



# Transparency and Utility of Using Net Monetary Benefit (NMB) Analysis over Incremental Cost-effectiveness Ratios (ICERs): The Case of the Singapore Diabetes Prevention Program Cost-Effectiveness Analysis (CEA)



Jose L. Paredes Ph.D. candidate and Brian Rittenhouse Ph.D.  
Massachusetts College of Pharmacy (MCPHS), Boston Massachusetts, USA

## Introduction and Objectives

A 2014 CEA from the Singapore healthcare system perspective was published, claiming that Metformin and Lifestyle modification treatments were cost-effective in Pre-Diabetes. The analysis used ICERs and made a classic error in calculating ICERs vs. a common (Placebo) alternative. Our objective was to show NMB advantages over ICERs.

Using the same data from Singapore study, first, we re-estimated costs and effects and compared them with the results published in the Singapore paper (Table 1).

Three treatment alternatives were evaluated: placebo, metformin, and lifestyle changes. Table 1 shows how the Singapore authors reported the ICERs for lifestyle vs. placebo as US\$ 17,184/QALY and metformin versus placebo as US\$ 21,065/QALY; **both treatments were claimed as cost-effective** (based on the assumed WTP threshold of US\$ 53,000 in 2012 (Png & Young, 2014)). It is notable that the Singapore authors only reported the comparison of metformin and lifestyle against placebo, counter to accepted practice in the economic evaluation field (Drummond et al., 2015). This error can lead to errors in conclusions.

The methodology used for the Singapore study to calculate ICERs is flawed (comparing metformin and lifestyle each to placebo rather than correctly calculating ICERs versus next most effective alternatives only).

When more than two alternatives are evaluated, expressing cost-effectiveness in terms of net benefit is useful because it is not necessary to make choices among possible pairwise comparisons between various treatments. In contrast to the calculation of *incremental* NMB when comparing only two treatments, when there are multiples alternatives, it is not necessary to calculate incremental net benefits because the net benefit of each alternative can be calculated and directly compared. The alternative which should be considered as cost-effective is simply the one that provides the highest net benefit (Drummond et al., 2015).

|           | COST US\$ | QALYS | ICER       |
|-----------|-----------|-------|------------|
| PLACEBO   | 8,050     | 1.98  |            |
| METFORMIN | 8,331     | 1.99  | 21,065 (*) |
| LIFESTYLE | 8,896     | 2.03  | 17,184 (*) |

Table 1: ICERs published by the Singapore CEA – compared with placebo (\*)

| Intervention | Cost US\$ | QALY  | ICER vs. NME1 | ICER vs. NME2 | NME2         |
|--------------|-----------|-------|---------------|---------------|--------------|
| Placebo      | 8,050     | 1.979 |               |               |              |
| Metformin    | 8,331     | 1.992 | 21,615        |               |              |
| Lifestyle    | 8,895     | 2.024 | 17,625 (*)    | 18,778        | Placebo (**) |

NME1: is the next most effective intervention, not dominated  
NME2: is the most effective intervention, not weakly dominated  
(\*) Metformin is, in this case, weakly dominated  
(\*\*) The only ICER necessary to calculate Lifestyle vs. Placebo

Table 2: Corrected ICERs reproduced from a cost and effect recalculation

## Methods

We reproduced the original costs, QALYs and ICERs, then calculated ICERs properly. We then calculated NMB values for each treatment, based on a willingness to pay (WTP) threshold of 50,000/QALY. We extended the analysis with a wide range of WTP values and presented the results graphically also. Lastly, we performed a Probabilistic Sensitivity Analysis (PSA) that relied on NMB values in each iteration.

We calculate ICERs, under proper methodology, Table 2, using our re-estimated costs and QALYs. Because we compare more than two alternatives in this analysis, the application of the Net Monetary Benefit Analysis is useful to assess cost-effectiveness among our three alternatives as it is simpler to implement than ICERs with the required steps of elimination of weakly and strongly dominated alternatives and yields identical results. It eliminates the complexity that permits errors in ICER calculations like that in the original CEA. We can express cost-effectiveness in terms of net benefit. It is not necessary to make specific and selected pairwise comparisons, calculate incremental cost or effectiveness, and identify which comparisons between nondominated (or weakly dominated) should be made.

This methodology can also avoid the problem of negative value ICERs and positive value ICERs that are composed of negative numerators and denominators where interpretation vs. WTP values is reversed from the conventional (to be cost-effective an ICER must be > WTP instead of less). The value of the ICER, alone, has no meaning when it is not clear in which quadrant it falls. One of the drawbacks of the ICER is that the location of negative ICERs matters, not only its value. What is also illustrated here is that simply considering the ICER has no meaning when it is not clear in which quadrant the ICER falls. Two extreme options are that a negative ICER may both be dominating as well as a dominated alternative depending on which quadrant is located.

The comparison with irrelevant alternatives misleads conclusions about the cost-effectiveness of alternatives. Failing to exclude strongly dominated and weakly dominated alternatives to calculate ICERs appropriately cause this misleading, unwanted effect. The Singapore authors omitted excluding those alternatives (metformin) in their analysis, leading to incorrect conclusions. In addition, had those authors used the NMB approach they would have simplified the analyses and could not have formed the incorrect conclusions. Under the NMB analysis, to calculate the appropriate incremental costs and effects is not relevant because the net benefit of each alternative can be calculated and directly compared, determining which alternative has the maximal NMB for any given WTP value. Interpreting net benefit is straightforward: regardless of the number of strategies, the cost-effective strategy is simply that with the highest net benefit.

| NMB     |         |           |           | Higher Net Benefit |           |
|---------|---------|-----------|-----------|--------------------|-----------|
| WTP     | Placebo | Metformin | Lifestyle | 11,740             | Placebo   |
| 10,000  | 11,740  | 11,589    | 11,345    | 41,705             | Lifestyle |
| 25,000  | 41,425  | 41,469    | 41,705    | 92,305             | Lifestyle |
| 50,000  | 90,900  | 91,269    | 92,305    | 98,377             | Lifestyle |
| 53,000  | 96,837  | 97,245    | 98,377    | 122,762            | Lifestyle |
| 65,048  | 120,680 | 121,245   | 122,762   | 142,905            | Lifestyle |
| 75,000  | 140,375 | 141,069   | 142,905   | 193,505            | Lifestyle |
| 100,000 | 189,850 | 190,869   | 193,505   |                    |           |

Table 3: Net Monetary Benefits at specific WTP

## Results

Successful reproduction of the cost and QALY numbers indicated consistency with the original analysis. The simple NMB calculation showed that Lifestyle had the maximum NMB when the WTP is a conventional range (\$50-\$150,000). Correct ICER calculations confirmed this result, both analyses indicating the clear error in the original analysis that labelled both Lifestyle and Metformin as cost-effective.

ICERs based on our model inputs are shown in Table 2. The metformin alternative is weakly dominated by the combination of the placebo and the lifestyle alternatives. In consequence, the only ICER to be calculated is lifestyle versus placebo - (US\$ 18,778/QALY). At WTP less than the ICER, placebo is cost-effective; at higher WTPs (such as the assumed \$50,000/QALY), Lifestyle is cost-effective.

Table 3 shows the net monetary benefit values of all alternatives using a range of Willingness to Pay (WTP) values. As with our ICER analysis, we find that the lifestyle alternative has the higher net benefit in all WTP values except for values less than US\$ 18,778 in which placebo has the higher one. The lifestyle alternative has the maximum NMB per patient at WTP values of US\$50,000 and US\$100,000 (NB = US\$92,305 and US\$193,505 respectively). The placebo alternative has the higher NMB when the WTP is US\$10,000 (US\$11,740). The Table 3 and 4 show that the metformin alternative was never the highest NMB of all alternatives in any given WTP. Table 3 also shows the net monetary extra benefit when comparing the NMB of each alternative versus the minimum NMB at a given WTP. An innovative way to compare more than two alternatives, expanding the incremental net monetary benefit analysis in which we can compare only two options. This methodology measures the extra monetary benefit compared with the minimum NMB; the highest extra benefit corresponds to the cost-effective alternative at any given WTP. This methodology produces a graph (Figure 1) which shows, in a more explicit form, the alternative with the highest extra net monetary benefit at different WTP values corresponding to the cost-effective alternative. The metformin alternative (blue line) is always exceeded by the other alternatives at any given WTP.

Finally, we represented decision uncertainty by producing Cost-effective Acceptability Curves from a PSA (Figure 2) based on the NMB for the PSA iterations, demonstrating that at a WTP of US\$50,000 the probability of lifestyle to be cost-effective is 1. In the PSA, metformin was not optimal at any WTP and never had a probability of being cost-effective as high as 0.30 (gray line); the best performance is given at a WTP of US\$18,000 (probability of 0.243) while the placebo probability is 0.757.

| Net Monetary Benefit |           |           |           | Net Monetary Extra Benefit |           |           |           | The Highest NMB |           |          |           |
|----------------------|-----------|-----------|-----------|----------------------------|-----------|-----------|-----------|-----------------|-----------|----------|-----------|
| WTP                  | Placebo   | Metformin | Lifestyle | Placebo                    | Metformin | Lifestyle | Placebo   | Metformin       | Lifestyle | Placebo  | Lifestyle |
| \$ 5,000             | \$ 1,845  | \$ 1,629  | \$ 1,225  | \$ 420                     | \$ 404    | \$ 35     | \$ 1,845  | \$ 1,629        | \$ 1,225  | \$ 420   | \$ 404    |
| \$ 6,000             | \$ 2,845  | \$ 2,629  | \$ 2,225  | \$ 520                     | \$ 504    | \$ 45     | \$ 2,845  | \$ 2,629        | \$ 2,225  | \$ 520   | \$ 504    |
| \$ 7,000             | \$ 3,845  | \$ 3,629  | \$ 3,225  | \$ 620                     | \$ 604    | \$ 55     | \$ 3,845  | \$ 3,629        | \$ 3,225  | \$ 620   | \$ 604    |
| \$ 8,000             | \$ 4,845  | \$ 4,629  | \$ 4,225  | \$ 720                     | \$ 704    | \$ 65     | \$ 4,845  | \$ 4,629        | \$ 4,225  | \$ 720   | \$ 704    |
| \$ 9,000             | \$ 5,845  | \$ 5,629  | \$ 5,225  | \$ 820                     | \$ 804    | \$ 75     | \$ 5,845  | \$ 5,629        | \$ 5,225  | \$ 820   | \$ 804    |
| \$ 10,000            | \$ 6,845  | \$ 6,629  | \$ 6,225  | \$ 920                     | \$ 904    | \$ 85     | \$ 6,845  | \$ 6,629        | \$ 6,225  | \$ 920   | \$ 904    |
| \$ 11,000            | \$ 7,845  | \$ 7,629  | \$ 7,225  | \$ 1,020                   | \$ 1,004  | \$ 95     | \$ 7,845  | \$ 7,629        | \$ 7,225  | \$ 1,020 | \$ 1,004  |
| \$ 12,000            | \$ 8,845  | \$ 8,629  | \$ 8,225  | \$ 1,120                   | \$ 1,104  | \$ 105    | \$ 8,845  | \$ 8,629        | \$ 8,225  | \$ 1,120 | \$ 1,104  |
| \$ 13,000            | \$ 9,845  | \$ 9,629  | \$ 9,225  | \$ 1,220                   | \$ 1,204  | \$ 115    | \$ 9,845  | \$ 9,629        | \$ 9,225  | \$ 1,220 | \$ 1,204  |
| \$ 14,000            | \$ 10,845 | \$ 10,629 | \$ 10,225 | \$ 1,320                   | \$ 1,304  | \$ 125    | \$ 10,845 | \$ 10,629       | \$ 10,225 | \$ 1,320 | \$ 1,304  |
| \$ 15,000            | \$ 11,845 | \$ 11,629 | \$ 11,225 | \$ 1,420                   | \$ 1,404  | \$ 135    | \$ 11,845 | \$ 11,629       | \$ 11,225 | \$ 1,420 | \$ 1,404  |
| \$ 16,000            | \$ 12,845 | \$ 12,629 | \$ 12,225 | \$ 1,520                   | \$ 1,504  | \$ 145    | \$ 12,845 | \$ 12,629       | \$ 12,225 | \$ 1,520 | \$ 1,504  |
| \$ 17,000            | \$ 13,845 | \$ 13,629 | \$ 13,225 | \$ 1,620                   | \$ 1,604  | \$ 155    | \$ 13,845 | \$ 13,629       | \$ 13,225 | \$ 1,620 | \$ 1,604  |
| \$ 18,000            | \$ 14,845 | \$ 14,629 | \$ 14,225 | \$ 1,720                   | \$ 1,704  | \$ 165    | \$ 14,845 | \$ 14,629       | \$ 14,225 | \$ 1,720 | \$ 1,704  |
| \$ 19,000            | \$ 15,845 | \$ 15,629 | \$ 15,225 | \$ 1,820                   | \$ 1,804  | \$ 175    | \$ 15,845 | \$ 15,629       | \$ 15,225 | \$ 1,820 | \$ 1,804  |
| \$ 20,000            | \$ 16,845 | \$ 16,629 | \$ 16,225 | \$ 1,920                   | \$ 1,904  | \$ 185    | \$ 16,845 | \$ 16,629       | \$ 16,225 | \$ 1,920 | \$ 1,904  |
| \$ 21,000            | \$ 17,845 | \$ 17,629 | \$ 17,225 | \$ 2,020                   | \$ 2,004  | \$ 195    | \$ 17,845 | \$ 17,629       | \$ 17,225 | \$ 2,020 | \$ 2,004  |
| \$ 22,000            | \$ 18,845 | \$ 18,629 | \$ 18,225 | \$ 2,120                   | \$ 2,104  | \$ 205    | \$ 18,845 | \$ 18,629       | \$ 18,225 | \$ 2,120 | \$ 2,104  |
| \$ 23,000            | \$ 19,845 | \$ 19,629 | \$ 19,225 | \$ 2,220                   | \$ 2,204  | \$ 215    | \$ 19,845 | \$ 19,629       | \$ 19,225 | \$ 2,220 | \$ 2,204  |
| \$ 24,000            | \$ 20,845 | \$ 20,629 | \$ 20,225 | \$ 2,320                   | \$ 2,304  | \$ 225    | \$ 20,845 | \$ 20,629       | \$ 20,225 | \$ 2,320 | \$ 2,304  |
| \$ 25,000            | \$ 21,845 | \$ 21,629 | \$ 21,225 | \$ 2,420                   | \$ 2,404  | \$ 235    | \$ 21,845 | \$ 21,629       | \$ 21,225 | \$ 2,420 | \$ 2,404  |
| \$ 26,000            | \$ 22,845 | \$ 22,629 | \$ 22,225 | \$ 2,520                   | \$ 2,504  | \$ 245    | \$ 22,845 | \$ 22,629       | \$ 22,225 | \$ 2,520 | \$ 2,504  |
| \$ 27,000            | \$ 23,845 | \$ 23,629 | \$ 23,225 | \$ 2,620                   | \$ 2,604  | \$ 255    | \$ 23,845 | \$ 23,629       | \$ 23,225 | \$ 2,620 | \$ 2,604  |
| \$ 28,000            | \$ 24,845 | \$ 24,629 | \$ 24,225 | \$ 2,720                   | \$ 2,704  | \$ 265    | \$ 24,845 | \$ 24,629       | \$ 24,225 | \$ 2,720 | \$ 2,704  |
| \$ 29,000            | \$ 25,845 | \$ 25,629 | \$ 25,225 | \$ 2,820                   | \$ 2,804  | \$ 275    | \$ 25,845 | \$ 25,629       | \$ 25,225 | \$ 2,820 | \$ 2,804  |
| \$ 30,000            | \$ 26,845 | \$ 26,629 | \$ 26,225 | \$ 2,920                   | \$ 2,904  | \$ 285    | \$ 26,845 | \$ 26,629       | \$ 26,225 | \$ 2,920 | \$ 2,904  |
| \$ 31,000            | \$ 27,845 | \$ 27,629 | \$ 27,225 | \$ 3,020                   | \$ 3,004  | \$ 295    | \$ 27,845 | \$ 27,629       | \$ 27,225 | \$ 3,020 | \$ 3,004  |
| \$ 32,000            | \$ 28,845 | \$ 28,629 | \$ 28,225 | \$ 3,120                   | \$ 3,104  | \$ 305    | \$ 28,845 | \$ 28,629       | \$ 28,225 | \$ 3,120 | \$ 3,104  |
| \$ 33,000            | \$ 29,845 | \$ 29,629 | \$ 29,225 | \$ 3,220                   | \$ 3,204  | \$ 315    | \$ 29,845 | \$ 29,629       | \$ 29,225 | \$ 3,220 | \$ 3,204  |
| \$ 34,000            | \$ 30,845 | \$ 30,629 | \$ 30,225 | \$ 3,320                   | \$ 3,304  | \$ 325    | \$ 30,845 | \$ 30,629       | \$ 30,225 | \$ 3,320 | \$ 3,304  |
| \$ 35,000            | \$ 31,845 | \$ 31,629 | \$ 31,225 | \$ 3,420                   | \$ 3,404  | \$ 335    | \$ 31,845 | \$ 31,629       | \$ 31,225 | \$ 3,420 | \$ 3,404  |
| \$ 36,000            | \$ 32,845 | \$ 32,629 | \$ 32,225 | \$ 3,520                   | \$ 3,504  | \$ 345    | \$ 32,845 | \$ 32,629       | \$ 32,225 | \$ 3,520 | \$ 3,504  |
| \$ 37,000            | \$ 33,845 | \$ 33,629 | \$ 33,225 | \$ 3,620                   | \$ 3,604  | \$ 355    | \$ 33,845 | \$ 33,629       | \$ 33,225 | \$ 3,620 | \$ 3,604  |
| \$ 38,000            | \$ 34,845 | \$ 34,629 | \$ 34,225 | \$ 3,720                   | \$ 3,704  | \$ 365    | \$ 34,845 | \$ 34,629       | \$ 34,225 | \$ 3,720 | \$ 3,704  |
| \$ 39,000            | \$ 35,845 | \$ 35,629 | \$ 35,225 | \$ 3,820                   | \$ 3,804  | \$ 375    | \$ 35,845 | \$ 35,629       | \$ 35,225 | \$ 3,820 | \$ 3,804  |
| \$ 40,000            | \$ 36,845 | \$ 36,629 | \$ 36,225 | \$ 3,920                   | \$ 3,904  | \$ 385    | \$ 36,845 | \$ 36,629       | \$ 36,225 | \$ 3,920 | \$ 3,904  |
| \$ 41,000            | \$ 37,845 | \$ 37,629 | \$ 37,225 | \$ 4,020                   | \$ 4,004  | \$ 395    | \$ 37,845 | \$ 37,629       | \$ 37,225 | \$ 4,020 | \$ 4,004  |
| \$ 42,000            | \$ 38,845 | \$ 38,629 | \$ 38,225 | \$ 4,120                   | \$ 4,104  | \$ 405    | \$ 38,845 | \$ 38,629       | \$ 38,225 | \$ 4,120 | \$ 4,104  |
| \$ 43,000            | \$ 39,845 | \$ 39,629 | \$ 39,225 | \$ 4,220                   | \$ 4,204  | \$ 415    | \$ 39,845 | \$ 39,629       | \$ 39,225 | \$ 4,220 | \$ 4,204  |
| \$ 44,000            | \$ 40,845 | \$ 40,629 | \$ 40,225 | \$ 4,320                   | \$ 4,304  | \$ 425    | \$ 40,845 | \$ 40,629       | \$ 40,225 | \$ 4,320 | \$ 4,304  |
| \$ 45,000            | \$ 41,845 | \$ 41,629 | \$ 41,225 | \$ 4,420                   | \$ 4,404  | \$ 435    | \$ 41,845 | \$ 41,629       | \$ 41,225 | \$ 4,420 | \$ 4,404  |
| \$ 46,000            | \$ 42,845 | \$ 42,629 | \$ 42,225 | \$ 4,520                   | \$ 4,504  | \$ 445    | \$ 42,845 | \$ 42,629       | \$ 42,225 | \$ 4,520 | \$ 4,504  |
| \$ 47,000            | \$ 43,845 | \$ 43,629 | \$ 43,225 | \$ 4,620                   | \$ 4,604  | \$ 455    | \$ 43,845 | \$ 43,629       | \$ 43,225 | \$ 4,620 | \$ 4,604  |
| \$ 48,000            | \$ 44,845 | \$ 44,629 | \$ 44,225 | \$ 4,720                   | \$ 4,704  | \$ 465    | \$ 44,845 | \$ 44,629       | \$ 44,225 | \$ 4,720 | \$ 4,704  |
| \$ 49,000            | \$ 45,845 | \$ 45,629 | \$ 45,225 | \$ 4,820                   | \$ 4,804  | \$ 475    | \$ 45,845 | \$ 45,629       | \$ 45,225 | \$ 4,820 | \$ 4,804  |
| \$ 50,000            | \$ 46,845 | \$ 46,629 | \$ 46,225 | \$ 4,920                   | \$ 4,904  | \$ 485    | \$ 46,845 | \$ 46,629       | \$ 46,225 | \$ 4,920 | \$ 4,904  |
| \$ 51,000            | \$ 47,845 | \$ 47,629 | \$ 47,225 | \$ 5,020                   | \$ 5,004  | \$ 495    | \$ 47,845 | \$ 47,629       | \$ 47,225 | \$ 5,020 | \$ 5,004  |
| \$ 52,000            | \$ 48,845 | \$ 48,629 | \$ 48,225 | \$ 5,120                   | \$ 5,104  | \$ 505    | \$ 48,845 | \$ 48,629       | \$ 48,225 | \$ 5,120 | \$ 5,104  |
| \$ 53,000            | \$ 49,845 | \$ 49,629 | \$ 49,225 | \$ 5,220                   | \$ 5,204  | \$ 515    | \$ 49,845 | \$ 49,629       | \$ 49,225 | \$ 5,220 | \$ 5,204  |
| \$ 54,000            | \$ 50,845 | \$ 50,629 | \$ 50,225 | \$ 5,320                   | \$ 5,304  | \$ 525    | \$ 50,845 | \$ 50,629       | \$ 50,225 | \$ 5,320 | \$ 5,304  |
| \$ 55,000            | \$ 51,845 | \$ 51,629 | \$ 51,225 | \$ 5,420                   | \$ 5,404  | \$ 535    | \$ 51,845 | \$ 51,629       | \$ 51,225 | \$ 5,420 | \$ 5,404  |
| \$ 56,000            | \$ 52,845 | \$ 52,629 | \$ 52,225 | \$ 5,520                   | \$ 5,504  | \$ 545    | \$ 52,845 | \$ 52,629       | \$ 52,225 | \$ 5,520 | \$ 5,504  |
| \$ 57,000            | \$ 53,845 | \$ 53,629 | \$ 53,225 | \$ 5,620                   | \$ 5,604  | \$ 555    | \$ 53,845 | \$ 53,629       | \$ 53,225 | \$ 5,620 | \$ 5,604  |
| \$ 58,000            | \$ 54,845 | \$ 54,629 | \$ 54,225 | \$ 5,720                   | \$ 5,704  | \$ 565    | \$ 54,845 | \$ 54,629       | \$ 54,225 | \$ 5,720 | \$ 5,704  |
| \$ 59,000            | \$ 55,845 | \$ 55,629 | \$ 55,225 | \$ 5,820                   | \$ 5,804  | \$ 575    | \$ 55,845 | \$ 55,629       | \$ 55,225 | \$ 5,820 | \$ 5,804  |
| \$ 60,000            | \$ 56,845 | \$ 56,629 | \$ 56,225 | \$ 5,920                   | \$ 5,904  | \$ 585    | \$ 56,845 | \$ 56,629       | \$ 56,225 | \$ 5,920 | \$ 5,904  |
| \$ 61,000            | \$ 57,845 | \$ 57,629 | \$ 57,225 | \$ 6,020                   | \$ 6,004  | \$ 595    | \$ 57,845 | \$ 57,629       | \$ 57,225 | \$ 6,020 | \$ 6,004  |
| \$ 62,000            | \$ 58,845 | \$ 58,629 | \$ 58,225 | \$ 6,120                   | \$ 6,104  | \$ 605    | \$ 58,845 | \$ 58,629       | \$ 58,225 | \$ 6,120 | \$ 6,104  |
| \$ 63,000            | \$ 59,845 | \$ 59,629 | \$ 59,225 | \$ 6,220                   | \$ 6,204  | \$ 615    | \$ 59,845 | \$ 59,629       | \$ 59,225 | \$ 6,220 | \$ 6,204  |
| \$ 64,000            | \$ 60,845 | \$ 60,629 | \$ 60,225 | \$ 6,320                   | \$ 6,304  | \$ 625    | \$ 60,845 | \$ 60,629       | \$ 60,225 | \$ 6,320 | \$ 6,304  |
| \$ 65,000            | \$ 61,845 | \$ 61,629 | \$ 61,225 | \$ 6,420                   | \$ 6,404  | \$ 635    | \$ 61,845 | \$ 61,629       | \$ 61,225 | \$ 6,420 | \$ 6,404  |
| \$ 66,000            | \$ 62,845 | \$ 62,629 | \$ 62,225 | \$ 6,520                   | \$ 6,504  | \$ 645    | \$ 62,845 | \$ 62,629       | \$ 62,225 | \$ 6,520 | \$ 6,504  |
| \$ 67,000            | \$ 63,845 | \$ 63,629 | \$ 63,225 | \$ 6,620                   | \$ 6,604  | \$ 655    | \$ 63,845 | \$ 63,629       | \$ 63,225 | \$ 6,620 | \$ 6,604  |
| \$ 68,000            | \$ 64,845 | \$ 64,629 | \$ 64,225 | \$ 6,720                   | \$ 6,704  | \$ 665    | \$ 64,845 | \$ 64,629       | \$ 64,225 | \$ 6,720 | \$ 6,704  |
| \$ 69,000            | \$ 65,845 | \$ 65,629 | \$ 65,225 | \$ 6,820                   | \$ 6,804  | \$ 675    | \$ 65,845 | \$ 65,629       | \$ 65,225 | \$ 6,820 | \$ 6,804  |
| \$ 70,000            | \$ 66,845 | \$ 66,629 | \$ 66,225 | \$ 6,920                   | \$ 6,904  | \$ 685    | \$ 66,845 | \$ 66,629       | \$ 66,225 | \$ 6,920 | \$ 6,904  |
| \$ 71,000            | \$ 67,845 | \$ 67,629 | \$ 67,225 | \$ 7,020                   | \$ 7,004  | \$ 695    | \$ 67,845 | \$ 67,629       | \$ 67,225 | \$ 7,020 | \$ 7,004  |
| \$ 72,000            | \$ 68,845 | \$ 68,629 | \$ 68,225 | \$ 7,120                   | \$ 7,104  | \$ 705    | \$ 68,845 | \$ 68,629       | \$ 68,225 | \$ 7,120 | \$ 7,104  |
| \$ 73,000            | \$ 69,845 | \$ 69,629 | \$ 69,225 | \$ 7,220                   | \$ 7,204  | \$ 715    | \$ 69,845 | \$ 69,629       | \$ 69,225 | \$ 7,220 | \$ 7,204  |
| \$ 74,000            | \$ 70,845 | \$ 70,629 | \$ 70,225 | \$ 7,320                   | \$ 7,304  | \$ 725    | \$ 70,845 | \$ 70,629       | \$ 70,225 | \$ 7,320 | \$ 7,304  |
| \$ 75,000            | \$ 71,845 | \$ 71,629 | \$ 71,225 | \$ 7,420                   | \$ 7,404  | \$ 735    | \$ 71,845 | \$ 71,629       | \$ 71,225 | \$ 7,420 | \$ 7,404  |
| \$ 76,000            | \$ 72,845 | \$ 72,629 | \$ 72,225 | \$ 7,520                   | \$ 7,504  | \$ 745    | \$ 72,845 | \$ 72,629       | \$ 72,225 | \$ 7,520 | \$ 7,504  |
| \$ 77,000            | \$ 73,845 | \$ 73,629 | \$ 73,225 | \$ 7,620                   | \$ 7,604  | \$ 755    | \$ 73,845 | \$ 73,629       | \$ 73,225 | \$ 7,620 | \$ 7,604  |
| \$ 78,000            | \$ 74,845 | \$ 74,629 | \$ 74,225 | \$ 7,720                   | \$ 7,704  | \$ 765    | \$ 74,845 | \$ 74,629       | \$ 74,225 | \$ 7,720 | \$ 7,704  |
| \$ 79,000            | \$ 75,845 | \$ 75,629 | \$ 75,225 | \$ 7,820                   | \$ 7,804  | \$ 775    | \$ 75,845 | \$ 75,629       | \$ 75,225 | \$ 7,820 | \$ 7,804  |
| \$ 80,000            | \$ 76,845 | \$ 76,629 | \$ 76,225 | \$ 7,920                   | \$ 7,904  | \$ 785    | \$ 76,845 | \$ 76,629       | \$ 76,225 | \$ 7,920 | \$ 7,904  |
| \$ 81,000            | \$ 77,845 | \$ 77,629 | \$ 77,225 | \$ 8,020                   | \$ 8,004  | \$ 795    | \$ 77,845 | \$ 77,629       | \$ 77,225 | \$ 8,020 | \$ 8,004  |
| \$ 82,000            | \$ 78,845 | \$ 78,629 | \$ 78,225 | \$ 8,120                   | \$ 8,104  | \$ 805    | \$ 78,845 | \$ 78,629       | \$ 78,225 | \$ 8,120 | \$ 8,104  |
| \$ 83,000            | \$ 79,845 | \$ 79,629 | \$ 79,225 | \$ 8,220                   | \$ 8,204  | \$ 815    | \$ 79,845 | \$ 79,629       | \$ 79,225 | \$ 8,220 | \$ 8,204  |
| \$ 84,000            | \$ 80,845 | \$ 80,629 | \$ 80,225 | \$ 8,320                   | \$ 8,304  | \$ 825    | \$ 80,845 | \$ 80,629       | \$ 80,225 | \$ 8,320 | \$ 8,304  |
| \$ 85,000            | \$ 81,845 | \$ 81,629 | \$ 81,225 | \$ 8,420                   | \$ 8,404  | \$ 835    | \$ 81,845 | \$ 81,629       | \$ 81,225 | \$ 8,420 | \$ 8,404  |
| \$ 86,000            | \$ 82,845 | \$ 82,629 | \$ 82,225 | \$ 8,520                   | \$ 8,504  | \$ 845    | \$ 82,845 | \$ 82,629       | \$ 82,225 | \$ 8,520 | \$ 8,504  |
| \$ 87,000            | \$ 83,845 | \$ 83,629 | \$ 83,225 | \$ 8,620                   | \$ 8,604  | \$ 855    | \$ 83,845 | \$ 83,629       | \$ 83,225 | \$ 8,620 | \$ 8,604  |
| \$ 88,000            | \$ 84,845 | \$ 84,629 | \$ 84,225 | \$ 8,720                   | \$ 8,704  | \$ 865    | \$ 84,845 | \$ 84,629       | \$ 84,225 | \$ 8,720 | \$ 8,704  |
| \$ 89,000            | \$ 85,845 | \$ 85,629 | \$ 85,225 | \$ 8,820                   | \$ 8,804  | \$ 875    | \$ 85,845 | \$ 85,629       | \$ 85,225 | \$ 8,820 | \$ 8,804  |
| \$ 90,000            | \$ 86,845 | \$ 86,629 | \$ 86,225 | \$ 8,920                   | \$ 8,904  | \$ 885    | \$ 86,845 | \$ 86,629       | \$ 86,225 | \$ 8,920 | \$ 8,904  |
| \$ 91,000            | \$ 87,845 | \$ 87,629 | \$ 87,225 | \$ 9,020                   | \$ 9,004  | \$ 895    | \$ 87,845 | \$ 87,629       | \$ 87,225 | \$ 9,020 | \$ 9,004  |
| \$ 92,000            | \$ 88,845 | \$ 88,629 | \$ 88,225 | \$ 9,120                   | \$ 9,104  | \$ 905    | \$ 88,845 | \$ 88,629</     |           |          |           |