

Understanding Election Dynamics: A Graph Analysis Approach

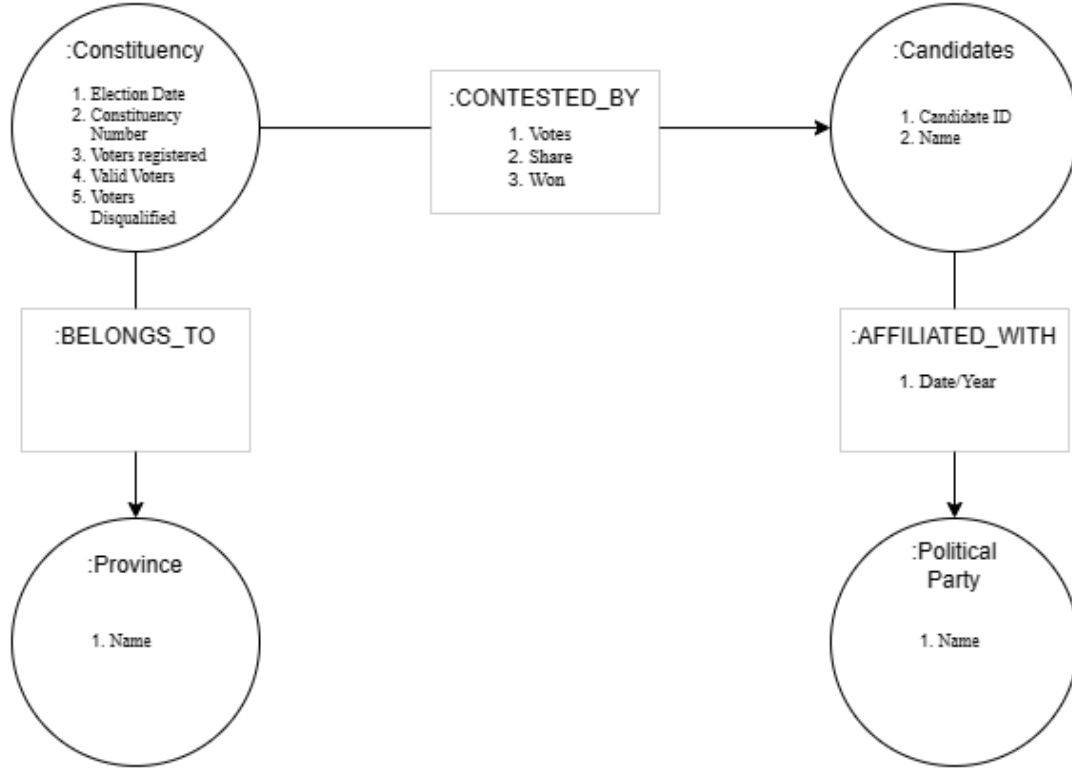
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Graph Data Model



Rationale

The following graph model represents the Pakistan national assembly election model. There are four nodes and three edges. Each candidate is affiliated with a political party, we have considered **independent** candidates as a political party as well. Each constituency belongs to either one of the four province, or FATA/Islamabad.

Finally, the most important edge in our graph is which constituency is contested by which candidate. The edge has properties as well, such as how many votes a specific candidate got, and a bool value *won*, which tells if the candidate won the seat or not. This relation would highlight key players in the graph. The edge *AFFILIATED_WITH* has a property of year, this is because many candidates have been affiliated with different political parties in different years. This would provide us with a better analysis point.

Loading Query

```
LOAD CSV WITH HEADERS FROM "file:///Candidates.csv" AS candidate
MERGE (c:Candidate {id: candidate.candidateID, name: candidate.
    candidate_name})
WITH c

LOAD CSV WITH HEADERS FROM "file:///Constituency.csv" AS
    constituency_row
MERGE (co:Constituency {
    election_date: constituency_row.election_date,
    constituency_number: constituency_row.constituency_number,
    constituency_name: constituency_row.constituency_name,
    voter_reg: TOINTEGER(constituency_row.voter_reg),
    validated_votes: TOINTEGER(constituency_row.validated_votes),
    votes_disq: TOINTEGER(constituency_row.votes_disq)
})
WITH co

LOAD CSV WITH HEADERS FROM "file:///Province.csv" AS province
MERGE (p:Province {Name: province.Name})
WITH p

LOAD CSV WITH HEADERS FROM "file:///Political_Party.csv" AS
    political_party
MERGE (pp:Political_Party {Name: political_party.Name})
WITH pp

LOAD CSV WITH HEADERS FROM "file:///BELONGS_TO.csv" AS belongs_to
MATCH (co:Constituency {constituency_number: belongs_to.
    Constituency_Number})
MATCH (p:Province {Name: belongs_to.Province_Name})
MERGE (co) -[:BELONGS_TO]->(p)
WITH co, pp

LOAD CSV WITH HEADERS FROM "file:///AFFILIATED_WITH.csv" AS
    affiliated_with
MATCH (c:Candidate {name: affiliated_with.candidate_name})
MATCH (pp:Political_Party {Name: affiliated_with.candidate_party})
MERGE (c) -[:AFFILIATED_WITH]->(pp)
```

```

WITH co

LOAD CSV WITH HEADERS FROM "file:///CONTESTED_BY.csv" AS contested_by
MATCH (co:Constituency {
    election_date: contested_by.election_date,
    constituency_number: contested_by.constituency_number
})
MATCH (c:Candidate {id: contested_by.candidateID, name: contested_by.candidate_name})
MERGE (co)-[:CONTESTED_BY {
    candidate_votes: TOINTEGER(contested_by.candidate_votes),
    candidate_share: TOFLOAT(contested_by.candidate_share),
    outcome: contested_by.outcome
}]->(c)

```