



D Regulatory disruption scores

Edge disruption scores

$$d_{xij}^{(E)} = \left| \begin{array}{c} \text{TF}_i \text{ to } G_j \\ \text{TF}_i \text{ to } G_j \end{array} \right| = \left| E_x^* - B^* \right|$$

Gene disruption scores

$$d_{xj}^{(G)} = \sum \left| \begin{array}{c} \text{TF}_i \text{ to } G_j \\ \text{TF}_i \text{ to } G_j \end{array} \right| = \left| E_x^* - B^* \right|$$

TF disruption scores

$$d_{xi}^{(TF)} = \sum \left| \begin{array}{c} \text{TF}_i \text{ to } G_j \\ \text{TF}_i \text{ to } G_j \end{array} \right| = \left| E_x^* - B^* \right|$$