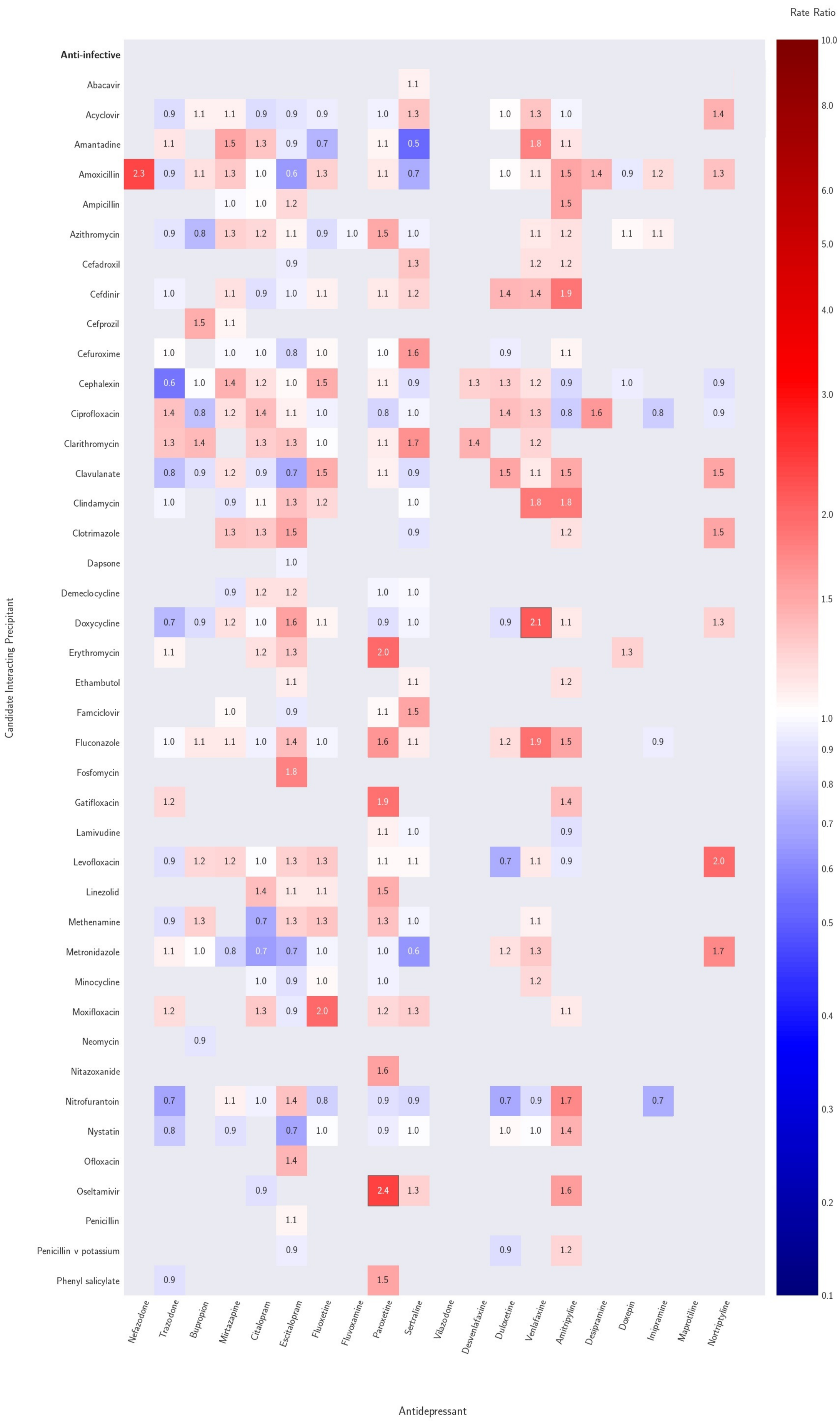
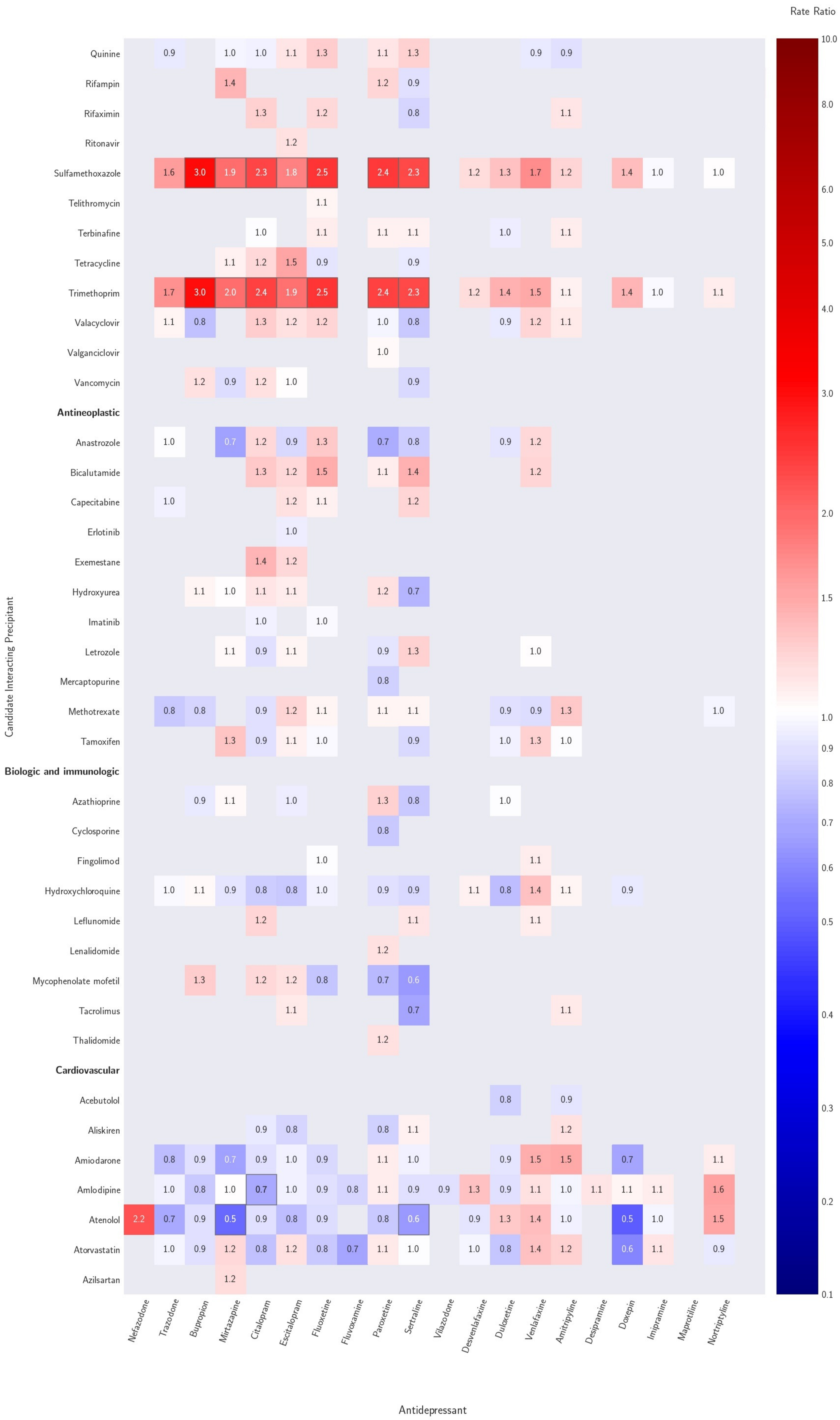
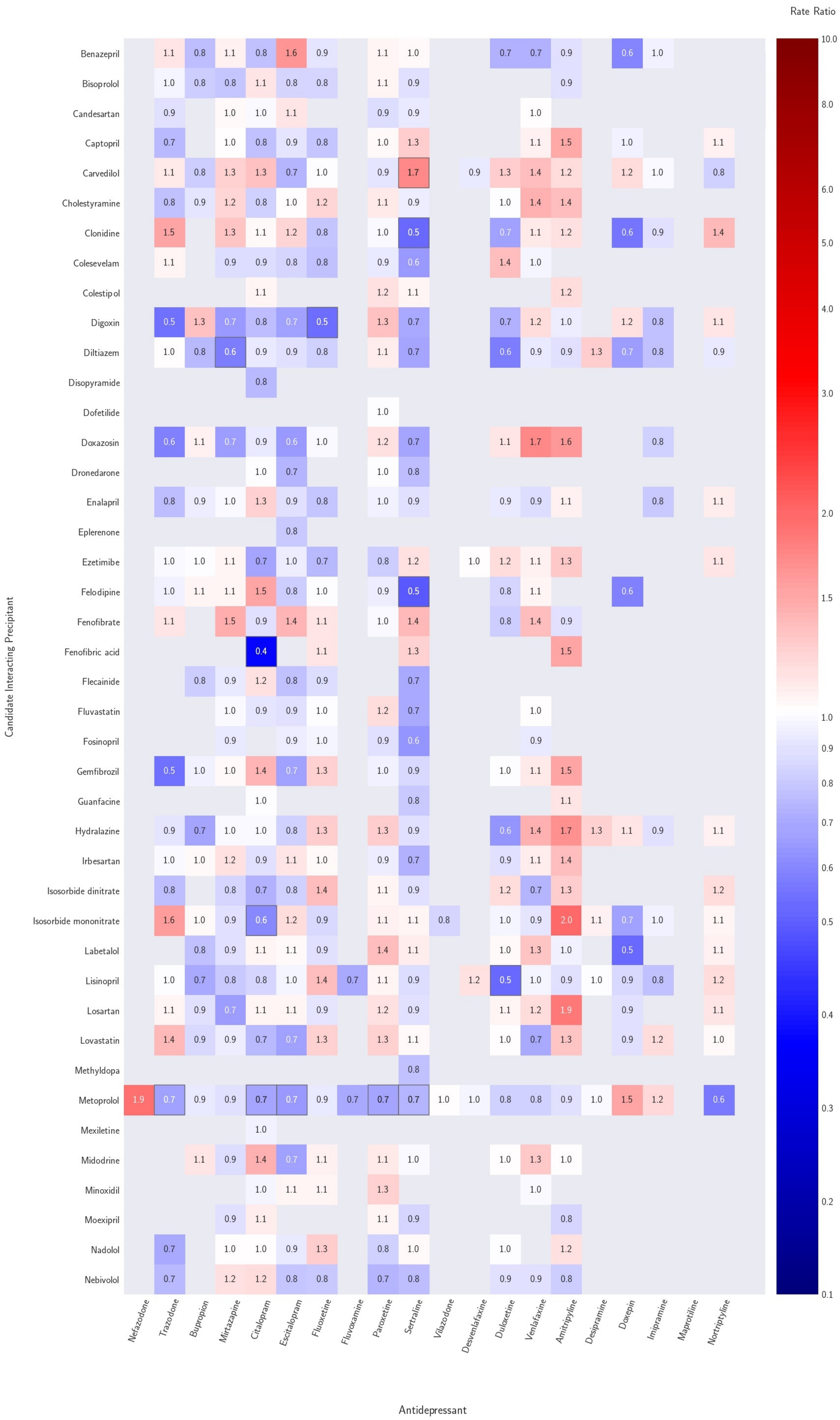
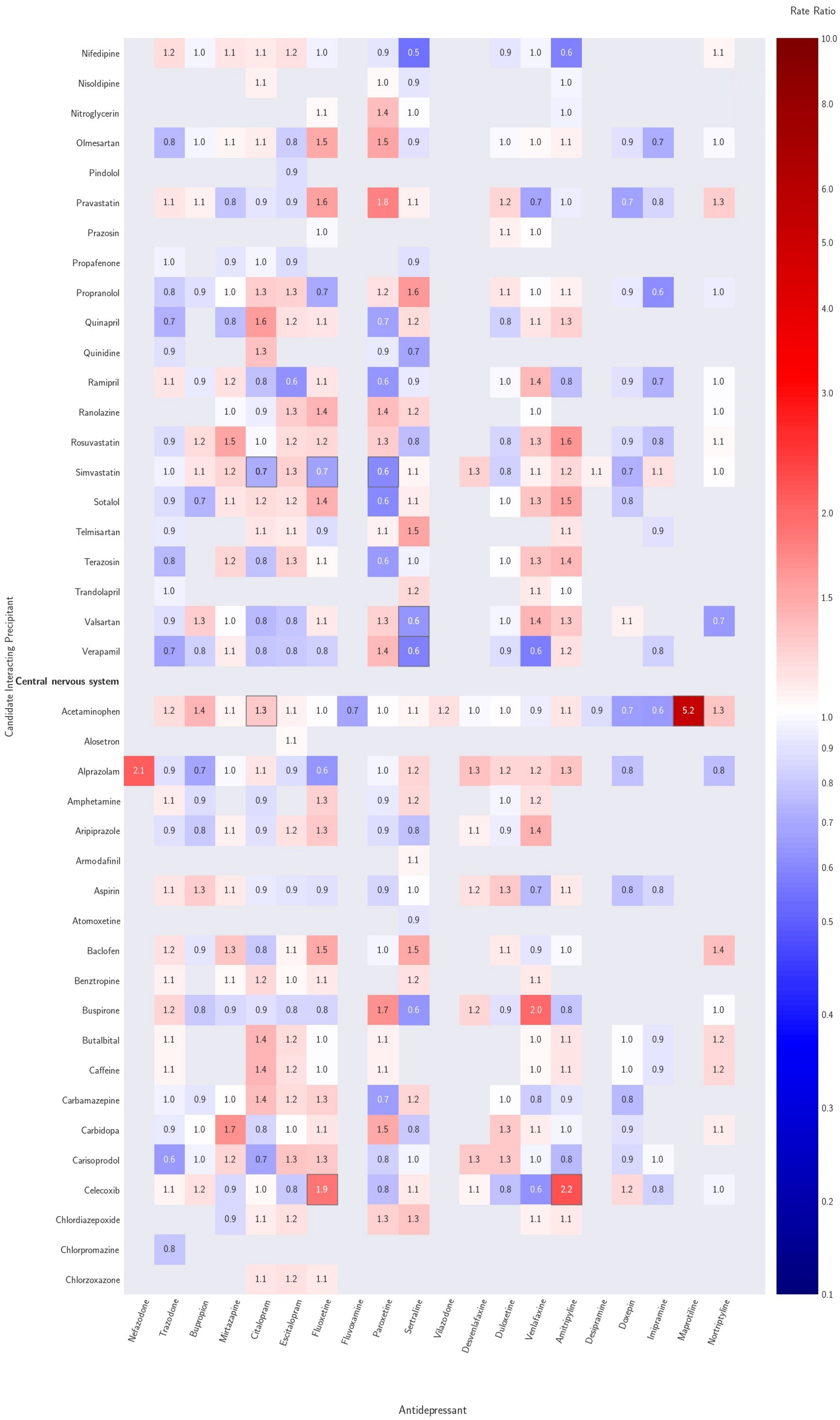
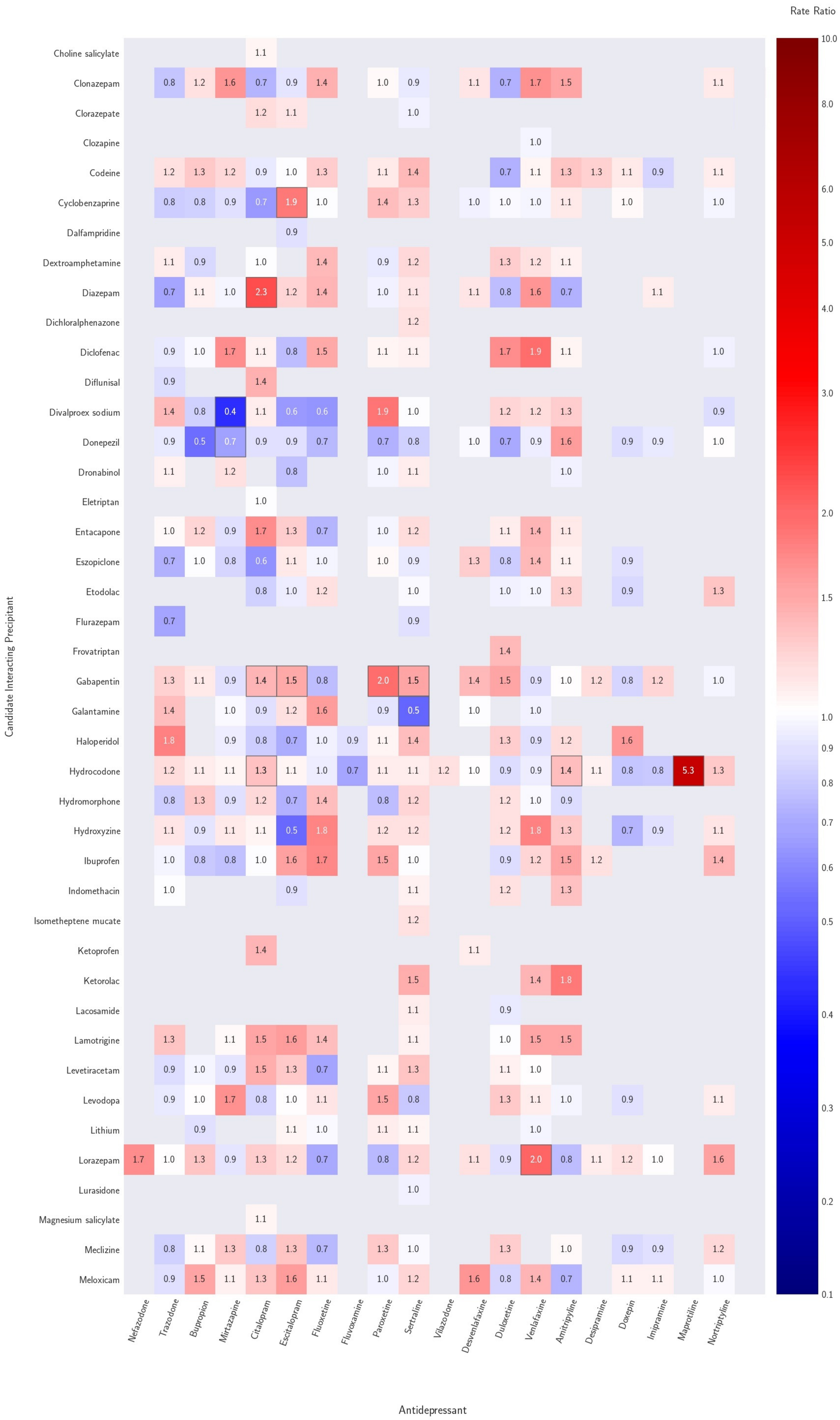
Supplemental Figure 1, Panel B. Heatmap depicting semi-Bayes shrunk adjusted rate ratios for typical hip fracture, by antidepressant object drug cohort.

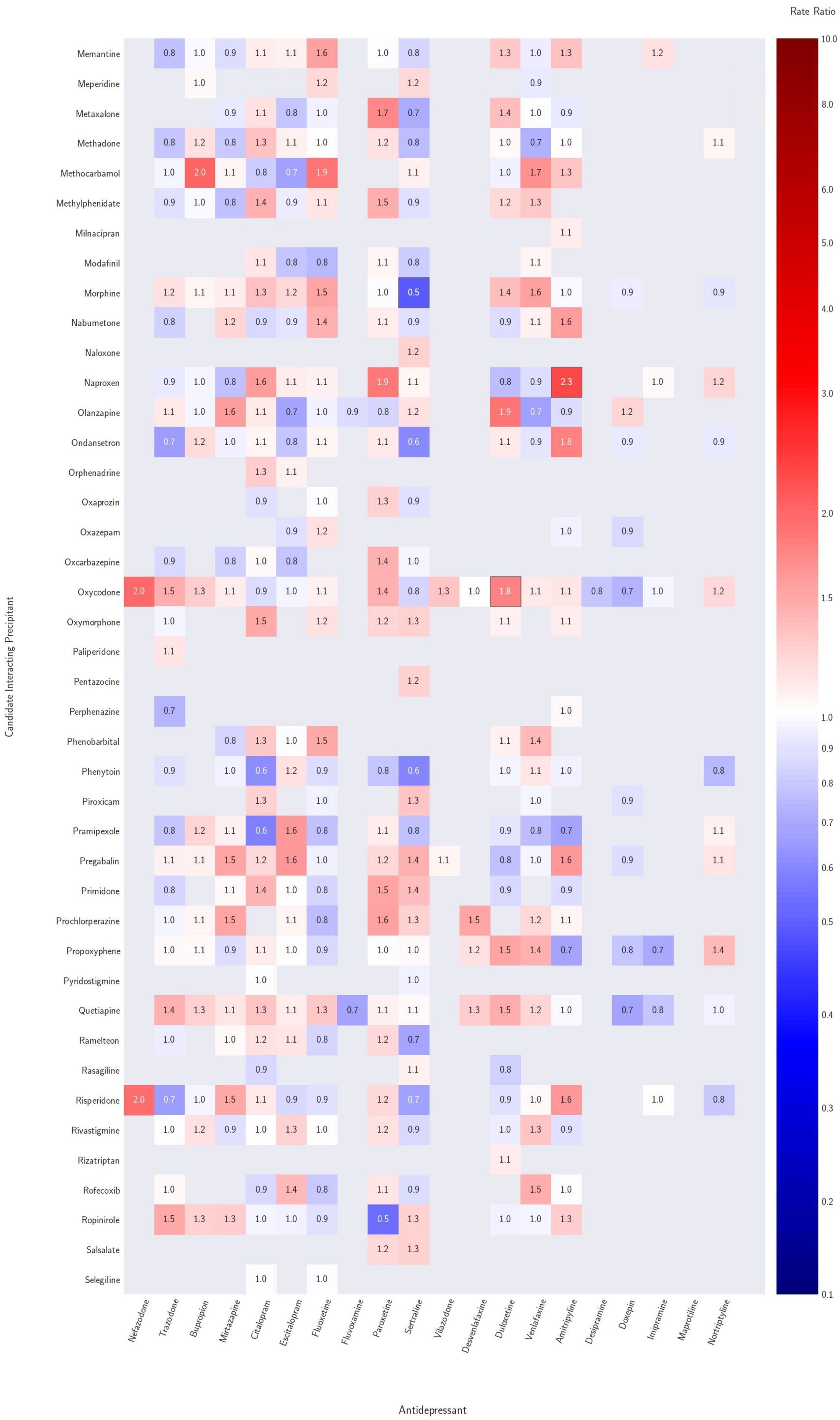



Rate Ratio
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Quinine
Rifampin
Rifaximin
Ritonavir
Sulfamethoxazole
Telithromycin
Terbinafine
Tetracycline
Trimethoprim
Valacyclovir
Valganciclovir
Vancomycin
Antineoplastic
Anastrozole
Bicalutamide
Capecitabine
Erlotinib
Exemestane
Hydroxyurea
Imatinib
Letrozole
Mercaptopurine
Methotrexate
Tamoxifen
Biologic and immunologic
Azathioprine
Cyclosporine
Fingolimod
Hydroxychloroquine
Leflunomide
Lenalidomide
Mycophenolate mofetil
Tacrolimus
Thalidomide
Cardiovascular
Acebutolol
Aliskiren
Amiodarone
Amlodipine
Atenolol
Atorvastatin
Azilsartan
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Antidepressant
Benazepril
Bisoprolol
Candesartan
Captopril
Carvedilol
Cholestyramine
Clonidine
Colesevelam
Colestipol
Digoxin
Diltiazem
Disopyramide
Dofetilide
Doxazosin
Dronedarone
Enalapril
Eplerenone
Ezetimibe
Felodipine
Fenofibrate
Fenofibric acid
Flecainide
Fluvastatin
Fosinopril
Gemfibrozil
Guanfacine
Hydralazine
Irbesartan
Isosorbide dinitrate
Isosorbide mononitrate
Labetalol
Lisinopril
Losartan
Lovastatin
Methyldopa
Metoprolol
Mexiletine
Midodrine
Minoxidil
Moexipril
Nadolol
Nebivolol
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline


Rate Ratio
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Central nervous system
Nifedipine
Nisoldipine
Nitroglycerin
Olmesartan
Pindolol
Pravastatin
Prazosin
Propafenone
Propranolol
Quinapril
Quinidine
Ramipril
Ranolazine
Rosuvastatin
Simvastatin
Sotalol
Telmisartan
Terazosin
Trandolapril
Valsartan
Verapamil
Acetaminophen
Alosetron
Alprazolam
Amphetamine
Aripiprazole
Armodafinil
Aspirin
Atomoxetine
Baclofen
Benztropine
Buspirone
Butalbital
Caffeine
Carbamazepine
Carbidopa
Carisoprodol
Celecoxib
Chlordiazepoxide
Chlorpromazine
Chlorzoxazone
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
10.0
8.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Choline salicylate
Clonazepam
Clorazepate
Clozapine
Codeine
Cyclobenzaprine
Dalfampridine
Dextroamphetamine
Diazepam
Dichloralphenazone
Diclofenac
Diflunisal
Divalproex sodium
Donepezil
Dronabinol
Eletriptan
Entacapone
Eszopiclone
Etodolac
Flurazepam
Frovatriptan
Gabapentin
Galantamine
Haloperidol
Hydrocodone
Hydromorphone
Hydroxyzine
Ibuprofen
Indomethacin
Isometheptene mucate
Ketoprofen
Ketorolac
Lacosamide
Lamotrigine
Levetiracetam
Levodopa
Lithium
Lorazepam
Lurasidone
Magnesium salicylate
Meclizine
Meloxicam
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitripyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
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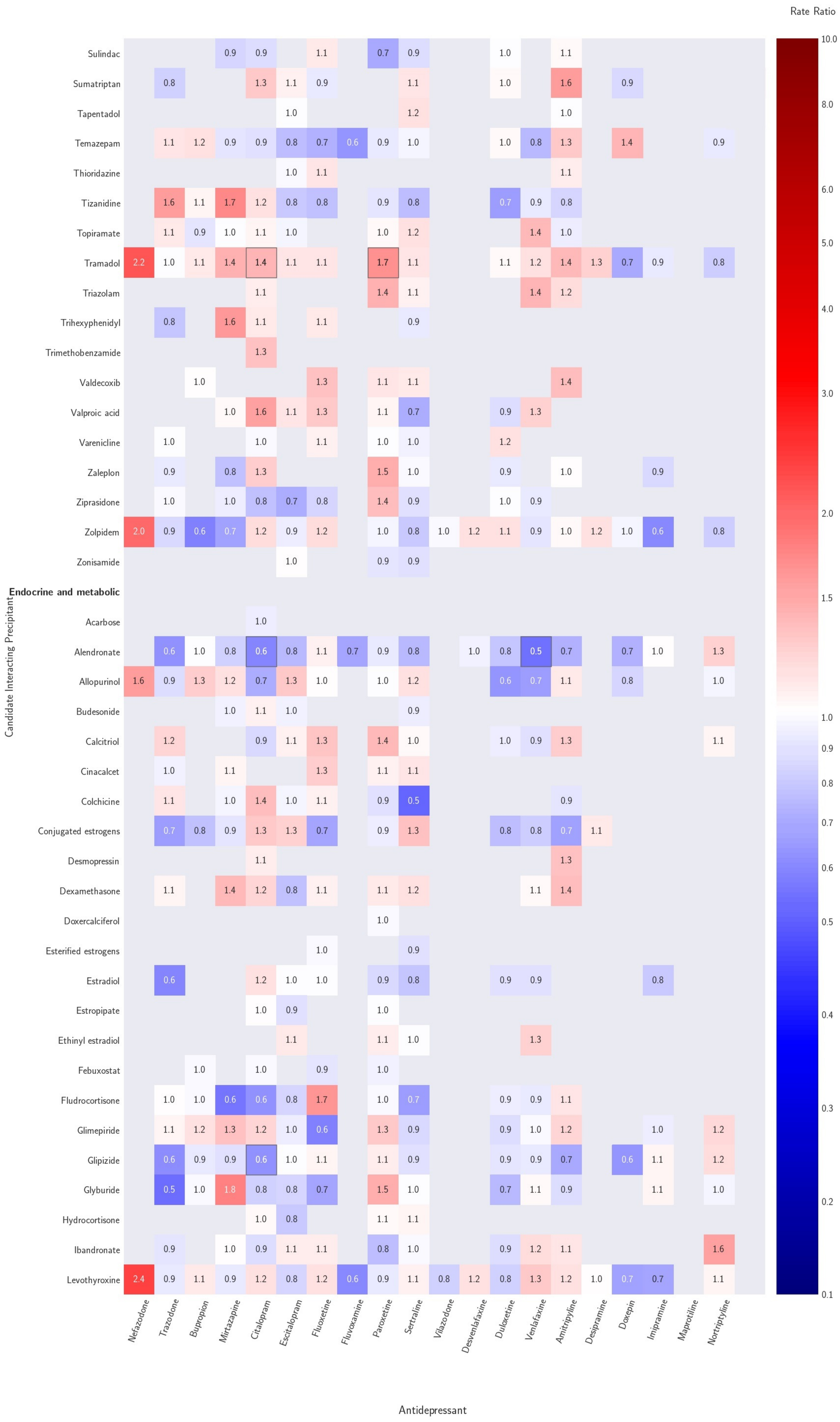
8.0
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Memantine
Meperidine
Metaxalone
Methadone
Methocarbamol
Methylphenidate
Milnacipran
Modafinil
Morphine
Nabumetone
Naloxone
Naproxen
Olanzapine
Ondansetron
Orphenadrine
Oxaprozin
Oxazepam
Oxcarbazepine
Oxycodone
Oxymorphone
Paliperidone
Pentazocine
Perphenazine
Phenobarbital
Phenytoin
Piroxicam
Pramipexole
Pregabalin
Primidone
Prochlorperazine
Propoxyphene
Pyridostigmine
Quetiapine
Ramelteon
Rasagiline
Risperidone
Rivastigmine
Rizatriptan
Rofecoxib
Ropinirole
Salsalate
Selegiline
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
10.0
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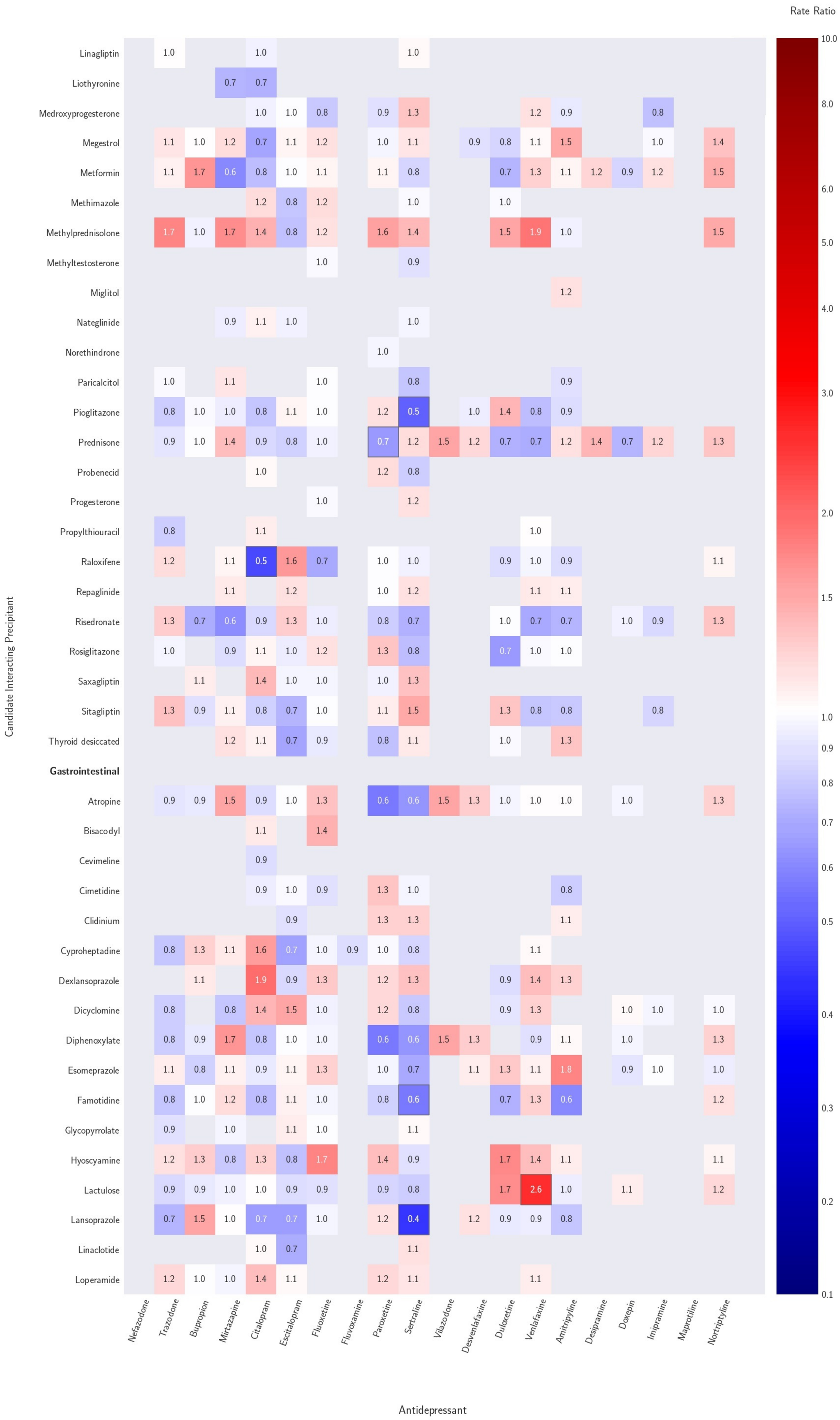
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Endocrine and metabolic
Sulindac
Sumatriptan
Tapentadol
Temazepam
Thioridazine
Tizanidine
Topiramate
Tramadol
Triazolam
Trihexyphenidyl
Trimethobenzamide
Valdecoxib
Valproic acid
Varenicline
Zaleplon
Ziprasidone
Zolpidem
Zonisamide
Acarbose
Alendronate
Allopurinol
Budesonide
Calcitriol
Cinacalcet
Colchicine
Conjugated estrogens
Desmopressin
Dexamethasone
Doxercalciferol
Esterified estrogens
Estradiol
Estropipate
Ethinyl estradiol
Febuxostat
Fludrocortisone
Glimepiride
Glipizide
Glyburide
Hydrocortisone
Ibandronate
Levothyroxine
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
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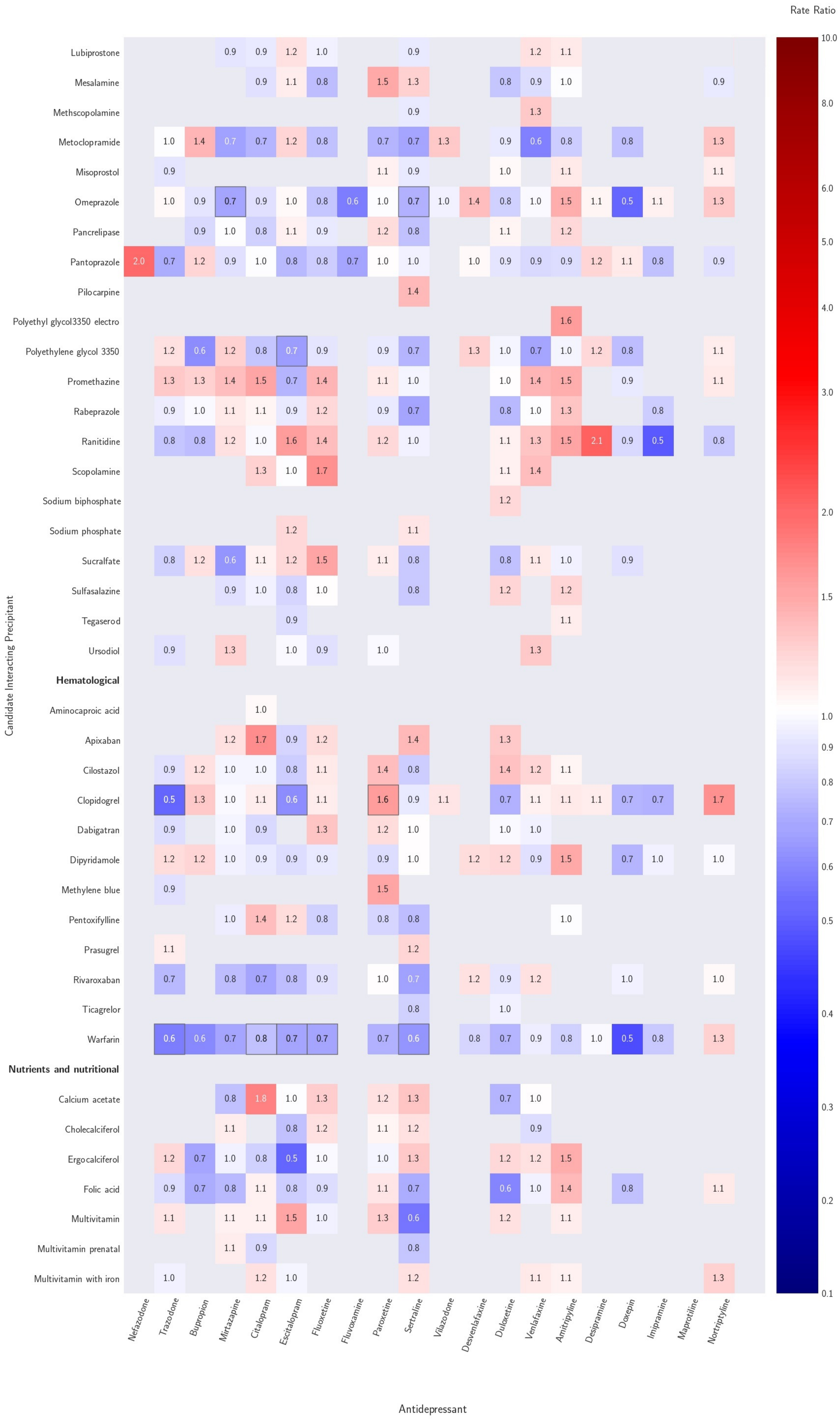
6.0
5.0
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Linagliptin
Liothyronine
Medroxyprogesterone
Megestrol
Metformin
Methimazole
Methylprednisolone
Methyltestosterone
Miglitol
Nateglinide
Norethindrone
Paricalcitol
Pioglitazone
Prednisone
Probenecid
Progesterone
Propylthiouracil
Raloxifene
Repaglinide
Risedronate
Rosiglitazone
Saxagliptin
Sitagliptin
Thyroid desiccated
Gastrointestinal
Atropine
Bisacodyl
Cevimeline
Cimetidine
Clidinium
Cyproheptadine
Dexlansoprazole
Dicyclomine
Diphenoxylate
Esomeprazole
Famotidine
Glycopyrrolate
Hyoscyamine
Lactulose
Lansoprazole
Linaclotide
Loperamide
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
10.0
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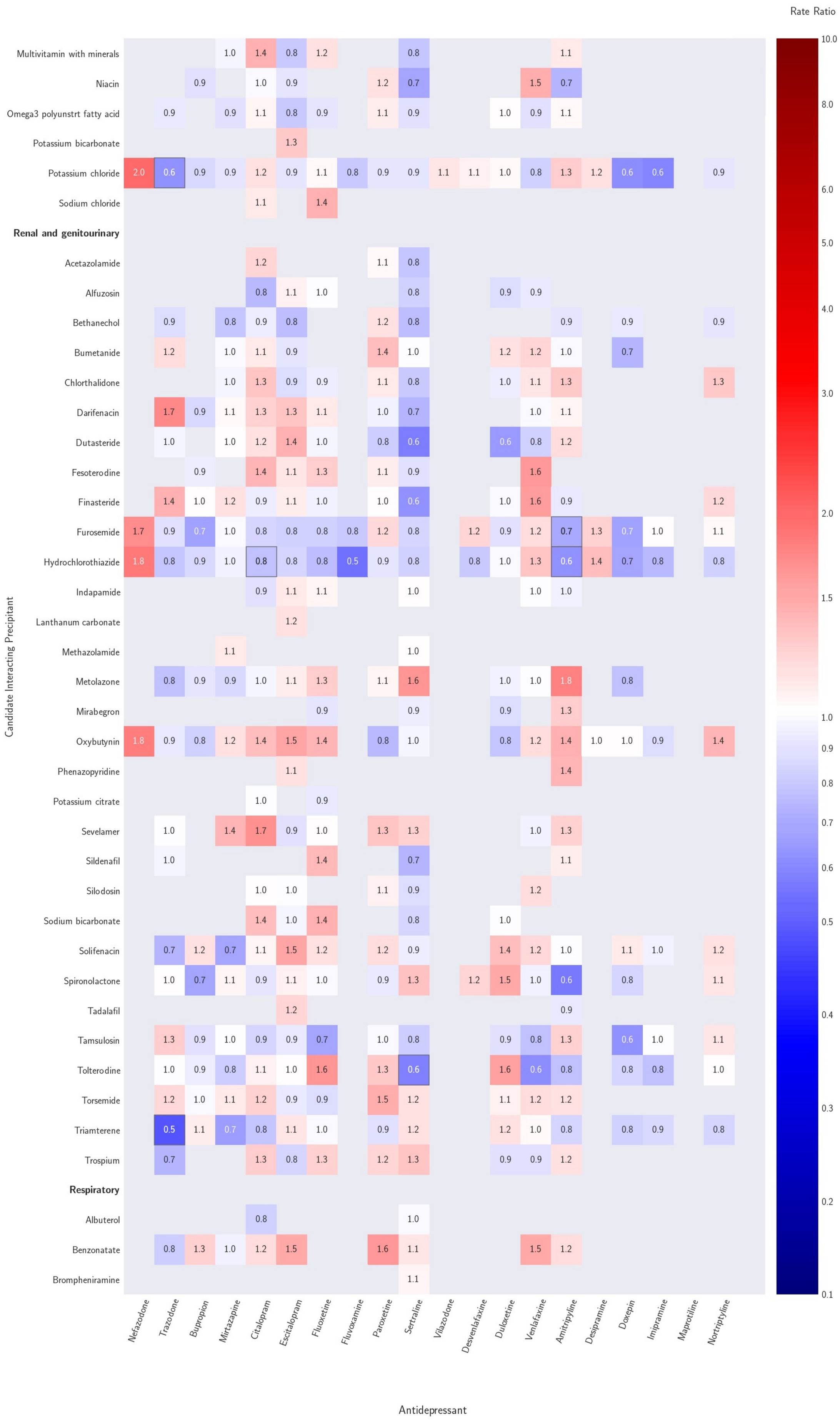
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Lubiprostone
Mesalamine
Methscopolamine
Metoclopramide
Misoprostol
Omeprazole
Pancrelipase
Pantoprazole
Pilocarpine
Polyethyl glycol3350 electro
Polyethylene glycol 3350
Promethazine
Rabeprazole
Ranitidine
Scopolamine
Sodium biphosphate
Sodium phosphate
Sucralfate
Sulfasalazine
Tegaserod
Ursodiol
Hematological
Aminocaproic acid
Apixaban
Cilostazol
Clopidogrel
Dabigatran
Dipyridamole
Methylene blue
Pentoxifylline
Prasugrel
Rivaroxaban
Ticagrelor
Warfarin
Nutrients and nutritional
Calcium acetate
Cholecalciferol
Ergocalciferol
Folic acid
Multivitamin
Multivitamin prenatal
Multivitamin with iron
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant


Rate Ratio
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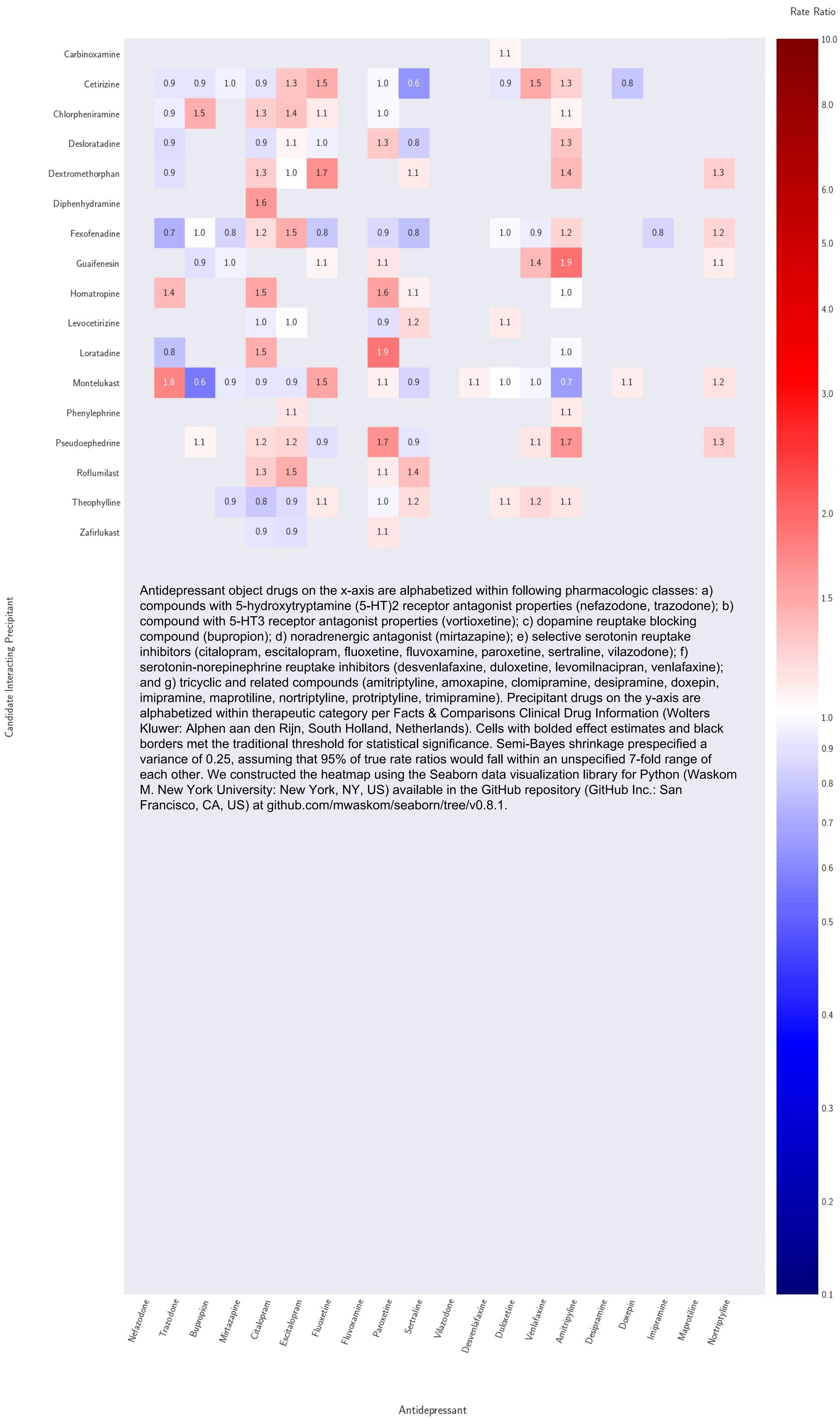
4.0
3.0
2.0
1.5
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
Candidate Interacting Precipitant
Multivitamin with minerals
Niacin
Omega3 polyunstrt fatty acid
Potassium bicarbonate
Potassium chloride
Sodium chloride
Renal and genitourinary
Acetazolamide
Alfuzosin
Bethanechol
Bumetanide
Chlorthalidone
Darifenacin
Dutasteride
Fesoterodine
Finasteride
Furosemide
Hydrochlorothiazide
Indapamide
Lanthanum carbonate
Methazolamide
Metolazone
Mirabegron
Oxybutynin
Phenazopyridine
Potassium citrate
Sevelamer
Sildenafil
Silodosin
Sodium bicarbonate
Solifenacin
Spironolactone
Tadalafil
Tamsulosin
Tolterodine
Torsemide
Triamterene
Trospium
Respiratory
Albuterol
Benzonatate
Brompheniramine
Nefazodone
Trazodone
Bupropion
Mirtazapine
Citalopram
Escitalopram
Fluoxetine
Fluvoxamine
Paroxetine
Sertraline
Vilazodone
Desvenlafaxine
Duloxetine
Venlafaxine
Amitriptyline
Desipramine
Doxepin
Imipramine
Maprotiline
Nortriptyline
Antidepressant



Antidepressant object drugs on the x-axis are alphabetized within following pharmacologic classes: a) compounds with 5-hydroxytryptamine (5-HT)2 receptor antagonist properties (nefazodone, trazodone); b) compound with 5-HT3 receptor antagonist properties (vortioxetine); c) dopamine reuptake blocking compound (bupropion); d) noradrenergic antagonist (mirtazapine); e) selective serotonin reuptake inhibitors (citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline, vilazodone); f) serotonin-norepinephrine reuptake inhibitors (desvenlafaxine, duloxetine, levomilnacipran, venlafaxine); and g) tricyclic and related compounds (amitriptyline, amoxapine, clomipramine, desipramine, doxepin, imipramine, maprotiline, nortriptyline, protriptyline, trimipramine). Precipitant drugs on the y-axis are alphabetized within therapeutic category per Facts & Comparisons Clinical Drug Information (Wolters Kluwer: Alphen aan den Rijn, South Holland, Netherlands). Cells with bolded effect estimates and black borders met the traditional threshold for statistical significance. Semi-Bayes shrinkage prespecified a variance of 0.25, assuming that 95% of true rate ratios would fall within an unspecified 7-fold range of each other. We constructed the heatmap using the Seaborn data visualization library for Python (Waskom M. New York University: New York, NY, US) available in the GitHub repository (GitHub Inc.: San Francisco, CA, US) at github.com/mwaskom/seaborn/tree/v0.8.1.