|  |  |  |
| --- | --- | --- |
| **Parameter** | **Description** | **Values** |
| Number of Relationships | Defined as the number of kinship relationships to consider in the analysis. | 100, 500, 1000, 5 000, 10 000, 50 000, 100 000 |
| Fuzziness | The degree of fuzziness allowed in the model. | 0, 1, 2, 5, 10 |
| Phenotypic Naïve | A Boolean parameter representing whether subjects are prioritized based on their phenotypic information. | FALSE, TRUE |
| Phenotype | Tested with three phenotype configurations:  **pheno1**: binary  **pheno2**: categorical with three categories **pheno3**: numerical | **pheno1**:  Diseased (20%) - Healthy (80%)  **pheno2**:  Disease 1 (10%) - Disease 2 (20%) - Healthy (70%)  **pheno3**:  Min 55.32; Median 99.97; Mean 100.01; Max 144.46 |

**Table 1. Simulation parameters used to run KDPS.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Phenotype** | **Schizophrenia** | **Acute Myocardial Infarction** | **Multiple**  **Sclerosis** | **Alcohol Drinking (Never)** |
|  | UK Biobank ID | 130 874 | 131 298 | 131 042 | 20 117 |
| **Full Sample** | Sample Size | 502 420 | 502 420 | 502 420 | 502 420 |
| Case/Exposure | 1 356 | 22 635 | 2 500 | 22 382 |
| Control/Ref | 501 064 | 479 785 | 499 920 | 480 038 |
| Prevalence | 2.70E-03 | 4.51E-02 | 4.98E-03 | 4.45E-02 |
| **Phenotypic Naïve Selection** | Sample Size | 427 803 | 427 797 | 427 795 | 427 793 |
| Case/Exposure | 1 184 | 19 662 | 2 175 | 19815 |
| Control/Ref | 426 619 | 408 135 | 425 620 | 407 978 |
| Prevalence | 2.77E-03 | 4.60E-02 | 5.08E-03 | 4.63E-02 |
| **Phenotypic Aware Selection** | Sample Size | 427 817 | 427 819 | 427 817 | 427 822 |
| Case/Exposure | 1 324 | 21 836 | 2 439 | 21 547 |
| Control/Ref | 426 493 | 405 983 | 425 378 | 406 275 |
| Prevalence | 3.09E-03 | 5.10E-02 | 5.70E-03 | 5.04E-02 |
| % Additional Case/Exposure Subjects Included | 11.8% | 11.1% | 12.1% | 8.7% |

**Table 2. Results and performance of KDPS in real life scenarios using UK Biobank for 4 phenotypes of interest.**