Graph versions:

Undirected:

- Version 1:
  - Relations (#18 * 2 = 36):
    1. (patient, hasDemographics, demographics)
    2. (patient, hasDisease, diseases)
    3. (patient, hasIntervention, procedure_provisioning_CPT)
    4. (patient, hasIntervention, procedure_provisioning_ICD9)
    5. (patient, hasIntervention, medication_provisioning)
    6. (patient, hasSocialContext, social_context)
    7. (demographics, hasMaritalStatus, marital_status)
    8. (demographics, followsReligion, religion)
    9. (demographics, hasRaceorEthnicity, race)
    10. (demographics, hasGender, gender)
    11. (demographics, hasAge, age_node)
    12. (age_node, hasStageOfLife, stage_of_life)
    13. (age_node, belongsToAgeGroup, age_group)
    14. (diseases, hasDisease, disease)
    15. (procedure_provisioning_CPT, hasIntervention, procedure_CPT)
    16. (procedure_provisioning_ICD9, hasIntervention, procedure_ICD9)
    17. (medication_provisioning, hasIntervention, procedure_medication)
    18. (social_context, hasSocialContext, social_context(employment, housing, household))
- Version 2:
  - Relations (#12 * 2 = 24):
    1. (patient, hasMaritalStatus, marital_status)
    2. (patient, followsReligion, religion)
    3. (patient, hasRaceorEthnicity, race)
    4. (patient, hasGender, gender)
    5. (patient, hasAge, age_node)
    6. (age_node, hasStageOfLife, stage_of_life)
    7. (age_node, belongsToAgeGroup, age_group)
    8. (patient, hasDisease, disease)
    9. (patient, hasIntervention, procedure_CPT)
    10. (patient, hasIntervention, procedure_ICD9)
    11. (patient, hasIntervention, procedure_medication)
    12. (patient, hasSocialContext, social_context(employment, housing, household))
- Version 3:
  - Relations (#10 * 2 = 20):
    1. (patient, hasMaritalStatus, marital_status)
    2. (patient, followsReligion, religion)
    3. (patient, hasRaceorEthnicity, race)
    4. (patient, hasGender, gender)
    5. (patient, belongsToAgeGroup, age_group)

6. (patient, hasDisease, disease)
7. (patient, hasIntervention, procedure_CPT)
8. (patient, hasIntervention, procedure_ICD9)
9. (patient, hasIntervention, procedure_medication)
10. (patient, hasSocialContext, social_context(employment, housing, household))

- Version 4:
    - Relations (#8 * 2 = 16):
        1. (patient, hasMaritalStatus, marital_status)
        2. (patient, followsReligion, religion)
        3. (patient, hasRaceorEthnicity, race)
        4. (patient, hasGender, gender)
        5. (patient, belongsToAgeGroup, age_group)
        6. (patient, hasDisease, disease)
        7. (patient, hasSocialContext, social_context(employment, housing, household))
        8. (patient, hasIntervention, procedure):
            - Procedure: CPT, ICD9, medication
- Version 5:
    - Relations (#4 * 2 = 8):
        1. (patient, hasDemographics, demographic_info)
            - demographic_info: marital_status, religion, race, gender, age_group
        2. (patient, hasDisease, disease)
        3. (patient, hasSocialContext, social_context(employment, housing, household))
        4. (patient, hasIntervention, procedure)
            - Procedure: CPT, ICD9, medication
- Version 6 (#1 * 2 = 2):
    - Relations (#1 * 2 = 2):
        1. (patient, has, info):
            - Info: marital_status, religion, race, gender, age_group, disease, procedure_CPT, procedure_ICD9, procedure_medication, social_context

Directed:

- Version 1:
    - Relations (#18 + 12 = 30):
        1. (demographics, hasDemographics, patient)
        2. (diseases, hasDisease, patient)
        3. (procedure_provisioning_CPT, hasIntervention, patient)
        4. (procedure_provisioning_ICD9, hasIntervention, patient)
        5. (medication_provisioning, hasIntervention, patient)
        6. (social_context, hasSocialContext, patient)

7. (demographics, hasMaritalStatus, marital_status): bi-directional
8. (demographics, followsReligion, religion): bi-directional
9. (demographics, hasRaceorEthnicity, race): bi-directional
10. (demographics, hasGender, gender): bi-directional
11. (demographics, hasAge, age_node): bi-directional
12. (age_node, hasStageOfLife, stage_of_life): bi-directional
13. (age_node, belongsToAgeGroup, age_group): bi-directional
14. (diseases, hasDisease, disease): bi-directional
15. (procedure_provisioning_CPT, hasIntervention, procedure_CPT): bi-directional
16. (procedure_provisioning_ICD9, hasIntervention, procedure_ICD9): bi-directional
17. (medication_provisioning, hasIntervention, procedure_medication): bi-directional
18. (social_context, hasSocialContext, social_context(employment, housing, household)): bi-directional

- Version 2:
  - Relations (#12):
    1. (marital_status, hasMaritalStatus, patient)
    2. (religion, followsReligion, patient)
    3. (race, hasRaceorEthnicity, patient)
    4. (gender, hasGender, patient)
    5. (age_node, hasAge, patient)
    6. (stage_of_life, hasStageOfLife, age_node)
    7. (age_group, belongsToAgeGroup, age_node)
    8. (disease, hasDisease, patient)
    9. (procedure_CPT, hasIntervention, patient)
    10. (procedure_ICD9, hasIntervention, patient)
    11. (procedure_medication, hasIntervention, patient)
    12. (social_context(employment, housing, household), hasSocialContext, patient)

- Version 3:
  - Relations (#10):
    1. (marital_status, hasMaritalStatus, patient)
    2. (religion, followsReligion, patient)
    3. (race, hasRaceorEthnicity, patient)
    4. (gender, hasGender, patient)
    5. (age_group, belongsToAgeGroup, patient)
    6. (disease, hasDisease, patient)
    7. (procedure_CPT, hasIntervention, patient)
    8. (procedure_ICD9, hasIntervention, patient)
    9. (procedure_medication, hasIntervention, patient)
    10. (social_context(employment, housing, household), hasSocialContext, patient)

- Version 4:
  - Relations (#8 + 4 = 12):
    1. (demographics, hasDemographics, patient)

2. (diseases, hasDisease, patient)
3. (interventions, hasIntervention, patient)
4. (social_context, hasSocialContext, patient)
5. (demographics, hasDemographics, demographic_info): bi-directional
   - Demographic_info: marital_status, religion, race, gender, age_group
6. (diseases, hasDisease, disease): bi-directional
7. (social_context, hasSocialContext, social_context(employment, housing, household)): bi-directional
8. (interventions, hasIntervention, procedure): bi-directional
   - Procedure: CPT, ICD9, medication
- Version 5:
  o Relations (#8):
    1. (marital_status, hasMaritalStatus, patient)
    2. (religion, followsReligion, patient)
    3. (gender, hasGender, patient)
    4. (race, hasRaceorEthnicity, patient)
    5. (age_group, belongsToAgeGroup, patient)
    6. (disease, hasDisease, patient)
    7. (social_context(employment, housing, household), hasSocialContext, patient)
    8. (procedure, hasIntervention, patient):
       - Procedure: CPT, ICD9, medication
- Version 6:
  o Relations (#4):
    1. (demographic_info, hasDemographics, patient)
       - demographic_info: marital_status, religion, race, gender, age_group
    2. (disease, hasDisease, patient)
    3. (social_context(employment, housing, household), hasSocialContext, patient)
    4. (procedure, hasIntervention, patient):
       - Procedure: CPT, ICD9, medication
- Version 7:
  o Relations (#1):
    1. (info, has, patient):
       - Info: marital_status, religion, race, gender, age_group, disease, procedure_CPT, procedure_ICD9, procedure_medication, social_context