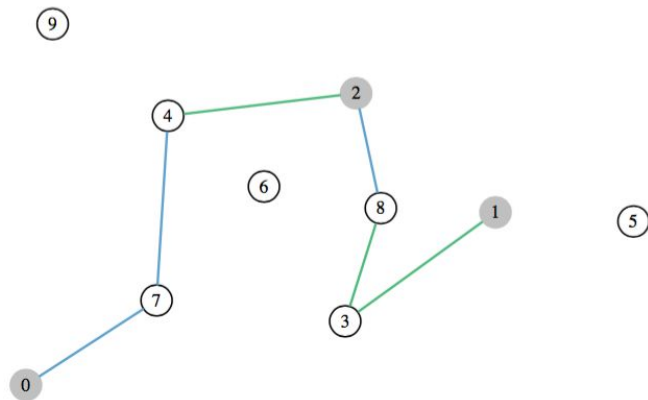
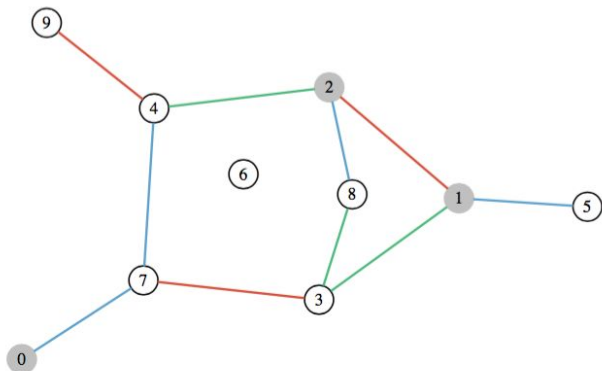


# Árvore de Steiner com rotulação mínima

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GRASP, VNS e GRASP/VNS

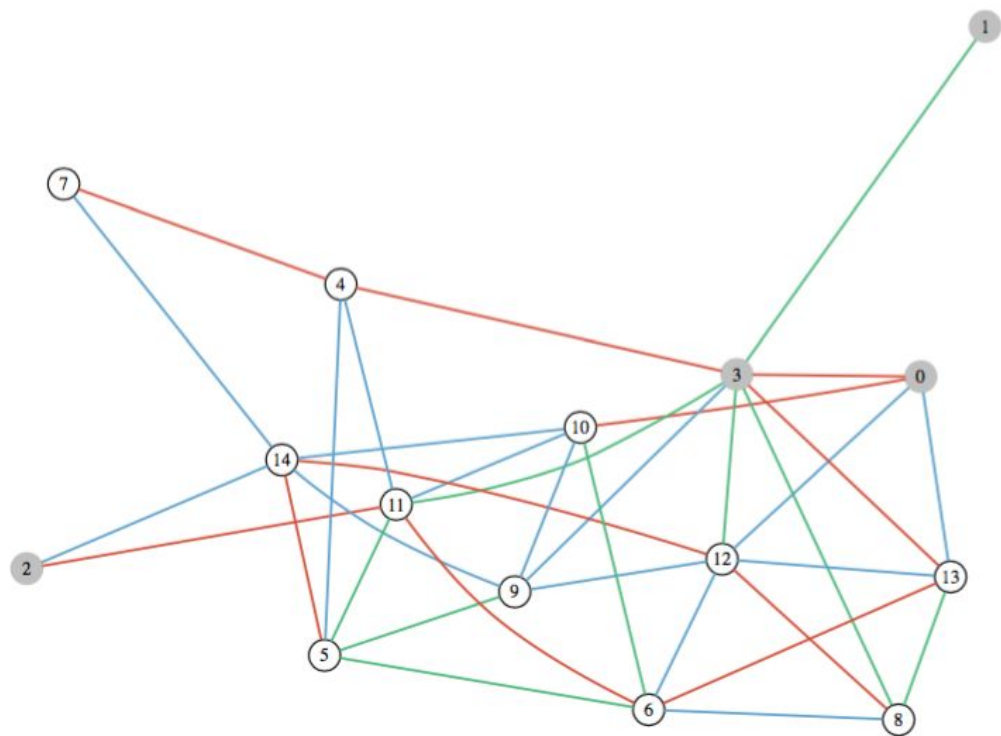
# Problema



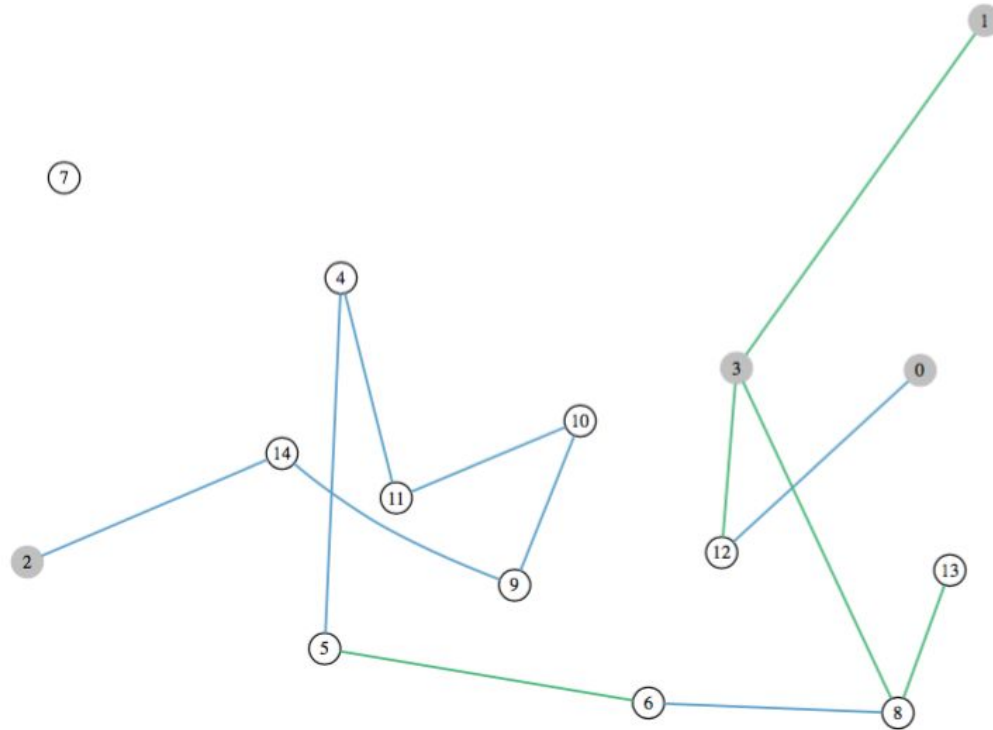
$$G = (V, E, L)$$

$$Q \subseteq V$$

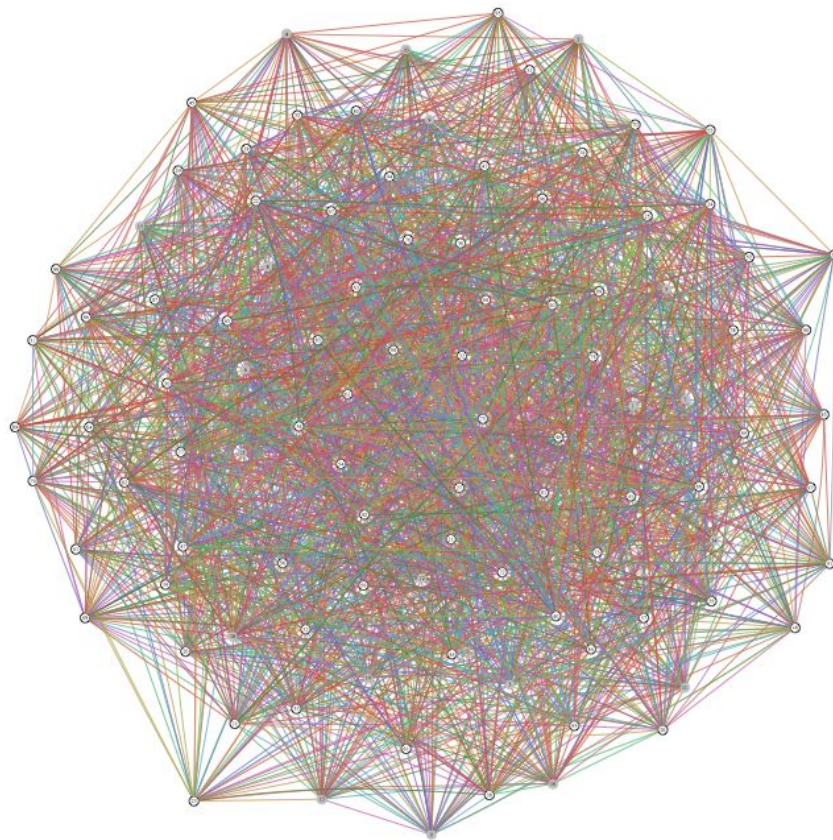
# Algoritmo



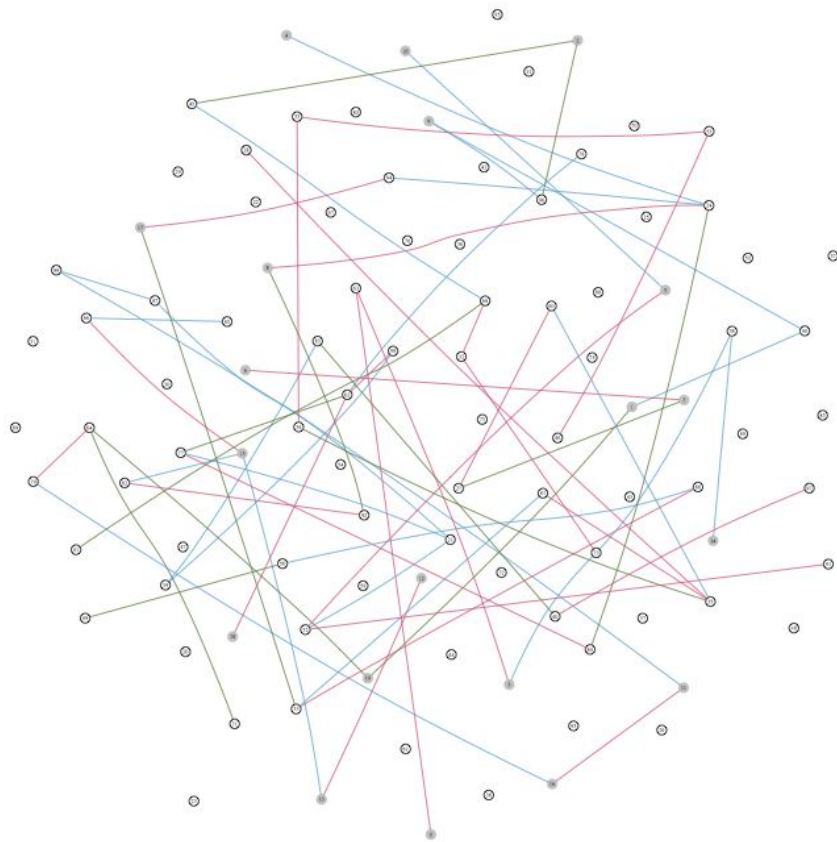
# Algoritmo



# Algoritmo



# Algoritmo



# GRASP

- Multi-inicialização
- Construção
  - RCL preenchida com  $\text{argmin Comp}(C)$
- Busca local
  - Remove cores desnecessárias
  - Verifica se grafo continua

# VNS

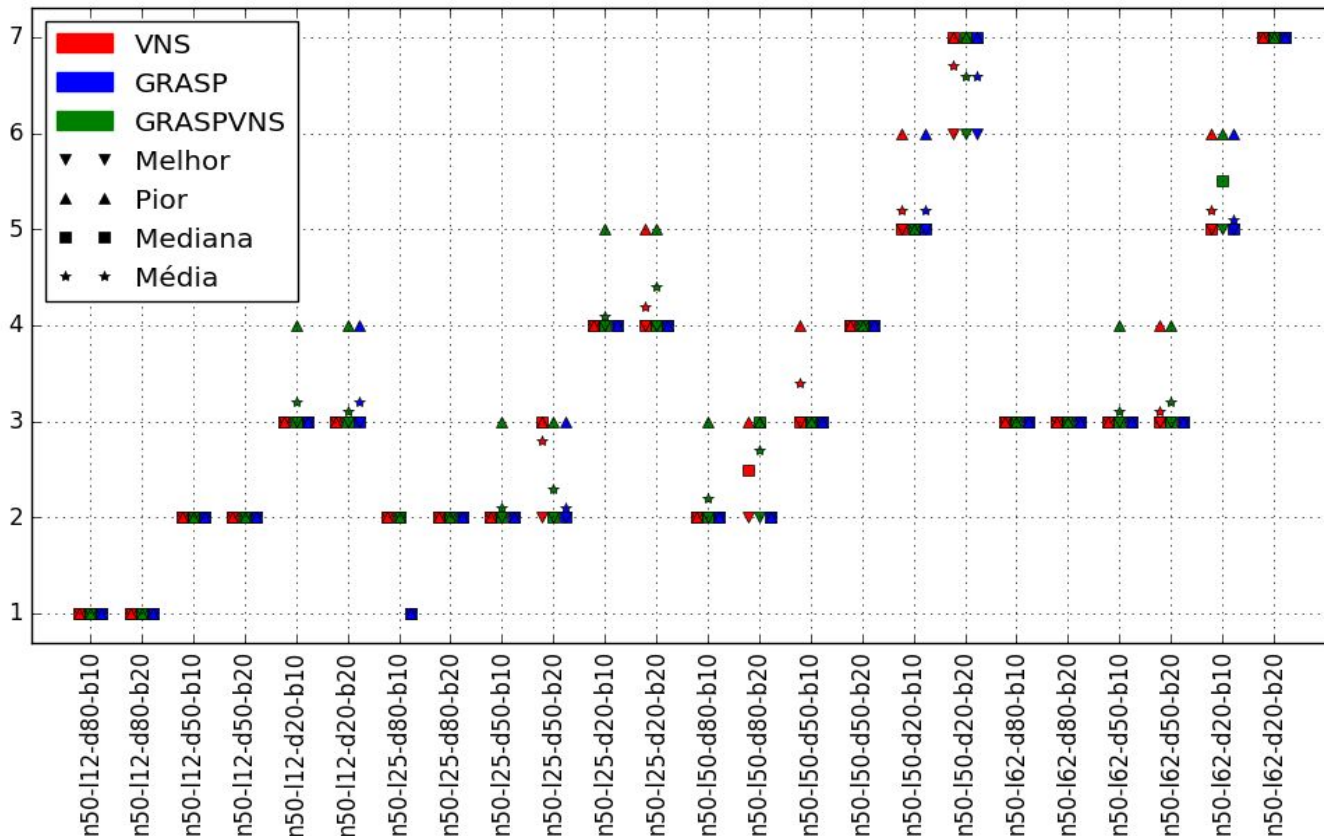
- Shaking
- Busca local



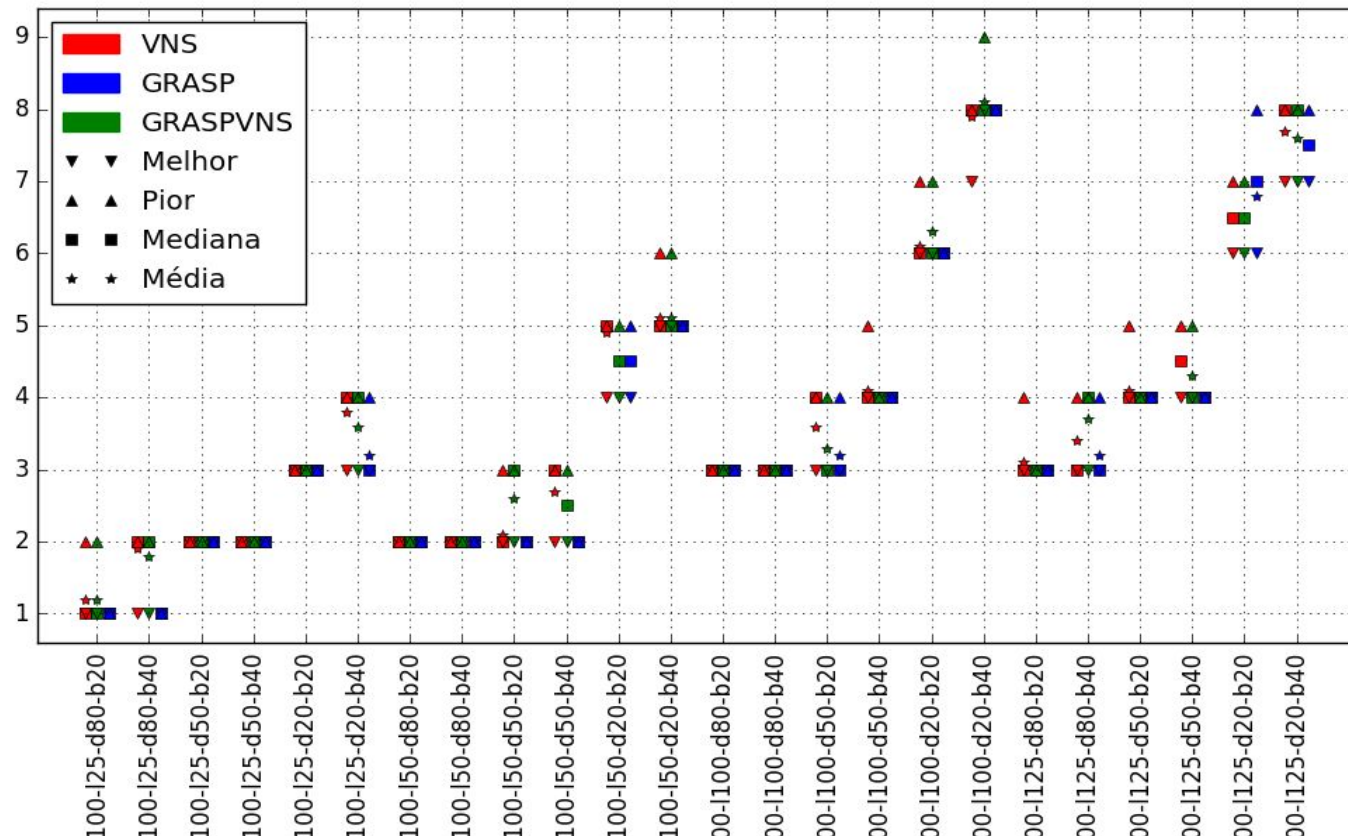
# GRASP/VNS

- Construção
- VNS
  - Busca local

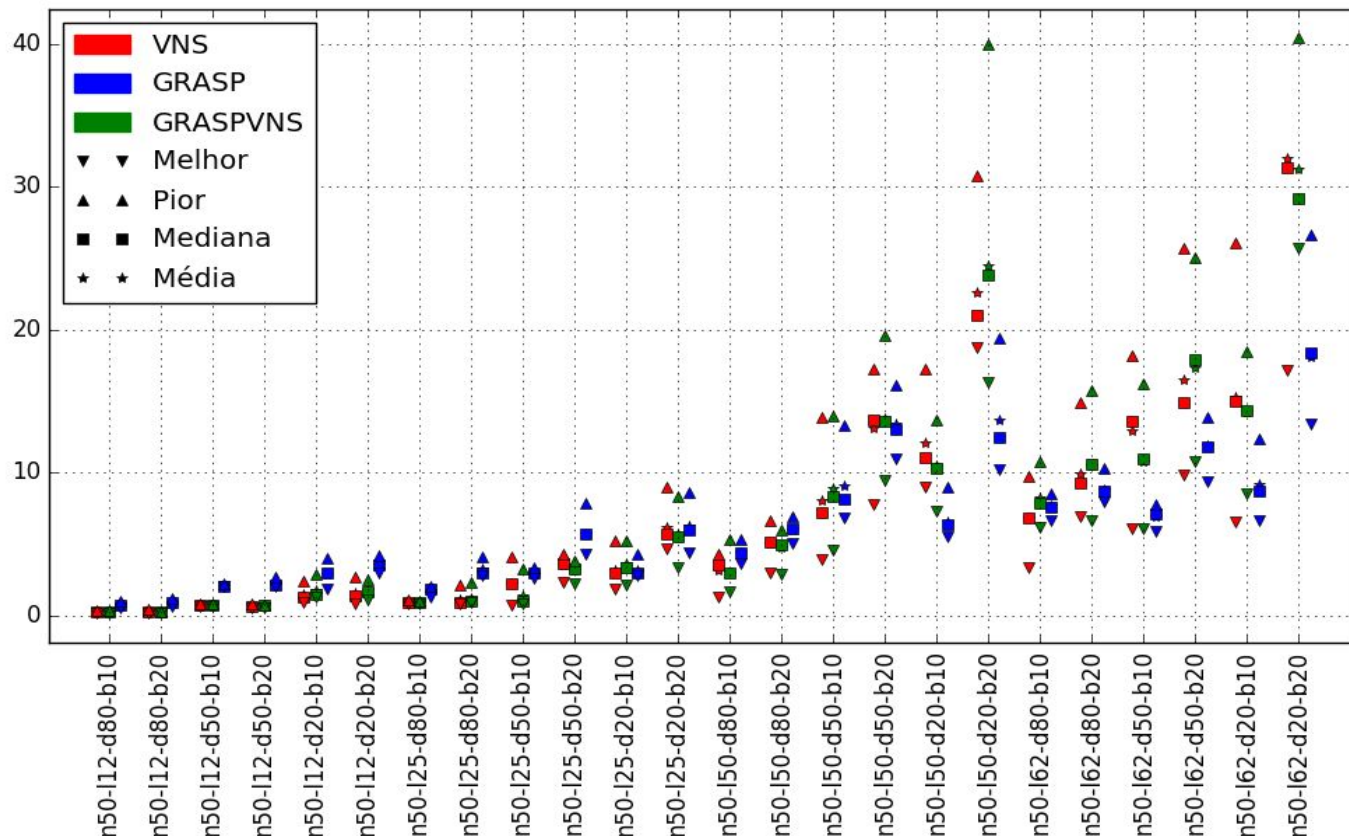
# Resultados (n = 50 | solução)



# Resultados (n = 100 | solução)



# Resultados (n = 50 | tempo)



# Resultados (n = 100 | tempo)

