Multiclass Classification of Policy Documents with Large Language Models

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Appendix A Prompt Examples

A.1 GPT 3.5 Prompt Example

Here is a dictionary which contains policy issue labels (keys) and specific topics (values) associated with those labels :

”’ {’Macroeconomics’: Includes issues related to general domestic macroeconomic policy and more specific issues including inflation, cost of living, prices, interest rates, unemployment rate, impact of unemployment, training and retraining, unemployment benefits, monetary policy, central bank, treasury, public debt, budgeting, efforts to reduce deficits, tax policy, the impact of taxes, and tax enforcement, manufacturing policy, industrial revitalization and growth, wage or price control, emergency price controls.,

’Civil Rights’: Includes issues related to civil rights and minority rights. More specifically, it includes issues related to minority, ethnic, and racial group discrimination, sex, gender, and sexual discrimination, age discrimination, mandatory retirement age policies, handicap and disease discrimination, voting rights, expanding or contracting the franchise, participation and related issues, freedom of speech, religious freedoms, other types of freedom of expression, privacy rights, privacy of records, access to government information, abortion rights and anti-government activity groups.,

’Health’: Includes issues related generally to health care, including appropriations for general health care government agencies. More specifically, it includes issues related to broad, comprehensive changes in the health care system, health insurance reform, regulation, availability,

and cost of insurance, the regulation and promotion of pharmaceuticals, medical devices, and clinical labs, facilities construction, regulation and payments, provider and insurer payments and regulation, medical liability, malpractice issues, medical fraud and abuse, and unfair practices, the supply and quantity of labor in the health care industry, training and licensing, disease prevention and treatment, health promotion, coverage and quality of infants and children care, school health programs, mental health care, and mental health disease, long term care, home health care, the terminally ill and rehabilitation services, prescription drug coverage, programs to pay for prescription drugs, policy to reduce the cost of prescription drugs, tobacco abuse, treatment, education and health effects, alcohol and illegal drug abuse, treatment, education and health effects, health care research and development.,

'Agriculture': Agriculture policy, the regulation and impact of agricultural foreign trade, government subsidies to farmers and ranchers, food inspection and safety, the regulation of agricultural marketing and providing information to consumers regarding a healthy diet, animal and crop disease, pest control and pesticide regulation, and welfare for domesticated animals, fishing, commercial fishery regulation and conservation, agricultural research and development.,

'Labor': Employment, and pensions, worker safety and protection and compensation for work-related injury and disease, job training for adult workers, workforce development, and efforts to retrain displaced workers, employee benefits, pensions, and retirement accounts, including government-provided unemployment insurance, labor unions, collective bargaining, employer-employee relations, fair labor standards, minimum wage and overtime compensation, labor law, youth employment, child labor and job training for youths, migrant, guest and seasonal workers.,

'Education': Education policy, higher education, student loans and education finance, the regulation of colleges and universities, elementary and private schools, school reform, safety in schools, efforts to generally improve educations standards and outcomes, education of underprivileged students, adult literacy programs, bilingual education needs, rural education initiatives, vocational education for children and adults, special education for the physically or mentally handicapped, education excellence, research and development in education.,

'Environment': Environmental policy, domestic drinking water safety, supply, pollution and

additives, disposal and treatment of wastewater, solid water and runoff, hazardous waste and toxic chemical regulation, treatment and disposal, air pollution, climate change, noise pollution, recycling, reuse, resource conservation, environmental hazards, indoor air contaminations, indoor hazardous substances, forest protection, endangered species, control of the domestic illicit trade in wildlife products, regulation of laboratory or performance animals, land and water resource conservations, research and development in environmental technology, not including alternative energy.,

'Energy': Energy policy, nuclear energy, safety and security, and disposal of nuclear waste, general electricity, hydropower, regulation of electric utilities, natural gas and oil, drilling, oil spills and flaring, oil and gas prices, shortages and gasoline regulation, coal production, use, trade, and regulation, alternative and renewable energy, biofuels, hydrogen and geothermal power, energy conservation and energy efficiency, energy research and development.,

'Immigration': Immigration, refugees, and citizenship.,

'Transportation': Transportation policy, mass transportation construction, regulation, safety and availability, highway construction, maintenance and safety, air travel, regulation and safety of aviation, airports, air traffic control, pilot training, aviation technology, railroads, rail travel, rail freight, development and deployment of new rail technologies, maritime transportation, inland waterways and channels, infrastructure and public works, transportation research and development.,

'Law and Crime': General law, crime and family issues, law enforcement agencies, white collar crime, organized crime, counterfeiting and fraud, cyber-crime, money laundering, illegal drug crime, criminal penalties for drug crimes, court administration, judiciary appropriations, guidelines for bail, pre-release, fines and legal representation, prisons and jails, parole systems, juvenile crime and justice, juvenile prisons and jails, efforts to reduce juvenile crime and recidivism, domestic violence, child welfare, family law, domestic criminal and civil codes, control, prevention and impact of crime, police and other general domestic security responses to terrorism.,

'Social Welfare': Social welfare policy, poverty assistance, food assistance programs, programs to assess or alleviate welfare dependency and tax credits directed at low-income families, el-

derly issues and elderly assistance, government pensions, aid for people with physical or mental disabilities, domestic volunteer associations, charities and youth organizations, parental leave and childcare.,

'Housing': Housing and urban affairs, housing and community development, neighborhood development, national housing policy, urban development and general urban issues, rural housing, economic, infrastructure and other development in non-urban areas, housing for low-income individuals and families, housing for the elderly, housing for homeless, efforts to reduce homelessness, housing and community development research and development.,

'Domestic Commerce': Government agencies regulating domestic commerce, the regulation of national banking systems and other non-bank financial institutions, the regulation and facilitation of securities and commodities trading, regulation of investments and related industries and exchanges, consumer finance, mortgages, credit cards, access to credit records, consumer credit fraud, insurance regulation, fraud and abuse in the insurance industry, the financial health of insurance industry, insurance availability and cost, personal, commercial and municipal bankruptcies, corporate mergers, antitrust regulation, corporate accounting and governance, corporate management, small businesses, copyrights and patents, patent reform, intellectual property, domestic natural disaster relief, disaster or flood insurance, natural disaster preparedness, tourism regulation, promotion and impact, consumer fraud and safety in domestic commerce, regulation and promotion of sports, gambling and personal fitness, domestic commerce research and development.,

'Defense': General defense policy, defense alliance and agreement, security assistance, UN peacekeeping activities, military intelligence, espionage and covert operations, military readiness, coordination of armed services air support and sealift capabilities, national stockpiles of strategic materials, nuclear weapons, nuclear proliferation, modernizations of nuclear equipment, military aid to other countries, control of arms sales, military manpower, military personnel and their dependents, military courts, general veterans,Äô issues, military procurement, conversion of old equipment, weapons and systems evaluation, military installations, construction and land transfers, military reserves and reserve affairs, military nuclear and hazardous waste disposal and military environmental compliance, domestic civil defense, national security

responses to terrorism, non-contractor civilian personnel, civilian employment in the defense industry, military base closings, military contractors, war-related military operations, prisoners of war and collateral damage to civilian populations, claims against the military, settlements for military dependents, compensation for civilians injured in military operations, defense research and development.,

'Technology': Space, science, technology and communications, the government use of space and space resource exploitation agreements, government space programs and space exploration, military use of space, regulation and promotion of commercial use of space, commercial satellite technology, government efforts to encourage commercial space development, science and technology transfer, international science cooperation, telephones and telecommunication regulation, infrastructure for high speed internet, mobile phones, broadcast industry, published media, control of the electromagnetic spectrum, weather forecasting, oceanography, geological surveys, weather forecasting research and technology, computer industry, regulation of the internet, cyber security.,

'Foreign Trade': Negotiations, disputes and agreements, including tax treaties, export regulation, subsidies, promotion and control, international private business investment and corporate development, productivity of competitiveness of domestic businesses and balance of payment issues, tariffs and other barriers to imports, import regulation and impact of imports on domestic industries, exchange rate and related issues.,

'International Affairs': General international affairs and foreign aid, foreign aid not directly targeting and increasing international development, international resources exploitations and resources agreements, law of the sea and international ocean conservation efforts, developing countries, international finance and economic development banks, sovereign debt and implications for international lending institutions, Western Europe and European Union, foreign country or region, assessment of political issues in other countries, relations between individual countries, human rights violations, human rights treaties and conventions, UN reports on human rights, crimes associated with genocide or crimes against humanity, international organizations, NGOs, the United Nations, International Red Cross, UNESCO, International Olympic Committee, International Criminal Court, international terrorism, hijacking, acts of

piracy in other countries, efforts to fight international terrorism, international legal mechanisms to combat terrorism, diplomats, diplomacy, embassies, citizens abroad, foreign diplomats in the country, visas and passports.

'Government Operations': Government agencies, intergovernmental relations, local government issues, general government efficiencies, bureaucratic oversight, postal services, regulation of mail, post-civil service, government pensions, general civil service issues, nominations and appointments, currency, national mints, medals and commemorative coins, government procurement, government contractors, contractor and procurement fraud, procurement processes and systems, government property management, construction and regulation, tax administration, enforcement, auditing for both individuals and corporations, public scandal and impeachment, government branch relations, administrative issues, constitutional reforms, regulation of political campaigns, campaign finance, political advertising and voter registration, census and statistics collection by government, capital city, claims against the government, compensation for the victims of terrorist attacks, compensation policies without other substantive provisions, national holidays and their observation.,

'Public Lands': General public lands, water management, and territorial issues, national parks, memorials, historic sites and recreation, the management and staffing of cultural sites, indigenous affairs, indigenous lands, assistance to indigenous people, natural resources, public lands, forest management, forest fires, livestock grazing, water resources, water resource development and civil works, flood control and research, territorial and dependency issues and devolution.,

'Culture': General cultural policy issues. }

Here is the title of a congressional bill:

""""1: A bill to amend the Foreign Assistance Act of 1961 to require congressional authorization for the involvement of American Forces in further hostilities in Indochina, and for extending assistance to North Vietnam. """"

Map it to one of the policy issue labels listed in the dictionary at the top. Use the specific topics information contained in the dictionary to infer the correct label. If the title is not related to any of the labels in the policy issue categories dictionary, then assign "Other" label. Give me only the predicted policy issue label. No explanation needed. Do not assign a label which is not one

of the keys of the dictionary or the label 'Other'. The generated response must only include the predicted label, nothing else.

A.2 GPT4 Prompt Example

Here is a list of policy issue topic labels: """

Macroeconomics,

Civil Rights,

Health,

Agriculture,

Labor,

Education,

Environment,

Energy,

Immigration,

Transportation,

Law and Crime,

Social Welfare,

Housing,

Domestic Commerce,

Defense,

Technology,

Foreign Trade,

International Affairs,

Government Operations,

Public Lands,

Culture,

Other.

"""

Here are some sentences:

,,,,,,

1: To amend title II of the Social Security Act so as to liberalize the conditions governing eligibility of blind persons to receive disability insurance benefits .thereunder 2: A bill to amend title V of the Elementary and Secondary Education Act of 1965 to reduce class size through the use of highly qualified teachers, and for other purposes. 3: To establish an emergency community facilities arid public works program in the Community Facilities Administration of the Housing and Home Finance Agency 4: To direct the Secretary of Health and Human Services to make payments to each State for the operation of a comprehensive health insurance plan ensuring health insurance coverage for individuals and families in the State, and for other purposes. 5: For the relief of Isolene E. F. Shakespeare 6: A bill to extend temporarily the suspension of duty on mucochloric acid. 7: A bill to amend the Fair Packaging and Labeling Act to require certain labeling to assist the consumer in purchases of packaged perishable or semiperishable foods. 8: A bill to authorize appropriations to the National Aeronautics and Space Administration for research and development, space flight, control and data communications, construction of facilities, and research and program management, and for other purposes. 9: A bill to provide for the resolution of claims and disputes relating to the Government contracts awarded by executive agencies. 10: A bill to revise, reform, and standardize the organization of the executive part of the military departments, and for other purposes. 11: A bill to expand the middle class, reduce the gap between the rich and the poor, keep our promises to veterans, lower the poverty rate, and reduce the Federal deficit by repealing tax breaks for the wealthiest one percent and eliminating unnecessary Cold War era defense spending, and for other purposes. 12: A bill to institute withholding tax on dispositions of United States real property interests by non-United States persons and to repeal present reporting requirements in such transactions. 13: For the relief of Teofila Pardo Ruiz 14: A bill to require a Federal permit for the taking of any migratory game birds other than migratory waterfowl. 15: To provide for orderly trade in textile articles and articles of leather footwear, and for other purposes 16: For the relief of Joshua Felise Ziro Brevio 17: To amend title XVIII of the Social Security Act to enhance beneficiary access in rural areas to quality health care services under the Medicare Program. 18: A bill for the relief of Bhuminder Singh 19: To create a catalog of Federal assistance programs, and for

other purposes 20: For the relief of Mr. Pasquale D'Addio 21: To control unfair trade practices affecting producers of agricultural products and associations of such producers, and for other purposes 22: To revise the Federal laws, and for other purposes 23: A bill to amend title 10, United States Code, to provide greater flexibility for the Armed Forces in ordering Reserves to active duty, and for other purposes. 24: For the relief of Angero and Theophilos Kamperldes 25: To amend title 5, United States Code, to provide a pay differential of 10 percent for night work performed by employees subject to prevailing rate pay systems, and for other purposes 26: A bill for the relief of Dr. Takashi Sawa. 27: To amend title 18, United States Code, to provide the penalty of death for certain murders of State and local correctional officers by incarcerated persons, and for other purposes. 28: To amend title 38 of the United States Code to permit members of the Department of Medicine and Surgery of the Veterans Administration to be granted leave to pursue certain courses of study 29: To authorize and request the President to award a Presidential Unit Citation to the 761st Tank Battalion 30: A bill to authorize appropriations for the preservation and restoration of historic buildings at historically black colleges and universities. 31: To authorize the extension of a loan of a naval vessel to the Government of the Republic of China 32: To establish a U.S. Disarmament Agency for World Peace and Security 33: To amend the Communications Act of 1934 to require Internet access providers to provide screening software to permit parents to control Internet access by their children. 34: To extend the existing suspension of duty on 4-Chloro-3-methylphenol. 35: To amend the privacy provisions of title 5, United States Code, to improve the protection of individuals information and to reestablish a permanent Privacy Protection Commission as an independent entity in the Federal Government, and for other purposes. 36: For .the relief of Jose Carrasco Hendy 37: A bill to amend title XVIII of the Social Security Act to provide for the administrative and judicial review of claims (involving the amount of benefits payable) which arises under the supplementary medical insurance program. 38: A bill to extend to all unmarried individuals the full tax benefits of income splitting now enjoyed by married individuals filing joint returns. 39: A bill to amend the Small Business Act to provide assistance to areas of economic dislocation in the United States that is the result of drastic fluctuation in the value of the currency in a country contiguous to the United States. 40: To amend the Immigration and Nationality Act, and for

other purposes 41: To prohibit the exportation of Alaskan North Slope crude oil. 42: For the relief of Florencia H. Fernandez 43: A bill to authorize and facilitate the improvement of water management by the Bureau of Reclamation, to require the Secretary of the Interior and the Secretary of Energy to increase the acquisition and analysis of water resources for irrigation, hydroelectric power, municipal, and environmental uses, and for other purposes. 44: For the relief of Melbourne Murray 45: To repeal section 115 of the Clean Air Act. 46: A bill to provide for collection by the Federal Government of data regarding service sector economic activity. 47: To increase from 8600 to $1,000 the personal income tax exemptions of a taxpayer (including the exemption for a spouse, the exemption for a dependent, and the additional exemptions for old age or blindness) 48: A bill to repeal the recently enacted provisions authorizing increases in the salaries of Senators and Representatives. 49: To improve the reading and literacy skills of children and families by improving in-service instructional practices for teachers who teach reading, to stimulate the development of more high-quality family literacy programs, to support extended learning-time opportunities for children, to ensure that children can read well and independently not later than third grade, and for other purposes. 50: A bill to amend the Internal Revenue Code of 1986 to clarify the treatment of incentive stock options and employee stock purchase plans. 51: To amend title 5, United States Code, to correct certain inequities in the crediting of National Guard technician service in connection with civil service retirement, and for other purposes 52: A bill to provide for permanent tax reductions for individuals and businesses. 53: A bill for the relief of Joseph Veich, also known as Guiseppe Veic 54: To amend the Federal Credit Union Act 55: A bill to provide for the temporary suspension of duty on the importation of fluorspar. 56: To establish a commission to study employment and economic insecurity in the workforce in the United States. 57: A bill to establish an interagency committee and an advisory council to examine and investigate the causes and effects of atmospheric fallout and to develop a comprehensive plan to reduce such fallout. 58: A bill for the relief of Mary Eliadou Rutherford 59: To amend section 406 (b) of the Civil Aeronautics Act of 1938, so as to eliminate authority for the payment of subsidies for domestic trunk air transportation 60: To amend title III of the Older Americans Act of 1965 with respect to assistance to older individuals who reside in rural areas. 61: A bill to provide for a temporary increase in the pub-

lic debt limit. 62: To amend title 23 of the United States Code to authorize parts of the National System of Interstate and Defense Highways to be constructed underground, to provide adequate public shelters in case of nuclear and germ warfare, and for other purposes 63: To amend the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 to require the Immigration and Naturalization Service to verify whether an alien has an immigration status rendering the alien eligible for service in the Armed Forces of the United States and to achieve parity between the immigration status required for employment as an airport security screener and the immigration status required for service in the Armed Forces, and to amend the Immigration and Nationality Act to permit naturalization through active-duty military service during specified military operations. 64: A bill to amend the Foreign Service Act of 1980, title 5 of the United States Code, and the Hostage Relief Act of 1980, and for other purposes. 65: For the relief of Mrs. Vassiliki P. Theodorou 66: A bill to amend the Federal Trade Commission Act (15 U.S.C. 41) to provide that under certain circumstances exclusive territorial arrangements shall not be deemed unlawful. 67: To establish a cropland retirement program 68: For the relief of Philip I. Veira 69: To provide a 5-year program of assistance to enable depressed segments of the fishing industry in the United States to regain a favorable economic status, and for other purposes 70: To amend the Internal Revenue Code of 1986 to provide a credit against tax for energy efficient appliances. 71: To amend the Federal Trade Commission Act to provide for the issuance of temporary cease-and-desist orders to prevent certain acts and practices pending completion of Federal Trade Commission proceedings 72: To provide means of further securing and protecting the right to vote. 73: To amend the Mineral Leasing Act for Acquired Lands (61 Stat. 913) to provide for competitive bidding on oil and gas leases issued thereunder where a competitive interest in leasing is evident 74: A bill to provide for the disposition of funds appropriated to pay a judgment in favor of the Quileute Tribe of Indians, including the Hoh Tribe, and for other purposes 75: To amend section 2(2) of the National Labor Relations Act to provide that the definition of employer therein shall include certain corporations or associations operating a hospital 76: To improve patient access to health care services and provide improved medical care by reducing the excessive burden the liability system places on the health care delivery system. 77: To amend title 38 of the United States Code so as to extend the period of entitle-

ment of persons entitled to assistance under the veterans educational assistance program and the war orphans educational assistance program, and for other purposes 78: A bill to amend the District of Columbia Self-Government and Government Reorganization Act to repeal the limitation on the council of the District of Columbia regarding the imposition of any tax upon individuals who are not residents of the District of Columbia. 79: To provide for the joint appointment of the Architect of the Capitol by the Speaker of the House of Representatives, the Majority Leader of the Senate, the Minority Leaders of the House of Representatives and Senate, and the chairs and ranking minority members of the committees of Congress with jurisdiction over the Office of the Architect of the Capitol, and for other purposes. 80: To amend title 13, United States Code, to limit the categories of questions required to be answered under penalty of law in the decennial censuses of population, unemployment, and housing, and for other purposes 81: A bill to establish demonstration projects to provide at-home infant care benefits. 82: For the relief of Eufemio Dacanay Felix 83: To provide for the suspension of U.S. foreign aid to any country with respect to which diplomatic relations with the United States have been terminated or suspended 84: To direct the Administrator of the National Oceanic and Atmospheric Administration to establish an integrated Federal ocean and coastal mapping plan for the Great Lakes and coastal state waters, the territorial sea, the exclusive economic zone, and the Continental Shelf of the United States, and for other purposes. 85: A bill for the relief of Isoo Kojima. 86: To amend the Outer Continental Shelf Lands Act to require the chief executive officer of each drilling and production operation under a lease under that Act to annually certify the operator's compliance with all applicable laws and operating regulations. 87: For the relief of Onofrio Saia 88: To make certain expenditures by the city of Sanford, N.C., eligible as local grants-in-aid for purposes of title I of the Housing Act of 1949 89: A bill for the relief of Major Joseph R. Williams. 90: A bill to authorize the establishment of postal stations and branch post offices at camps, posts, or stations of the Armed Forces (including the Coast Guard), and at defense or other strategic installations, and for other purposes 91: A bill entitled the Federal Election Commission Authorization. 92: A bill to suspend temporarily the duty on Capa 4000-series. 93: A bill to preserve, protect, and maintain the original boundary stones of the Nation's Capital. 94: To amend chapter 1of the Internal Revenue Code of 1954,

in regard to certain investments by dealers in real property 95: To suspend until January 1, 1995, the duty on Malathion. 96: To amend the Internal Revenue Code of 1954 to provide for the determent of income from service contracts 97: A bill to amend part B of title IV of the Social Security Act to provide, as the primary form in which services are to be furnished under the child-welfare services program, for supportive day treatment and in-home services to children and families. 98: A bill for the relief of Chunchai Letasz. 99: To amend section 8(c) of theFederal Water Pollution Control Act toprovide a new formula for the allocation of construction grant funds for the fiscal years beginning on or after July 1, 1970 100: For the relief of BienvenidoTan

Please assign a policy issue topic label to each sentence. Give me only the sentence number and the label, and put one label per line. Don't use any label which is not listed in the policy issue topics array. Use the "Other" label if the sentence is not related to any of the first 21 categories with a very high probability.

Here are two example bill titles that belongs to the other category:
1: 'A bill for the relief of Andrew D, Sumner.'
2: 'A bill for the relief of Felix Hernandez-Arana and his wife, Felicia Ogaldez-De Hernandez.
Here are some notes:
- The category defense also includes issues related to veterans affairs and welfare benefits to current military members,
- The category public lands encompasses issues including, but not limited to, Native Americans affairs, national parks and national forests and interstate highways,
- Abortion related issues belong to the category of civil rights,
- Banking and finance related issues are related to domestic commerce category, - Issues related countries other than the United States are related to the category of international affairs,
- Technology category also includes issues related to science and space,
- Titles which contain keywords such as import, export, tariff and duty are related to the category of foreign trade,
- Issues related to American state governments and the federal government organizations and

their employees, not including the members of the army, are related to government operations category,

- Culture category is very rare, less than one percent, in the congressional bill title data.

Here is an example title that belongs to the government operations category:

'To retain coverage under the laws providing employee benefits, such as compensation for injury, retirement, life insurance, and health benefits for employees of the Government of the United States who transfer to Indian tribal organizations to perform services in connection with governmental or other activities which are or have been performed by Government employees in or for Indian communities, and for other purposes'

You must give me a list with 100 labels.

Appendix B Additional Results

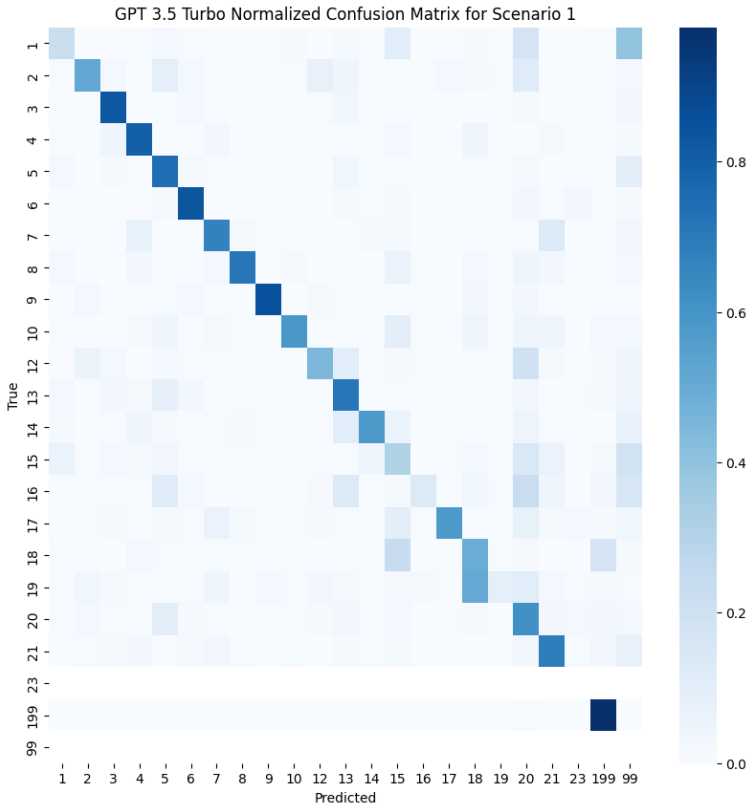

Figure 1

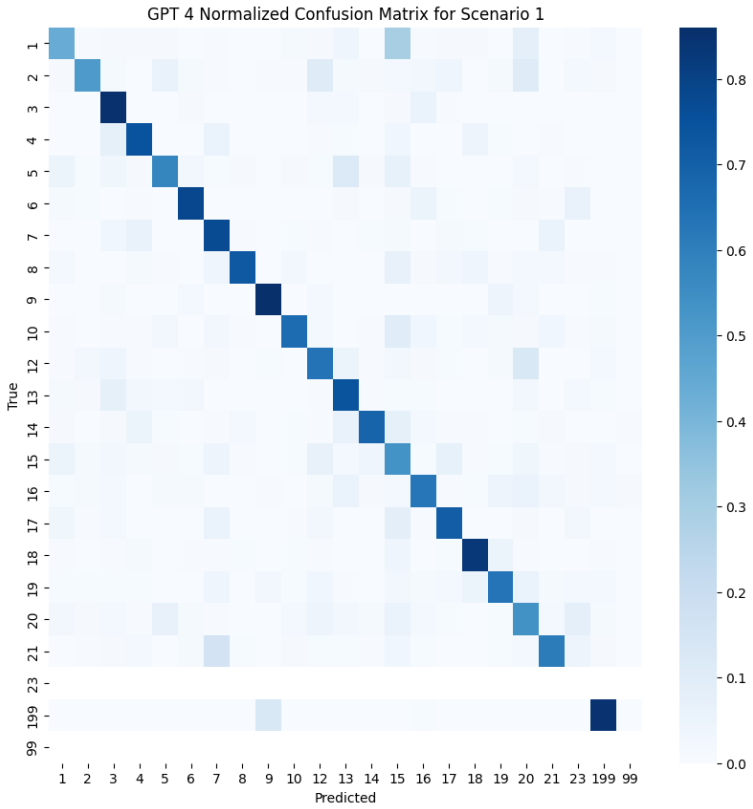

Figure 2

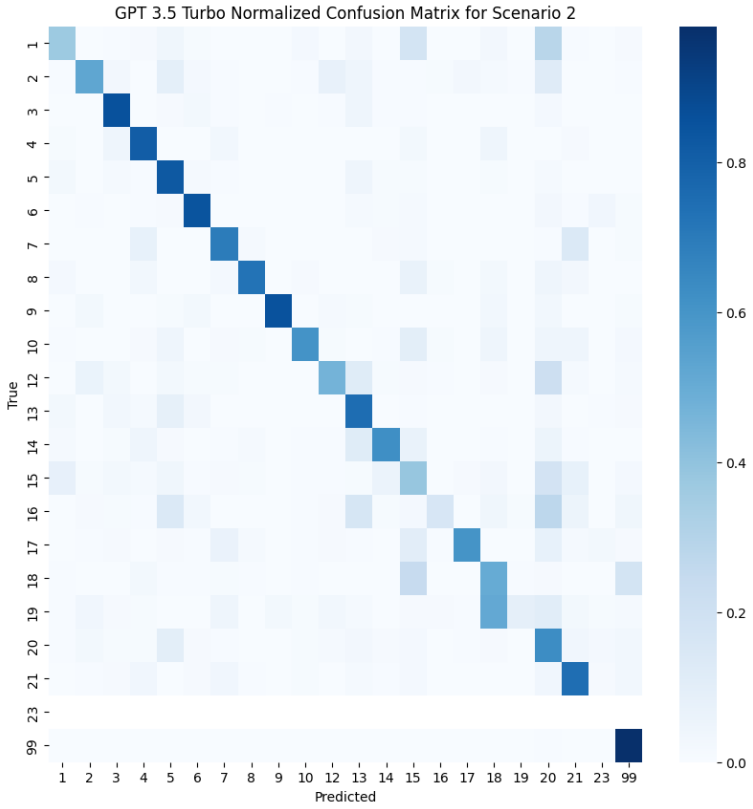

Figure 3

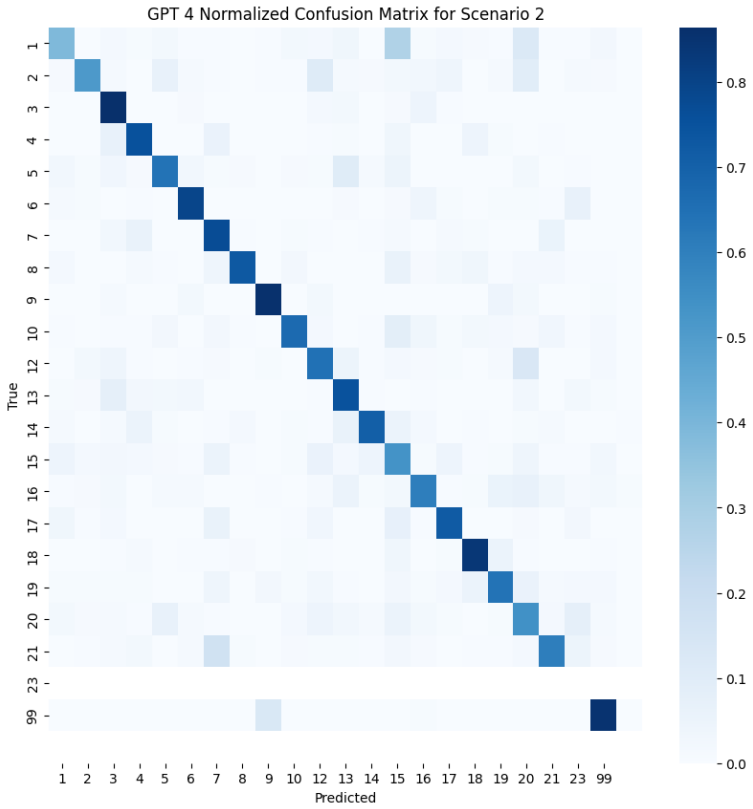

Figure 4

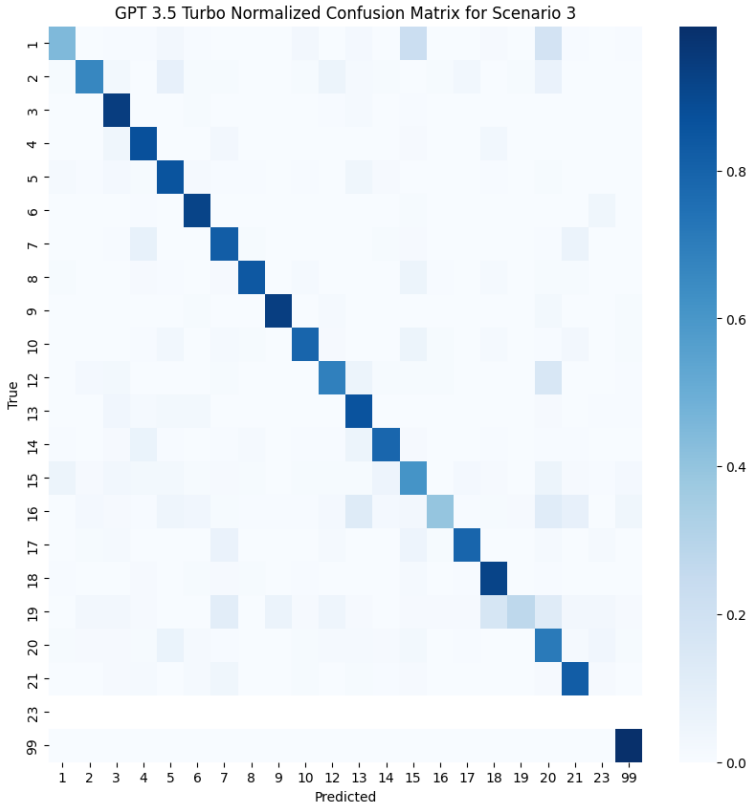

Figure 5

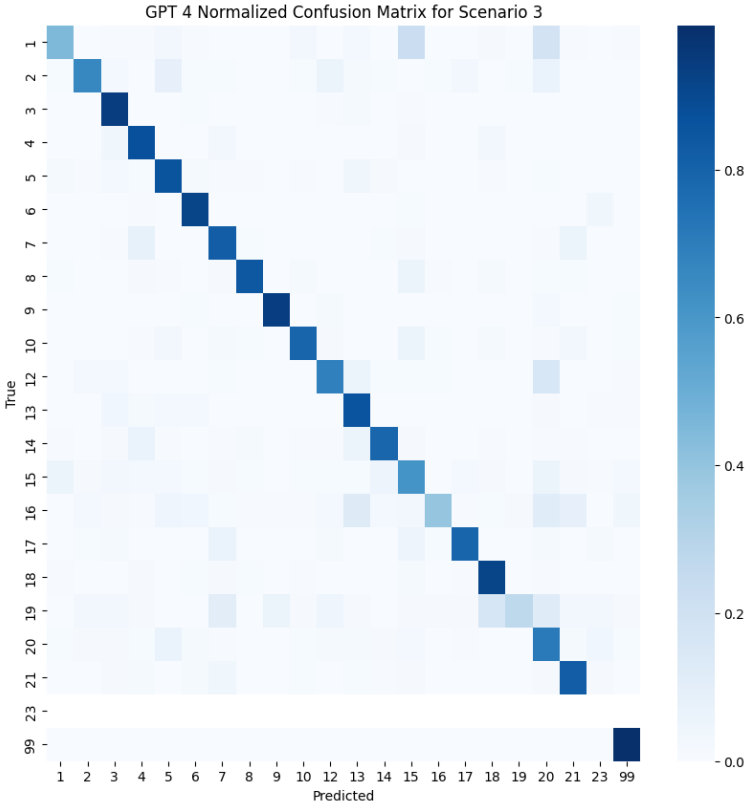
GPT 4 Normalized Confusion Matrix for Scenario 3
True
Predicted
1
2
3
4
5
6
7
8
9
10
12
13
14
15
16
17
18
19
20
21
23
99
0.0
0.2
0.4
0.6
0.8

Figure 6

Table 1: Class-specific performance metrics for GPT 3.5 Turbo in Scenario 1 - Congressional Bills

Class	Precision	Recall	F1-score
Macroeconomics	0.49	0.22	0.31
Civil Rights	0.49	0.52	0.50
Health	0.85	0.83	0.84
Agriculture	0.70	0.80	0.74
Labor	0.43	0.74	0.55
Education	0.75	0.83	0.79
Environment	0.67	0.67	0.67
Energy	0.86	0.71	0.78
Immigration	0.85	0.85	0.85
Transportation	0.87	0.59	0.70
Law and Crime	0.79	0.45	0.57
Social Policy	0.47	0.71	0.56
Housing	0.63	0.58	0.60
Domestic Commerce	0.32	0.31	0.32
Defense	0.80	0.13	0.23
Technology	0.79	0.58	0.67
Foreign Trade	0.50	0.50	0.50
International Affairs	0.61	0.09	0.16
Government Operations	0.53	0.61	0.57
Public Lands	0.74	0.69	0.72
Culture	0.00	0.00	0.00
Other (Private Bills)	0.89	0.98	0.93

Table 2: Class-specific performance metrics for GPT 4 in Scenario 1 - Congressional Bills

Class	Precision	Recall	F1-score
Macroeconomics	0.57	0.44	0.50
Civil Rights	0.56	0.51	0.53
Health	0.75	0.86	0.80
Agriculture	0.73	0.75	0.74
Labor	0.61	0.58	0.59
Education	0.77	0.79	0.78
Environment	0.48	0.77	0.60
Energy	0.87	0.72	0.79
Immigration	0.28	0.86	0.43
Transportation	0.83	0.66	0.74
Law and Crime	0.65	0.64	0.64
Social Policy	0.56	0.74	0.64
Housing	0.68	0.69	0.68
Domestic Commerce	0.40	0.53	0.46
Defense	0.76	0.63	0.69
Technology	0.53	0.71	0.61
Foreign Trade	0.84	0.83	0.83
International Affairs	0.52	0.64	0.57
Government Operations	0.71	0.54	0.61
Public Lands	0.84	0.61	0.71
Culture	0.00	0.00	0.00
Other (Private Bills)	0.94	0.85	0.89

Table 3: Class-specific performance metrics for GPT 3.5 Turbo in Scenario 1 - Congressional Hearings

Class	Precision	Recall	F1-score
Macroeconomics	0.56	0.49	0.52
Civil Rights	0.54	0.35	0.43
Health	0.82	0.76	0.79
Agriculture	0.67	0.79	0.73
Labor	0.55	0.78	0.64
Education	0.74	0.76	0.75
Environment	0.71	0.69	0.70
Energy	0.80	0.75	0.78
Immigration	0.70	0.71	0.71
Transportation	0.81	0.66	0.73
Law and Crime	0.61	0.40	0.48
Social Welfare	0.37	0.79	0.50
Housing	0.66	0.65	0.65
Domestic Commerce	0.66	0.37	0.48
Defense	0.82	0.46	0.59
Technology	0.67	0.63	0.65
Foreign Trade	0.27	0.77	0.40
International Affairs	0.90	0.34	0.49
Government Operations	0.61	0.62	0.62
Public Lands	0.67	0.65	0.66
Culture	0.00	0.00	0.00

Table 4: Class-specific performance metrics for GPT 3.5 Turbo in Scenario 2 - Congressional Bills

Class	Precision	Recall	F1-score
Macroeconomics	0.51	0.24	0.33
Civil Rights	0.50	0.55	0.52
Health	0.85	0.83	0.84
Agriculture	0.70	0.80	0.74
Labor	0.43	0.74	0.55
Education	0.75	0.83	0.79
Environment	0.67	0.67	0.67
Energy	0.86	0.71	0.78
Immigration	0.85	0.85	0.85
Transportation	0.87	0.59	0.70
Law and Crime	0.79	0.45	0.57
Social Policy	0.47	0.71	0.56
Housing	0.63	0.58	0.60
Domestic Commerce	0.32	0.31	0.32
Defense	0.80	0.13	0.23
Technology	0.79	0.58	0.67
Foreign Trade	0.50	0.50	0.50
International Affairs	0.61	0.09	0.16
Government Operations	0.53	0.61	0.57
Public Lands	0.74	0.69	0.72
Culture	0.00	0.00	0.00
Other (Private Bills)	0.89	0.98	0.93

Table 5: Class-specific performance metrics for GPT 4 in Scenario 2 - Congressional Bills

Class	Precision	Recall	F1-score
Macroeconomics	0.57	0.44	0.50
Civil Rights	0.56	0.51	0.53
Health	0.75	0.86	0.80
Agriculture	0.73	0.75	0.74
Labor	0.61	0.58	0.59
Education	0.77	0.79	0.78
Environment	0.48	0.77	0.60
Energy	0.87	0.72	0.79
Immigration	0.28	0.86	0.43
Transportation	0.83	0.66	0.74
Law and Crime	0.65	0.64	0.64
Social Policy	0.56	0.74	0.64
Housing	0.68	0.69	0.68
Domestic Commerce	0.40	0.53	0.46
Defense	0.76	0.63	0.69
Technology	0.53	0.71	0.61
Foreign Trade	0.84	0.83	0.83
International Affairs	0.52	0.64	0.57
Government Operations	0.71	0.54	0.61
Public Lands	0.84	0.61	0.71
Culture	0.00	0.00	0.00
Other (Private Bills)	0.94	0.85	0.89

Table 6: Class-specific performance metrics for GPT 3.5 Turbo in Scenario 2 - Congressional Hearings

Class	Precision	Recall	F1-score
Macroeconomics	0.56	0.58	0.57
Civil Rights	0.54	0.37	0.44
Health	0.82	0.80	0.81
Agriculture	0.67	0.83	0.75
Labor	0.55	0.81	0.65
Education	0.74	0.82	0.78
Environment	0.71	0.71	0.71
Energy	0.80	0.78	0.79
Immigration	0.70	0.80	0.75
Transportation	0.81	0.75	0.78
Law and Crime	0.61	0.42	0.50
Social Welfare	0.37	0.81	0.50
Housing	0.66	0.73	0.69
Domestic Commerce	0.66	0.47	0.55
Defense	0.82	0.51	0.63
Technology	0.67	0.70	0.69
Foreign Trade	0.27	0.81	0.41
International Affairs	0.90	0.36	0.52
Government Operations	0.61	0.67	0.64
Public Lands	0.67	0.76	0.71
Culture	0.00	0.00	0.00
accuracy	0.64	0.64	0.64
macro avg	0.63	0.64	0.61
weighted avg	0.69	0.64	0.65

Table 7: Class-specific performance metrics for GPT 3.5 and GPT 4 in Scenario 3 - Congressional Bills

Class	Precision	Recall	F1-score
Macroeconomics	0.66	0.45	0.53
Civil Rights	0.72	0.66	0.69
Health	0.87	0.94	0.91
Agriculture	0.78	0.87	0.83
Labor	0.67	0.86	0.76
Education	0.83	0.92	0.87
Environment	0.73	0.82	0.77
Energy	0.92	0.84	0.88
Immigration	0.90	0.94	0.92
Transportation	0.90	0.79	0.84
Law and Crime	0.84	0.69	0.76
Social Policy	0.70	0.86	0.77
Housing	0.74	0.79	0.76
Domestic Commerce	0.54	0.61	0.57
Defense	0.85	0.39	0.54
Technology	0.81	0.79	0.80
Foreign Trade	0.83	0.92	0.87
International Affairs	0.75	0.27	0.40
Government Operations	0.77	0.72	0.74
Public Lands	0.87	0.82	0.85
Culture	0.00	0.00	0.00
Other (Private Bills)	0.98	1.00	0.99

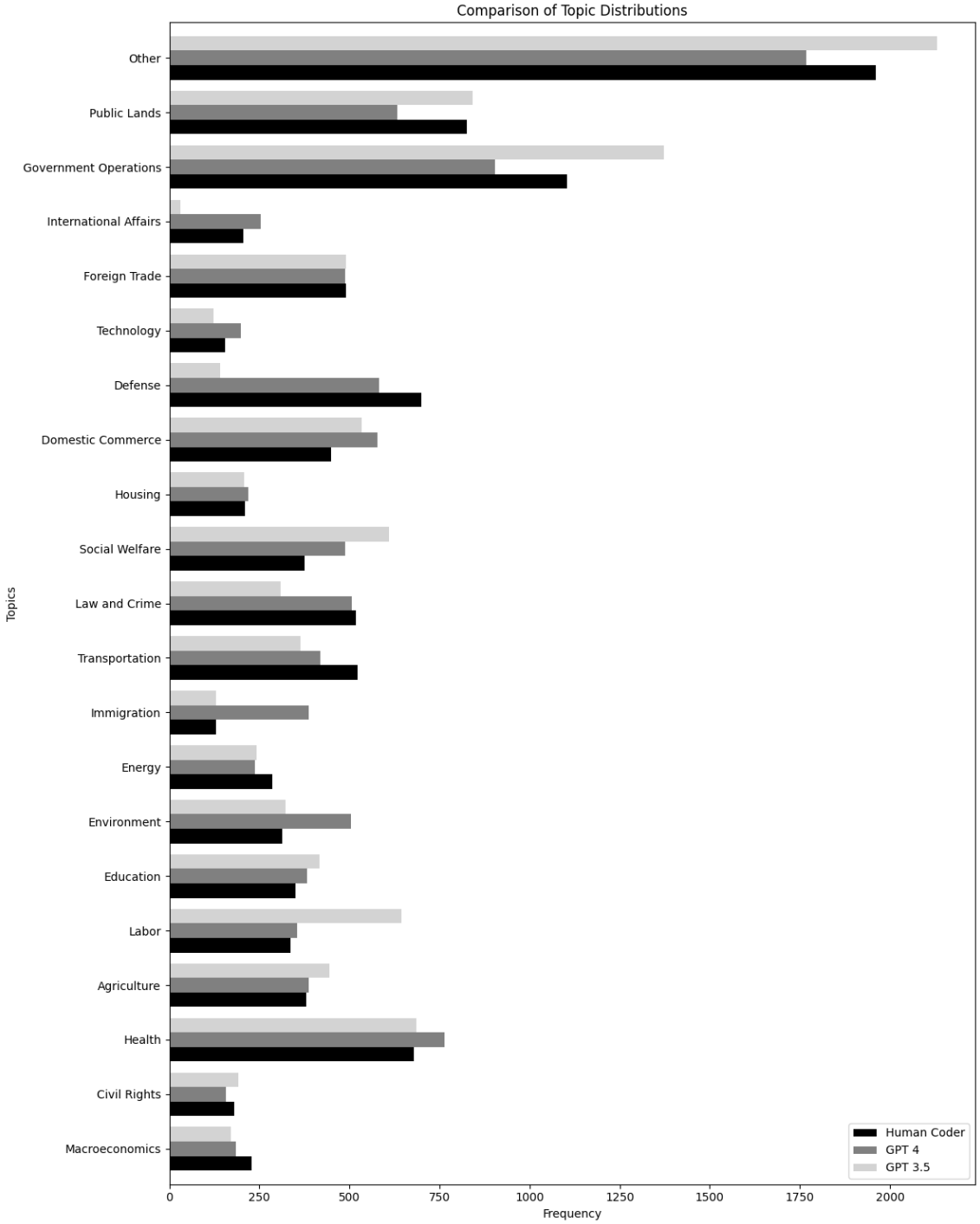

Figure 7: Distribution of topics across coding methods - Scenario 2 - Congressional Bills

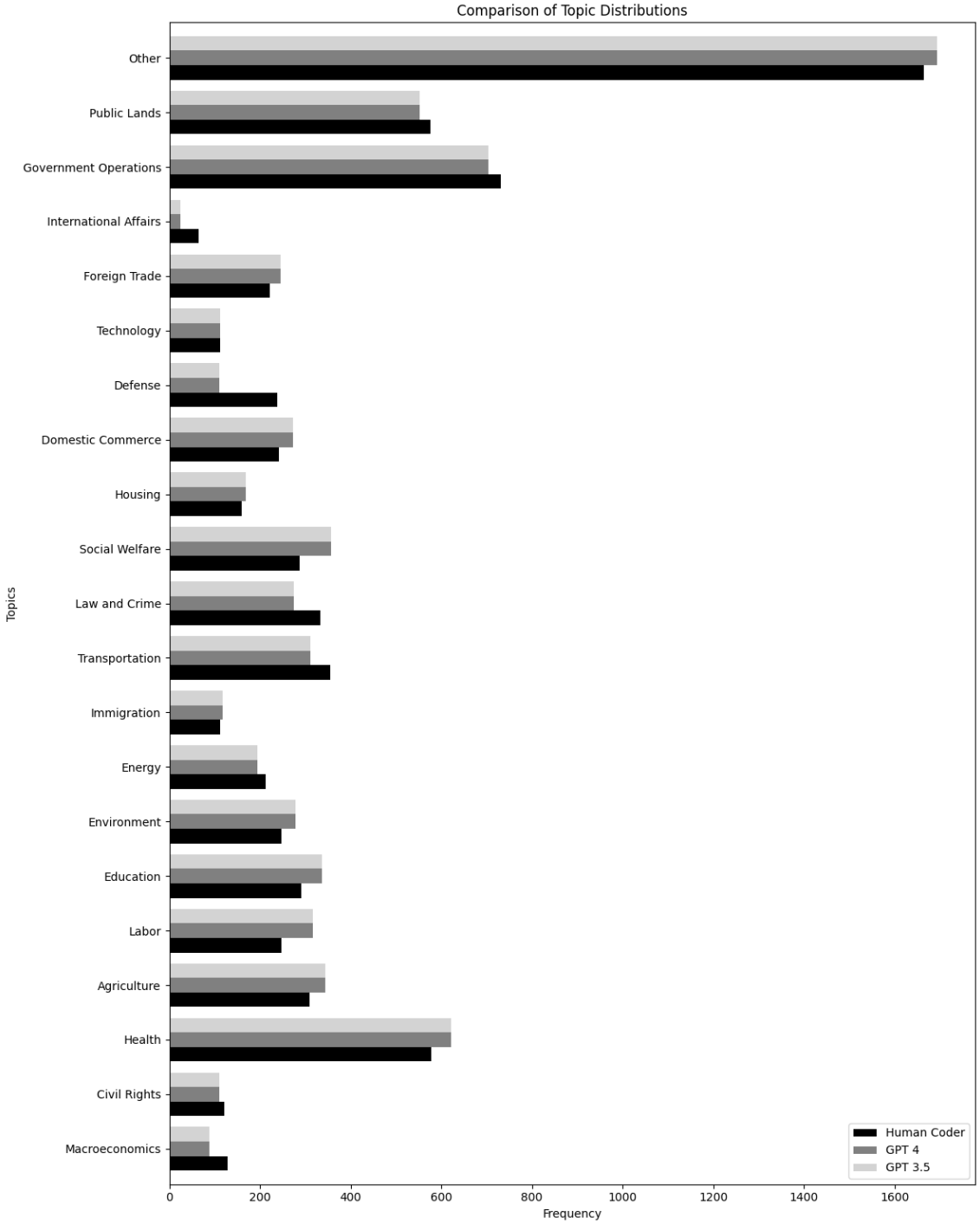

Figure 8: Distribution of topics across coding methods - Scenario 3 - Congressional Bills