Reformulation

$\min \|v(x)\|_\infty$

$= \min \max |v_i(x)| \quad i=1,\dots,m$

let $w = \max |v_i(x)| \quad i=1,\dots,m$

reformulation:

$\min w$

$st. \quad w - |v_i(x)| \geq 0 \quad i=1,\dots,m$

reformulation:

$\min w$

$st. \quad w - v_i(x) \geq 0 \quad i=1,\dots,m$

$\quad\quad w + v_i(x) \geq 0 \quad i=1,\dots,m$