < 0.001 | Jun 2021       | Partial       | 0.056 |
| eyelid cysts                                | -0.131                     | (-0.16,-0.102)  | < 0.001 | Feb 2021       | Partial       | 0.078 |
| anisometropia/aniseikonia                   | -0.130                     | (-0.156,-0.104) | < 0.001 | Dec 2020       | Partial       | 0.075 |
| eyelid/periocular open wound                | -0.129                     | (-0.171,-0.085) | < 0.001 | Jun 2020       | Full          | 0.119 |
| optic nerve/pathway injury                  | -0.128                     | (-0.166,-0.087) | < 0.001 | Jun 2020       | Partial       | 0.111 |
| burn, corneal/conjunctival sac              | -0.126                     | (-0.165,-0.085) | < 0.001 | Sep 2020       | Partial       | 0.103 |
| dacryoadenitis – acute                      | -0.124                     | (-0.173,-0.073) | < 0.001 | Jun 2020       | Full          | 0.119 |
| corneal ulcer – unperforated, w/ str involv | -0.122                     | (-0.145,-0.099) | < 0.001 | Feb 2021       | Partial       | 0.061 |
| corneal neovascularization                  | -0.122                     | (-0.141,-0.102) | < 0.001 | Feb 2021       | Partial       | 0.067 |
| other scleral disorders                     | -0.120                     | (-0.142,-0.097) | < 0.001 | Feb 2021       | Partial       | 0.070 |
| eyelid retraction                           | -0.119                     | (-0.152,-0.085) | < 0.001 | Sep 2020       | Full          | 0.066 |
| interstitial/deep keratitis                 | -0.116                     | (-0.131,-0.102) | < 0.001 | Feb 2021       | Partial       | 0.054 |
| glaucoma, PACG – other/unspec               | -0.116                     | (-0.144,-0.087) | < 0.001 | Feb 2021       | Full          | 0.074 |
| other hereditary corneal dystrophies        | -0.115                     | (-0.132,-0.097) | < 0.001 | Jun 2021       | Partial       | 0.048 |
| central serous chorioretinopathy            | -0.115                     | (-0.131,-0.098) | < 0.001 | Jun 2021       | Partial       | 0.056 |
| corneal membrane changes                    | -0.113                     | (-0.142,-0.083) | < 0.001 | Aug 2021       | Full          | 0.083 |
| wet AMD, inactive scar                      | -0.112                     | (-0.137,-0.086) | < 0.001 | Jun 2021       | Partial       | 0.054 |
| intermittent heterotropia                   | -0.112                     | (-0.146,-0.076) | < 0.001 | Sep 2020       | Full          | 0.082 |
| conjunctival scars                          | -0.112                     | (-0.142,-0.08)  | < 0.001 | Feb 2021       | Partial       | 0.099 |
| keratitis – infectious                      | -0.110                     | (-0.138,-0.082) | < 0.001 | Nov 2020       | Partial       | 0.064 |
| dry AMD, adv stage w/ subfov involv         | -0.107                     | (-0.133,-0.08)  | < 0.001 | Mar 2021       | Partial       | 0.063 |
| glaucoma, PACG – chronic                    | -0.105                     | (-0.122,-0.088) | < 0.001 | Jun 2021       | Partial       | 0.046 |
| diplopia                                    | -0.104                     | (-0.128,-0.079) | < 0.001 | Mar 2021       | Partial       | 0.052 |
| BRAO  | -0.104                     | (-0.131,-0.077) | < 0.001 | Jun 2021       | Partial       | 0.075 |
| secondary uveitis – infectious              | -0.103                     | (-0.131,-0.074) | < 0.001 | Jun 2020       | Full          | 0.072 |
| other endophthalmitis                       | -0.102                     | (-0.124,-0.08)  | < 0.001 | Sep 2020       | Partial       | 0.070 |
| lagophthalmos                               | -0.102                     | (-0.123,-0.079) | < 0.001 | Dec 2020       | Partial       | 0.072 |
| episcleritis                                | -0.102                     | (-0.126,-0.077) | < 0.001 | Sep 2020       | Partial       | 0.055 |
| ocular laceration w/ prolapse               | -0.101                     | (-0.135,-0.066) | < 0.001 | Jun 2020       | Full          | 0.100 |
| cystoid macular degeneration                | -0.101                     | (-0.117,-0.084) | < 0.001 | Jun 2021       | Partial       | 0.045 |
| vitreous prolapse                           | -0.099                     | (-0.133,-0.064) | < 0.001 | Jun 2020       | Full          | 0.093 |
| other refraction/accommodation disorders    | -0.099                     | (-0.126,-0.071) | < 0.001 | Feb 2021       | Partial       | 0.062 |
| chorioretinal scars following detach surg   | -0.092                     | (-0.112,-0.072) | < 0.001 | Jun 2021       | Partial       | 0.075 |
| other postop complications                  | -0.091                     | (-0.117,-0.064) | < 0.001 | Oct 2020       | Partial       | 0.122 |
| other subj visual disturb                   | -0.090                     | (-0.118,-0.061) | < 0.001 | Dec 2020       | Full          | 0.072 |
| benign neoplasm – conjunctiva               | -0.090                     | (-0.117,-0.061) | < 0.001 | Sep 2020       | Full          | 0.076 |
| esotropia                                   | -0.087                     | (-0.11,-0.063)  | < 0.001 | Dec 2020       | Partial       | 0.060 |
| anterior uveitis – acute, recurrent         | -0.086                     | (-0.118,-0.053) | < 0.001 | Sep 2020       | Full          | 0.081 |
| transient visual loss                       | -0.082                     | (-0.109,-0.053) | < 0.001 | Jun 2020       | Full          | 0.081 |
| amblyopia, unspec                           | -0.081                     | (-0.104,-0.058) | < 0.001 | Dec 2020       | Partial       | 0.050 |

**Diagnosis Category**

- Blind
- Cataract
- Cornea/External
- Glaucoma
- Neuro
- Oculoplastics
- OGI
- Other
- PO
- Refra
- Retina/Vitreous
- Strab
- Uveitis

(Continued on the next page)

|   |        |                 |         |          |         |       |
|---|--------|-----------------|---------|----------|---------|-------|
| panuveitis                              | -0.080 | (-0.099,-0.06)  | < 0.001 | Jun 2021 | Partial | 0.041 |
| malignant neoplasm – conjunctiva        | -0.080 | (-0.108,-0.052) | < 0.001 | Nov 2020 | Partial | 0.078 |
| glaucoma, secondary to eye infl         | -0.079 | (-0.097,-0.06)  | < 0.001 | Feb 2021 | Partial | 0.049 |
| FB, cornea                              | -0.078 | (-0.115,-0.039) | < 0.001 | Jun 2020 | Partial | 0.085 |
| scleritis                               | -0.074 | (-0.089,-0.057) | < 0.001 | Jun 2021 | Partial | 0.043 |
| PDR, stable                             | -0.074 | (-0.101,-0.045) | < 0.001 | Jun 2020 | Partial | 0.075 |
| PDR w/o DME                             | -0.073 | (-0.094,-0.052) | < 0.001 | Mar 2021 | Partial | 0.051 |
| recession of chamber angle              | -0.072 | (-0.094,-0.05)  | < 0.001 | Dec 2020 | Partial | 0.063 |
| oculomotor nerve palsy                  | -0.071 | (-0.119,-0.022) | 0.0087  | Jun 2020 | Full    | 0.107 |
| RPE detachment, hemorrhagic             | -0.070 | (-0.098,-0.042) | < 0.001 | Jun 2020 | Full    | 0.105 |
| angoid streaks of macula                | -0.070 | (-0.09,-0.049)  | < 0.001 | Jun 2020 | Partial | 0.049 |
| dacryoadenitis – chronic                | -0.069 | (-0.11,-0.026)  | 0.00202 | Sep 2020 | Full    | 0.099 |
| abducent nerve palsy                    | -0.069 | (-0.097,-0.041) | < 0.001 | Jun 2020 | Full    | 0.057 |
| anterior uveitis – acute, primary       | -0.067 | (-0.098,-0.035) | < 0.001 | Jun 2020 | Full    | 0.082 |
| malignant neoplasm – retina             | -0.063 | (-0.11,-0.012)  | 0.0146  | Aug 2020 | Partial | 0.090 |
| keratoconjunctivitis – dry eye syndrome | -0.062 | (-0.087,-0.036) | < 0.001 | Sep 2020 | Full    | 0.094 |
| anterior uveitis – other                | -0.062 | (-0.092,-0.03)  | < 0.001 | Sep 2020 | Partial | 0.082 |
| glaucoma, absolute                      | -0.056 | (-0.077,-0.034) | < 0.001 | Dec 2020 | Full    | 0.050 |
| optic neuritis                          | -0.055 | (-0.089,-0.02)  | 0.00372 | Jun 2020 | Full    | 0.071 |
| anterior uveitis – chronic              | -0.055 | (-0.081,-0.029) | < 0.001 | Jun 2020 | Full    | 0.059 |
| CRAO                                    | -0.054 | (-0.08,-0.028)  | < 0.001 | Jun 2020 | Full    | 0.075 |
| glaucoma, PACG – acute                  | -0.051 | (-0.08,-0.02)   | 0.00173 | Sep 2020 | Full    | 0.064 |
| ROP, stage 1                            | -0.048 | (-0.081,-0.014) | 0.00699 | Jun 2020 | Full    | 0.096 |
| choroidal hemorrhage                    | -0.044 | (-0.068,-0.019) | < 0.001 | Dec 2020 | Full    | 0.080 |
| benign neoplasm – orbit                 | -0.042 | (-0.074,-0.008) | 0.01394 | Nov 2020 | Partial | 0.099 |
| unspec macular degeneration             | -0.041 | (-0.074,-0.007) | 0.01867 | Dec 2020 | Full    | 0.104 |
| enophthalmos                            | -0.039 | (-0.077,0.001)  | 0.05857 | Jun 2020 | Full    | 0.111 |
| RD, traction                            | -0.037 | (-0.051,-0.023) | < 0.001 | Jun 2021 | Partial | 0.040 |
| aphakia                                 | -0.033 | (-0.057,-0.009) | 0.00857 | Sep 2020 | Full    | 0.052 |
| corneal degen – other/unspec            | -0.032 | (-0.073,0.01)   | 0.13412 | Sep 2020 | Partial | 0.081 |
| cataract, traumatic                     | -0.031 | (-0.06,-0.001)  | 0.04269 | Jun 2020 | Partial | 0.069 |
| herpesviral ocular disease              | -0.030 | (-0.05,-0.009)  | 0.00486 | Jun 2020 | Partial | 0.070 |
| posterior uveitis                       | -0.027 | (-0.041,-0.012) | < 0.001 | Dec 2020 | Partial | 0.044 |
| hereditary choroidal dystrophies        | -0.026 | (-0.07,0.021)   | 0.26877 | Jun 2020 | Partial | 0.099 |
| orbit penetrating wound w/ FB           | -0.025 | (-0.072,0.023)  | 0.29921 | Jun 2020 | Full    | 0.119 |
| retinal vasculitis                      | -0.018 | (-0.035,-0.001) | 0.04106 | Jun 2021 | Partial | 0.061 |
| IOL displacement                        | -0.018 | (-0.063,0.029)  | 0.44564 | Sep 2020 | Full    | 0.091 |
| blebitis                                | -0.017 | (-0.07,0.041)   | 0.5559  | Jun 2020 | Full    | 0.088 |
| retinal neovascularization              | -0.013 | (-0.043,0.018)  | 0.40523 | Jun 2020 | Full    | 0.069 |
| retained foreign body – eyelid          | -0.010 | (-0.039,0.02)   | 0.49789 | Sep 2020 | Full    | 0.113 |

Diagnosis entities that met definitions of partial or sustained recovery in the post-hiatus period. The order of the diagnosis entities in each panel is sorted by the value of their post-hiatus mean deviation, in descending order. Rows are colored by the diagnosis category that each entity belongs to. *Abbreviations:* Blind = blindness and vision defects; Neuro = neuro-ophthalmology; Oculoplastics = oculofacial plastics and orbital conditions; OGI = ocular globe injury/intraocular foreign body; Strab = strabismus; Refra = refractive error; RMSPE = root mean squared percentage error; CI = confidence interval; DR = diabetic retinopathy; DME = diabetic macular edema; ROP = retinopathy of prematurity; TRAO = transient retinal artery occlusion; unspec = unspecified; spec = specified; PACG = primary angle closure glaucoma; AMD = age-related macular degeneration; BRAO = branch retinal artery occlusion; FB = foreign body; PDR = proliferative diabetic retinopathy; RPE = retinal pigment epithelium; CRAO = central retinal artery occlusion; IOL = intraocular lens; RD = retinal detachment; mvmt dis = movement disorder; surg = surgery; str involv = stromal involvement; adv stage = advanced stage; subfov involv = subfoveal involvement; detach = detachment; subj = subjective; infl = inflammation.

### Supplementary References.

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