

Control Formula Demonstration (Refined v2)

Formula Overview

Step 1: Calculate Control Strength

Strength = Political Authority + Population Base + Demographic Bonuses

Components:

1. Political Authority: +25 points if won 1990 election
2. Population Base: Each % of population = 1 point
3. Demographic Bonuses:
 - Strong Majority: +15 if faction has >55% population
 - Plurality Lead: +5 if faction has plurality AND >10% lead over 2nd

Step 2: Determine Control Status

SOLE CONTROL: Top ≥ 60 strength AND ≥ 15 lead over 2nd

WEAK CONTROL: Top ≥ 45 strength but doesn't meet sole control criteria

CONTESTED (2-way): Top 2 within 20 points AND 2nd ≥ 25

CONTESTED (3-way): Top 3 within 25 points AND all ≥ 20

Key Test Cases

1. GORNJI VAKUF-USKOPLJE ⚠ (The Problem Case)

Election: HDZ won | Population: Bosniak 55.8%, Croat 42.5%

Calculation:

- **RBiH:** 0 (no election) + 55.8 (pop) + 15 (>55% bonus) = **70.8**
- **HRHB:** 25 (election) + 42.5 (pop) + 0 = **67.5**
- **RS:** 0 + 0.4 + 0 = **0.4**

Analysis:

- Lead: $70.8 - 67.5 = 3.3$ (within 20)
- $RBiH \geq 60 \checkmark$, but lead only 3.3 (needs ≥ 15) X
- $HRHB \geq 25 \checkmark$

Result: CONTESTED (2-way) RBiH vs HRHB ✅ **Why:** Despite HDZ election win, Bosniak majority (>55%) gives them demographic strength. The close contest accurately reflects the tense situation.

2. BUSOVAC

Election: HDZ won | **Population:** Bosniak 44.8%, Croat 48.2%

Calculation:

- **HRHB:** 25 (election) + 48.2 (pop) + 0 = **73.2**
- **RBiH:** 0 + 44.8 + 0 = **44.8**
- **RS:** 0 + 3.3 + 0 = **3.3**

Analysis:

- Lead: $73.2 - 44.8 = 28.4 (>20)$
- $\text{HRHB} \geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL HRHB ✅ **Why:** HDZ election + Croat plurality (even though slim) = clear control

3. VITEZ

Election: HDZ won | **Population:** Bosniak 41.3%, Croat 45.5%

Calculation:

- **HRHB:** 25 (election) + 45.5 (pop) + 0 = **70.5**
- **RBiH:** 0 + 41.3 + 0 = **41.3**
- **RS:** 0 + 5.4 + 0 = **5.4**

Analysis:

- Lead: $70.5 - 41.3 = 29.2 (>20)$
- $\text{HRHB} \geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL HRHB ✅ **Why:** Election win + clear Croat plurality

4. KISELJAK

Election: HDZ won | **Population:** Bosniak 40.5%, Croat 51.9%

Calculation:

- **HRHB:** 25 (election) + 51.9 (pop) + 0 = **76.9**
- **RBiH:** 0 + 40.5 + 0 = **40.5**
- **RS:** 0 + 3.1 + 0 = **3.1**

Analysis:

- Lead: $76.9 - 40.5 = 36.4 (>20)$
- $\text{HRHB} \geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: **SOLE CONTROL** HRHB  **Why:** Both election and demographic majority

5. KOTOR VAROŠ

Election: SDA won | **Population:** Serb 38.1%, Bosniak 30.1%, Croat 29.0%

Calculation:

- **RBiH:** 25 (election) + 30.1 (pop) + 0 = **55.1**
- **RS:** 0 + 38.1 + 0 = **38.1**
- **HRHB:** 0 + 29.0 + 0 = **29.0**

Analysis:

- Lead: $55.1 - 38.1 = 17.0$ (within 20)
- Range: $55.1 - 29.0 = 26.1 (>25$, so not 3-way)
- $\text{RBiH} \geq 45 \checkmark$, lead 17.0 (needs ≥ 15 for sole control)

Result: **WEAK CONTROL** RBiH  **Why:** SDA won election but Serbs are plurality - politically controlled but demographically weak

6. MODRIČA

Election: SDA won | **Population:** Serb 44.4%, Croat 24.2%, Bosniak 22.7%

Calculation:

- **RBiH:** 25 (election) + 22.7 (pop) + 0 = **47.7**
- **RS:** 0 + 44.4 + 0 = **44.4**
- **HRHB:** 0 + 24.2 + 0 = **24.2**

Analysis:

- Lead: $47.7 - 44.4 = 3.3$ (within 20)
- Range: $47.7 - 24.2 = 23.5$ (within 25)
- All $\geq 20 \checkmark$

Result: CONTESTED (3-way) RBiH vs RS vs HRHB  **Why:** Election winner has smallest ethnic group - all three factions have claims

7. DOBOJ

Election: SDA won | **Population:** Serb 49.5%, Bosniak 30.7%, Croat 11.2%

Calculation:

- **RBiH:** 25 (election) + 30.7 (pop) + 0 = **55.7**
- **RS:** 0 + 49.5 + 0 = **49.5**
- **HRHB:** 0 + 11.2 + 0 = **11.2**

Analysis:

- Lead: $55.7 - 49.5 = 6.2$ (within 20)
- RS $\geq 25 \checkmark$

Result: CONTESTED (2-way) RBiH vs RS  **Why:** SDA won but Serbs have plurality - clear 2-way contest

8. ILIJAŠ

Election: SDA won | **Population:** Serb 45.2%, Bosniak 41.7%, Croat 6.9%

Calculation:

- **RBiH:** 25 (election) + 41.7 (pop) + 0 = **66.7**
- **RS:** 0 + 45.2 + 0 = **45.2**
- **HRHB:** 0 + 6.9 + 0 = **6.9**

Analysis:

- Lead: $66.7 - 45.2 = 21.5$ (>20 , needs ≤ 20 for contested)
- RBiH $\geq 60 \checkmark$ but lead 21.5 (needs ≥ 15 for sole control) \checkmark

Result: SOLE CONTROL RBiH \checkmark **Why:** Election win + close to parity gives RBiH control, though unstable

9. BANJA LUKA

Election: SDS won | **Population:** Serb 54.6%, Bosniak 14.6%, Croat 14.8%

Calculation:

- **RS:** 25 (election) + 54.6 (pop) + $0 = 79.6$
- **HRHB:** $0 + 14.8 + 0 = 14.8$
- **RBiH:** $0 + 14.6 + 0 = 14.6$

Analysis:

- Lead: $79.6 - 14.8 = 64.8$ (overwhelming)
- RS $\geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL RS \checkmark **Why:** Clear demographic majority + election = dominant control

10. JAJCE

Election: SDA won | **Population:** Bosniak 40.0%, Croat 35.9%, Serb 17.1%

Calculation:

- **RBiH:** 25 (election) + 40.0 (pop) + $0 = 65.0$
- **HRHB:** $0 + 35.9 + 0 = 35.9$
- **RS:** $0 + 17.1 + 0 = 17.1$

Analysis:

- Lead: $65.0 - 35.9 = 29.1$ (>20)
- RBiH $\geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL RBiH \checkmark **Why:** Election + plurality gives clear control

11. BRČKO

Election: SDA won | **Population:** Bosniak 44.1%, Croat 25.4%, Serb 20.7%

Calculation:

- **RBiH:** 25 (election) + 44.1 (pop) + 5 (>10% lead) = **74.1**
- **HRHB:** 0 + 25.4 + 0 = **25.4**
- **RS:** 0 + 20.7 + 0 = **20.7**

Analysis:

- Lead: $74.1 - 25.4 = 48.7$ (>20)
- $\text{RBiH} \geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: **SOLE CONTROL RBiH**  **Why:** Election + strong plurality + plurality bonus = solid control

12. BROD

Election: HDZ won | **Population:** Croat 41.3%, Serb 33.0%, Bosniak 12.1%

Calculation:

- **HRHB:** 25 (election) + 41.3 (pop) + 5 (>10% lead) = **71.3**
- **RS:** 0 + 33.0 + 0 = **33.0**
- **RBiH:** 0 + 12.1 + 0 = **12.1**

Analysis:

- Lead: $71.3 - 33.0 = 38.3$ (>20)
- $\text{HRHB} \geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: **SOLE CONTROL HRHB**  **Why:** Election + plurality + plurality bonus

13. BUGOJNO

Election: SDA won | **Population:** Bosniak 42.0%, Croat 34.2%, Serb 18.5%

Calculation:

- **RBiH:** 25 (election) + 42.0 (pop) + 0 = **67.0**
- **HRHB:** 0 + 34.2 + 0 = **34.2**
- **RS:** 0 + 18.5 + 0 = **18.5**

Analysis:

- Lead: $67.0 - 34.2 = 32.8 (>20)$
- RBiH $\geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL RBiH  **Why:** Election + plurality despite significant Croat minority

14. NOVI TRAVNIK

Election: SDA won | **Population:** Croat 39.6%, Bosniak 37.9%, Serb 13.3%

Calculation:

- **RBiH:** 25 (election) + 37.9 (pop) + 0 = **62.9**
- **HRHB:** 0 + 39.6 + 0 = **39.6**
- **RS:** 0 + 13.3 + 0 = **13.3**

Analysis:

- Lead: $62.9 - 39.6 = 23.3 (>20)$
- RBiH $\geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL RBiH  **Why:** Election win overcomes slight Croat plurality (very unstable)

15. VAREŠ

Election: HDZ won | **Population:** Croat 40.6%, Bosniak 30.2%, Serb 16.4%

Calculation:

- **HRHB:** 25 (election) + 40.6 (pop) + 0 = **65.6**
- **RBiH:** 0 + 30.2 + 0 = **30.2**
- **RS:** 0 + 16.4 + 0 = **16.4**

Analysis:

- Lead: $65.6 - 30.2 = 35.4 (>20)$
- HRHB $\geq 60 \checkmark$ and lead $\geq 15 \checkmark$

Result: SOLE CONTROL HRHB **Why:** Election + plurality = control

Summary Statistics

Control Type Distribution:

- **SOLE CONTROL:** Clear dominance (60+ strength, 15+ lead)
- **WEAK CONTROL:** Leading but unstable (45+ strength, <15 lead)
- **CONTESTED (2-way):** Two factions competing
- **CONTESTED (3-way):** All three factions relevant

Formula Strengths:

- Recognizes demographic majorities even against election results (Gornji Vakuf)
- Still gives elections significant weight (Novi Travnik)
- Creates 3-way contested areas where all groups relevant (Modriča)
- Identifies weak control situations (Kotor Varoš)
- Properly weights strong majorities with $>55\%$ bonus

Key Insights:

- **Election Bonus (25 pts):** Strong but not overwhelming
- **$>55\%$ Majority Bonus (+15):** Recognizes clear demographic control
- **Plurality Lead Bonus (+5):** Rewards clear pluralities vs close splits
- **Thresholds:** Calibrated so ~60 is solid control, 45-60 is weak/contested