LIST OF BIASED OCCUPATIONS OBTAINED FOR TRANSE/DISTMULT FOR THE ATTRIBUTE GENDER

In the Table I, we report sample occupations for each of the geographies that are labeled as biased for the two learning algorithms– TransE and DistMult in case of gender.

LIST OF BIASED OCCUPATIONS OBTAINED FOR COMPGCN FOR GENDER AND AGE

We report sample occupations for each of the geographies that are labeled as biased for the case of CompGCN and attributes gender, and age in Table II.

LIST OF BIASED OCCUPATIONS OBTAINED FOR TRANSE/DISTMULT FOR THE ATTRIBUTE AGE

In Table III, we report sample occupations for each of the geographies that are labeled as biased for embedding learning algorithms TransE and DistMult and the sensitive attribute age.

LIST OF BIASED OCCUPATIONS OBTAINED FOR GEKC FOR GENDER AND AGE

We report sample occupations for each of the geographies that are labeled as biased for the case of GeKC and attributes gender, and age in Table IV.

geography	Male-biased		Female-biased		Gender-neutral	
	TrasE	DistMult	TransE	DistMult	TransE	DistMult
Arabia	artist, human rights activist	diplomat	singer, politician	physician	–	–
India	autobiographer, judge	–	lawyer, historian, singer-songwriter, painter	television producer, activist, television presenter	–	–
Israel	curator, sport cyclist, legal scholar	television producer, children's writer	model, illustrator, literary editor	–	–	–
Japan	videographer, physician, table tennis player, art historian	lecturer, jazz musician, tennis player, mixed martial artist	fashion model, AV idol, model, artistic gymnast	fashion designer, ice dancer, speed skater, pianost	songwriter	–
South Korea	manhwaga, athletics competitor, sport shooter, politician	comedian, fencer	pianist, musician	pianist,badminton player	–	–
Turkey	human rights activist, lawyer	economist, architect, swimmer	physician, photographer	lyricist	athletics competitor	artist
Russia	philosopher, photographer, coach	sculptor, art historian, human rights activist, painter	figure skating coach, lyricist, rower	curler, photographer, television presenter	–	–
Australia	volleyball player, farmer, editor, chess player	civil servant, trade unionist, bowls player, chess player	librarian, autobiographer, philanthropist, artistic gymnast	librarian, ballet dancer, water polo player, model	opera singer	–
NewZealand	chairperson, civil servant, film director	playwright, film actor, film director, jeweler	tennis player, illustrator, potter, sprinter	historian, tennis player	–	–
Egypt	athletics competitor, swimmer	swimmer, athletics competitor	actor, film actor	journalist, judoka	–	–
Nigeria	poet, film actor, amateur wrestler	poet	radio personality, screenwriter	rasio personality, media personality	–	–
South Africa	author, field hockey player, singer-songwriter, university teacher	author, musician, sculptor, businessperson	songwriter, water polo player, artist	water polo player, singer-songwriter, television actor	–	film actor
France	pedagogue, linguist, economist, judoka	environmentalist, military person, chess plyer, businessperson	videographer, literary scholar, farmworker, environmentalist	blogger, shopkeeper, singer, performing artist	poet, swimmer	–
Germany	television producer, engineer, professor, theologian	YouTuber, herpetologist, singer songwriter	fashion designer, beach volleyball player, scenographer, alpine skier	folklorist, pornographic actor, social worker, environmentalist	volleyball player	–
Spain	dub actor, military personnel, physician, comics artist	Esperanist, political activist, canoeist	physician, comics artist, television producer, sociologist	curator, activist, fashion designer, aristrocat	taekwondo athlete, television presenter	–
UK	production designer, manufacturer, podcaster, mountainer drawer	manufacturer, psychiatrist, judge, production designer	lecturer, LGBTQIA+ rights activist, rapper	landscape architect, socialite, philosopher, writer	–	–
Argentina	judge, psychologist, tennis player, translator	athelete, field hockey player, television actor	dancer, biochemist, ballet dancer, choreographer	author, economist, historian	literacy critic	film actor
Brazil	designer, YouTuber, lawyer, translator	diplomat, tennis player, civil servant	presenter, biologist, author, ichthyologist	author, historian, nurse	–	film actor
Canada	chemist, sports commentator, field hockey player, aircraft pilot	chemist, trade unionist, freestyle skier, basketball player	television presenter, designer, choreographer, stage actor	human rights activist, missionary, swimmer, television producer	artist	–
Mexico	activist, volleyball player	businessperson, sport cyclist, civil servant	academic, novelist, film producer	university teacher, fashion designer, television actor	artist	–
USA	role-playing game designer, thai boxer, real estate broker, aerospace engineer	Ameriacn football player, etcher, naval officer, architect	social worker, suffragist, prostitute, costume designer	glamour model, scholar, political adviser, pornographic actor	art historian, singer-songwriter	–

TABLE I: Example male-biased, female-biased, and gender-neutral occupations for each geography obtained in the training procedure by TransE and DistMult in each of the categories. Here red-colored and blue-colored occupations denote the occupations satisfying equations (1), (2) and (3), (4) respectively.

geography	Gender			Age		
	male-biased	female-biased	gender-neutral	young-biased	old-biased	age-neutral
Arabia	athletics competitor, television presenter	human rights activist	_	athletics competitor,	writer	_
India	autobiographer, engineer entomologist, chess player	activist, poet, television producer, academic	_	television presenter, association football player	dancer, athletics competitor, musician	_
Israel	engineer, businessperson, television producer,	military officer, musician, judge, editor	_	model, basketball player, association football player, songwriter	singer-songwriter, singer, film director	_
Japan	lecturer, AV idol, entomologist	cross-country skier, long-distance runner, singer, weather presenter	_	field hockey player, ukiyo-e artist	entomologist, tennis player, engineer, film director	_
South Korea	film director, association football player	pianist, musician, field hockey player, songwriter	_	badminton player, manhwaga, composer, basketball player	screenwriter, taekwondo athlete	_
Turkey	television actor, diplomat, lawyer	television presenter, swimmer, model, taekwondo athlete	_	basketball player, television presenter, film producer, photographer	writer, association football manager	_
Russia	professor, artist, musicologist, fencer	speed skater, weightlifter, opera singer, sprinter	_	sport shooter, swimmer, weightlifter	economist, opera singer, politician, entrepreneur	_
Australia	canoeist, pianist, chess player	autobiographer, farmer science fiction writer, sport shooter,	painter, badminton player	artistic gymnast, basketball player, aircraft pilot	explorer, painter, television producer, academic	_
New Zealand	chairperson, basketball player, sculptor, songwriter	civil servant, rugby league player, teacher, singer	_	sport cyclist, swimmer, tennis player, singer	boxer, screenwriter	_
Egypt	_	athletics competitor, politician, swimmer	_	novelist, singer	film actor	_
Nigeria	poet, journalist, entrepreneur	radio personality, researcher, sprinter	_	boxer, businessperson	politician	_
South Africa	painter, businessperson	artist, field hockey player, writer	_	athletics competitor, badminton player, swimmer, boxer	politician, composer	_
France	middle-distance runner, fashion designer, violinist, athlete	pensioner, field hockey player, technician, activist	French Resistance fighter	middle-distance runner, artistic gymnast, association football player, visual artist	pensioner, anciens cadres, journalist, miscellaneous persons without work under 60 excluding retirees	_
Germany	magician, competitive diver, ski jumper, athlete	historian of the modern age, high school teacher, author, journalist	_	comics artist, ski jumper, actor, presenter	translator, association football manager, abbot, competitive diver	_
Spain	judoka, volleyball player, opera singer, religious	YouTuber, model, choreographer, political activist	_	rink hockey player, drawer, tennis player, motorcycle rider	editor, photographer, race car driver, basketball coach	_
UK	film critic, announcer, police officer, voice actor	socialite, landscape architect, music pedagogue, librarian	_	artistic gymnast, sports commentator, race car driver, professional wrestler	film editor, autobiographer, television director	_
Argentina	businessperson, biochemist	visual artist, choreographer, handball player, badminton player	_	model, basketball player, television actor, screenwriter	rower, guitarist	_
Brazil	YouTuber, ornithologist, anthropologist, sociologist	sprinter, botanist, voice actor, television presenter	_	Esperantist, rower	geographer, dancer, illustrator	_
Canada	chemist, sports commentator, short track speed skater, professional wrestler	designer, installation artist, model, writer	_	field hockey player, comics artist	historian, lawyer, photographer	_
Mexico	amateur wrestler, tennis player, taekwondo athlete, rower	academic, activist, television producer	_	professional wrestler, businessperson	swimmer, military personnel, playwright, basketball player	_
USA	war photographer, surfer, actor, musician	choir director, political adviser, writer, columnist	_	war photographer, gymnast, actor, rugby union player	bowler, merchant, writer, baseball umpire	television producer

TABLE II: Example biased occupations for each geography obtained in the training procedure by CompGCN in each of the sensitive attributes gender and age. Here red-colored and blue-colored occupations denote the occupations satisfying equation (1), (2) and (3), (4) respectively.

geography	Young-biased		Old-biased		Age-neutral	
	TrasE	DistMult	TransE	DistMult	TransE	DistMult
Arabia	athletics competitor		journalist	poet	_	_
India	television presenter, association football palyer, athletics competitor	television presenter, music director	activist, businessperson,	businessperson, novelist, songwriter	songwriter	_
Israel	television presenter, singer-songwriter	television actor, translator, chess player	swimmer, lawyer	songwriter, director	dub actor	record producer
Japan	athlete, AV idol, field hockey player, tennis player	athlete, field hockey player	literary critic, film producer, sociologist	voice actor, association football manager, literary critic ,designer	coach	singer-songwriter
South Korea	baseball player	badminton player, voice actor, volleyball player	athletics competitor, voice actor, volleyball player	athletics competitor , film director	_	
Turkey	photographer		composer, author		_	
Russia	boxer, sport cyclist	volleyball player, basketball player	military personnel, painter, director	economist, middle-distance runner, lyricist, prosaist	_	
Australia	ice hockey player, competitive diver, opera singer	judoka, television producer, sport cyclist, figure skater	trade unionist, explorer, judoka	explorer, businessperson, civil servant	_	
New Zealand	singer, writer, rower rugby league player	academic, writer	musician, sport cyclist, cricketer	screenwriter, tennis player	_	
Egypt	singer, screenwriter	film director	film director, politician, composer	composer, film actor	_	
Nigeria	athletics competitor	writer, athletics competitor, boxer	businessperson	journalist, businessperson	_	
South Africa	photographer, boxer	boxer, film director, badminton player	swimmer, athletics competitor	businessperson, composer	_	
France	ice hockey player, volleyball player, veterinarian, colonial administrator	association football referee, activist, association football player, amateur wrestler	cinematographer, business executive chauffer, Officer of the French Navy	nun, manual worker ,writer, businessperson	researcher	
Germany	disc jockey, farmer, comics artist, swimmer	luger, ruler, ski jumper	rugby union player, poet lawyer, police officer	water polo player, merchant, theologian, linguist	_	
Spain	tennis player, filmmaker, mountaineer, rink hockey player	rink hockey player, sport cyclist, trade unionist, tennis player	editor, sculptor, aristocrat, sailor	theatrical director, sculptor, linguist, drawer	film director	
UK	athlete, alpine skier, darts player, film maker	Formula One driver, police officer, association football manager, racing automobile driver	theatrical director, sports commentator, figure skater, literary critic	computer scientist, graphic designer, soldier	_	_
Argentina	university teacher, musician	television presenter, teacher, racing automobile driver, basketball player	film director, screenwriter, stage actor, playwright	businessperson, screenwriter, alpine skier, university teacher	_	
Brazil	engineer, official, association football manager, dancer	racing automobile driver, police officer, association football manager	architect, painter, artist, farmer	Esperantist, vocalist	vocalist	
Canada	tennis player, baseball player, cinematographer, film editor	comics artist, engineer, lacrosse player, figure skater	cricketer, historian, theatrical director, comics artist	sprinter, playwright, visual artist		
Mexico	basketball player, baseball player, film producer	basketball player, activist, singer, songwriter	painter, activist, playwright	engineer, businessperson, television producer, stage actor	_	poet
USA	war photographer, rapper, showrunner, chief executive officer	war photographer, surfer, circus performer, singer	educator, political scientist, writer, librarian, choir director, slaveholder	writer, chess player	basketball player	pianist

TABLE III: Example young-biased, old-biased, and age-neutral occupations for each geography obtained in the training procedure by TransE and DistMult in each of the categories. Here red-colored and blue-colored occupations denote the occupations satisfying equations (1), (3) and (2), (4) respectively.

geography	Gender			Age		
	male-biased	female-biased	gender-neutral	young-biased	old-biased	age-neutral
Arabia	human rights activist, politician	diplomat, artist		military personnel, writer	politician, singer	
India	diplomat, human rights activist, chess player	judge, lawyer, fashion designer, artist		athletics competitor, association football player, amateur wrestler, composer	playback singer, songwriter, lyricist	
Israel	businessperson, television presenter, opinion journalist	fashion designer, model, childreńs writer, dancer		film producer, journalist, composer, songwriter	mathematician, military personnel	
Japan	military personnel, oracle, coach, graphic designer	artistic gymnast, childreńs writer, playwright, handball player		model, basketball player, broadcast writer, researcher	choreographer, musicologist, rower, artist	
South Korea	dancer, basketball player, short track speed skater, comedian	fencer, swimmer, screenwriter, rower	poet, association football player	volleyball player, composer	politician, film director, amateur wrestler	
Turkey	translator, photographer	lyricist, academic, archaeologist, musician	actor		composer, film director	
Russia	record producer, paleontologist, philosopher, artist	blogger, athlete, stage actor, lyricist	visual artist	radio personality, volleyball player, public figure	teacher, military personnel, figure skater, artist	
Australia	trade unionist, athlete	artistic gymnast, sailor, model, water polo player		field hockey player, civil servant, racing driver, judoka	artist, singer-songwriter, sprinter	rugby league player
New Zealand	musician, trade unionist, botanical collector, political candidate	librarian, chemist, swimmer, field hockey player	politician	tennis player, military personnel, athlete, cricketer	swimmer, actor	
Egypt	politician, translator	singer		composer	journalist, politician	
Nigeria	journalist, presenter, sprinter, athletics competitor	businessperson, film producer, association football player		businessperson, association football player, athletics competitor	politician, artist	
South Africa	businessperson, painter	botanist, film director	squash player	cricketer	artist, boxer	
France	architect, radio personality, comics artist	entrepreneur, explorer, employee	university teacher, association football player	bobsledder, rugby league player, flying ace, music pedagogue	penciller, anciens cadres, cadres de la fonction publique, weightlifter	
Germany	choir director, engineer, science fiction writer, art dealer	nurse, German scholar, javelin thrower, speed skater		judoka, sport shooter, coach	artistic gymnast, German scholar, costume designer, cross-country skier	table tennis player, badminton player
Spain	anarcho-syndicalist, zoologist, architect	long-distance runner, pornographic actor, blogger, archivist	association football player, writer	explorer, model, humorist, water polo player	art historian, diplomat, university teacher, basketball coach	
UK	museum director, SOE agent, engineer, head teacher	lyricist, dancer, curator, watercolorist		sports commentator, socialite, beauty pageant contestant, sprinter	entertainer, water polo player, fencer	athletics competitor
Argentina	scientist, stage actor	visual artist, architect, teacher, association football player		trade unionist, racing automobile driver, sport cyclist, swimmer	composer, screenwriter, botanist, association football manager	
Brazil	illustrator, official, singer-songwriter, herpetologist	athlete, dancer, YouTuber, artist	zoologist	farmer, high school teacher	painter, record producer, official	television actor, actor
Canada	civil servant, librarian, boxer, canoeist	violinist, videographer, recording artist, ecologist		blogger, filmmaker, cricketer	film editor, author, writer	musician, judoka
Mexico	taekwondo athlete, businessperson	teacher, zoologist, dancer, philosopher	association football player	basketball player, badminton player, artist	lawyer, activist, painter, boxer	television actor
USA	surgeon, American football player, music video director, sport shooter	musical theatre actor, folklorist, civil rights advocate, real estate broker	badminton player	pornographic actor, triathlete, mandolinist, kickboxer	film critic, political activist, civil rights advocate, trumpeter	

TABLE IV: Example biased occupations for each geography obtained in the training procedure by GeKC in each of the sensitive attributes gender and age. Here red-colored and blue-colored occupations denote the occupations satisfying equation (1), (2) and (3), (4) respectively.