Statistical summary of the change in MOH measures between the start of each Woodlands Trust one-day educational seminar *or* group therapy course and the 12-month follow-up [2004 to 2017 period] (for those gambler clients who provided 12-month follow-up data)

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Executive summary

There were 462 clients who attended either a Woodlands Trust one-day educational seminar or a group therapy course in the period 2004 to 2017 and who provided both initial and 12-month follow-up data for three Ministry of Health (MOH) measures ("harm", "control over gambling" and "$ lost"). Note that the "harm" measure was not introduced until 2008, so data start then. This report summarises the change in each MOH measure between the initial and 12-month assessments for the 462 clients.

Overall, 95% of clients showed an improvement in one or more of the three MOH measures between the start of the seminar or course and the 12-month follow-up.

- o 85% of responding clients reduced their "Harm" measure between the start of the seminar or course and the 12-month follow-up.

- o The average reduction in the "Harm" measure was 58%, with the average Harm measure reducing from 11.7 to 5.0.

- ● 81% of responding clients reduced their "$ lost" between the start of the seminar or course and the 12-month follow-up.

- ● The average reduction in the "$ lost" measure was 74%, with the average $ lost reducing from $1110 to $286.

- ▢ 61% of responding clients improved their "control over gambling" between the start of the seminar or course and the 12-month follow-up.

- ▢ The average improvement in the "control over gambling" measure was 61% of the maximum improvement that could be achieved (down to a score of 1).

- ▢ At the initial assessment, 39% of clients were "out of control", while at the 12-month follow-up assessment only 10% of clients were "out of control".

In general, those clients with the worst MOH measures showed the most improvement in the measures between the initial assessment and the 12-month follow-up assessment. For more information on this aspect of the data, go to sections 5 and 6 of the report below.

METHOD

Since the Woodlands Trust courses and seminars commenced, data on all three MOH measures has become available for 462 gambler clients who completed both initial and 12-month follow-up questionnaires.

For both the initial and 12-month follow-up questionnaires, a third MOH measure (of "harm") was included. This "harm" measure is a total over 9 questions, each with a response between 0 and 3, so the measure ranges from a minimum of 0 to a maximum of 27, with a low measure being "good" and a high measure "bad".

For these 462 gambler clients, the change in each MOH measure (harm, $ lost and control over gambling) between the initial assessment and the 12-month assessment is now summarised in several ways, as follows:

1. The changes in measures between the initial and 12-month assessments are classified into "reductions" (good), no change, and increases (not good), and counted.

2. The number of measures showing a reduction (0, 1, 2 or 3 measures) is tabulated.

3. The 95% Confidence Interval (95% CI) is calculated for the mean reduction in each measure between the initial and 12-month assessments (averaged over all gambler clients who responded on both occasions).

4. The third measure, "control over gambling" initially had four categories as follows:
    1   Completely in control
    2   Mostly in control
    3   Mostly out of control
    4   Completely out of control
This was later changed to:
    1   Complete control
    2   Some control
    3   Little control
    4   No control
In this report, the more recent wording is used.

For this measure, the number of clients in each category at the start of the seminars and courses is calculated, and compared to the number of clients in each category at the 12-month assessment.

5. Also for this measure, the fate of each client is tracked more precisely by calculating the number of clients who change from, e.g., "little control" to "some control".

6. For each client, the reduction in each measure is plotted against the initial measure, and a line of best fit put through the data (this line is restricted to pass through the origin, or in the case of the Control measure the point (1,0), where 1=complete control).

RESULTS

1. The changes in each MOH measure between the initial and 12-month assessments are classified into "reductions" (good), no change, and increases (not good), and counted. The percentage of clients who reduced their measure is also given.

	Value	Harm	$ lost	Control
Measure increased	Not good	53	50	29
Zero change	Neutral	18	36	153
Measure reduced	Good	391	376	280
TOTAL		**462**	**462**	**462**
% reducing	**Good**	**85%**	**81%**	**61%**

Overall, 85% of clients improved their harm measure, 81% improved their $ lost measure and 61% improved their control over gambling measure.

2. The number of clients **who showed a reduction in one or more of the MOH measures** was 437 (or **95%**). More precisely, there were 25 clients who did not show a reduction in any of the measures, 70 clients showed a reduction in just one measure, 124 clients showed a reduction in two measures, and 243 clients showed a reduction in all three of the measures.

3. For each MOH measure, the mean initial value, the mean 12-month value, and the 95% confidence interval (95% CI) for the mean reduction in measure between the initial and 12-month assessments (averaged over all clients) are as follows:

	Harm	$ lost	Control
Mean initial measure	11.7	1110	2.3
Mean final measure	5.0	286	1.5
Mean reduction in measure	**6.7**	**824**	**0.8**
95% confidence interval for mean reduction in measure	**±0.6**	**±200**	**±0.1**

Summary: On average, all three MOH measures reduced between the initial and 12-month assessments, when averaged over all gambler clients; this reduction was statistically significant for all three measures at p<0.001. On average, the harm measure reduced by 58%, dollars lost reduced by 74% and the Control measure reduced by 61% of the maximum possible reduction (to a score of 1).

4. For the "control over gambling" measure, the number of clients in each category for the initial assessment was calculated, and compared to the number of clients in each category at the 12-month assessment.   Results are:

	Initial	12-month
Complete control	94	286
Some control	187	132
Little control	119	28
No control	62	16

At the initial assessment, 39% of clients were "out of control" (categories 3 or 4), while at the 12-month assessment, only 10% of clients were "out of control".

5. The fate of each client is now tracked more precisely by calculating the number of clients who change categories for the "Control over gambling" measure. Results are:

		12-month Control category			
		Complete	Some	Little	No
Initial	Complete	**76**	15	2	1
Control	Some	124	**57**	3	3
category	Little	57	44	**13**	5
	No	29	16	10	**7**

To interpret this table, note that:
- clients who lie on the main diagonal (**bold**ed) represent "no change in category" (76 + 57 + 13 + 7 = 153 clients)
- clients who lie on the diagonal immediately *below* the main diagonal had "improved by one category" (124 + 44 + 10 = 178 clients)
- clients who lie on the diagonal *two below* the main diagonal had "improved by two categories" (57 + 16 = 73 clients)
- clients in the bottom left cell of the table had "improved by three categories" (29 clients)
- clients who lie on the diagonal immediately *above* the main diagonal had "deteriorated by one category" (15 + 3 + 5 = 23 clients)
- clients who lie on the diagonal *two above* the main diagonal had "deteriorated by two categories" (2 + 3 = 5 clients)
- clients in the top right cell of the table had "deteriorated by three categories" (1 client)

6. (a) Harm

For the "Harm" measure, the reduction in Harm is plotted against the initial Harm for all 462 clients, and a "line of best fit" plotted through the data (solid line). This line is restricted to pass through the origin. (Note that not all of the 462 points are visible on the graph, since some points represent more than one client.)
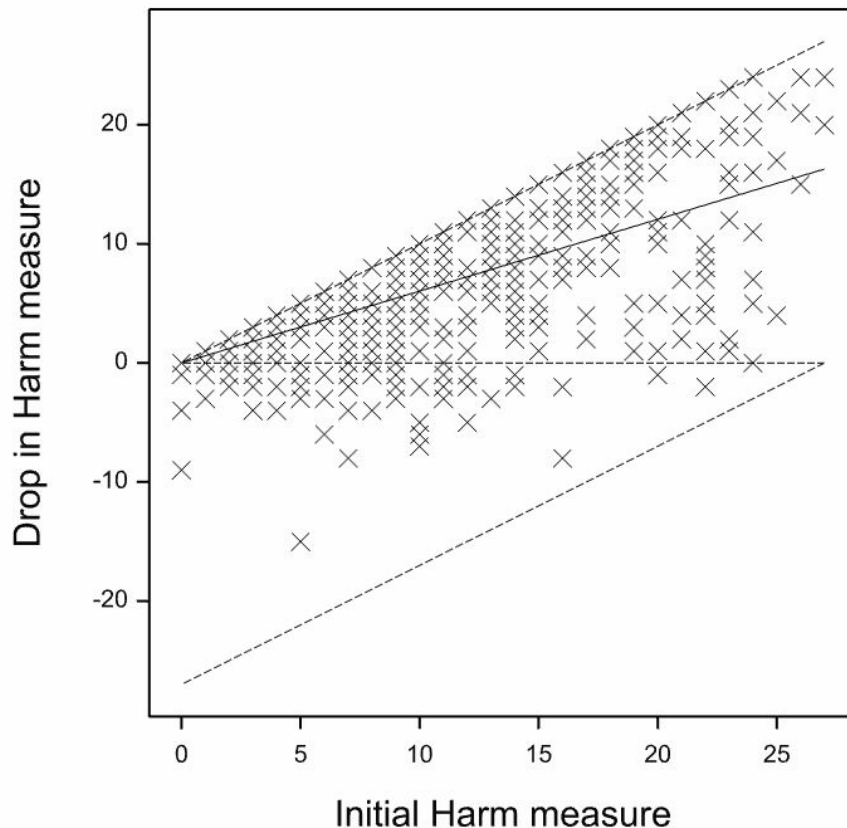
In words, those clients with the highest initial Harm measures had the most potential for reduction, and the *solid line* on the graph shows that on average they did reduce more than clients with low initial Harm measures.

To further interpret this graph, the upper and lower dashed lines indicate the bounds for the data. The *upper line* indicates the *maximum improvement* that a client can achieve, given their initial Harm measure. For example, a client with an initial Harm measure of 5 can only improve by a maximum of 5 units (down to 0), while a client with an initial score of 24 can improve by a maximum of 24 units (down to 0).

The *lower line* indicates the maximum amount by which a client's Harm measure can *deteriorate*, given their initial Harm measure. Harm measures must lie within the range 0 (perfect) to 27 (worst possible), so the maximum deterioration for a client with an initial Harm measure of "b" is (27-b). For example, a client with an initial Harm measure of 5 can deteriorate by a maximum of (27-5) = 22 units (up to 27),

while a client with an initial Harm measure of 24 can only deteriorate by a maximum of (27-24) = 3 units (up to 27).

The *horizontal* dashed line at "y=change in Harm=0" is the boundary between clients who improved in the Harm measure during the seminar or course (and the ensuing 12-month period) and those who deteriorated in the Harm measure. As tabulated in section 1 above, there are 18 clients on this line of no change, 391 clients who improved (these are above the line y=0), and 53 clients whose Harm measures deteriorated (these are below the line y=0).

Note that if the seminars and courses had been totally *ineffective*, the above graph would be a "<" shape centred on the horizontal line y=0, since positive and negative changes in Harm measure would be roughly equal in number. If the seminars and courses had a positive effect for *all* clients, then all points would be above the line y=0 (i.e., all Harm measures reduce, with no increases in Harm measure). In the graph shown above, most points are above the line y=0, reflecting the fact that the Harm measure improved for 85% of clients who responded on both occasions.

In the extreme hypothetical case that all 12-month Harm values are zero (seminars and courses were *100% effective* for all clients), then all of the points would lie on the 1:1 line though the origin (upper dashed line with slope=1). To get an estimate of the percentage effectiveness (as an average over the clients), the line of best fit was constrained so that it passed through the origin. The estimated slope of the line was 0.603, suggesting that the *percentage effectiveness* of the seminars and courses in terms of reducing Harm was 60.3%.

Details of fitted regression line shown on graph
- The *equation* of the fitted line is:
(Reduction in Harm) = 0.603 x (Initial Harm)
- The slope of this line is significantly different from zero at the 0.1% level of statistical significance.

(b) $ lost

For $ lost, the reduction in $ lost is plotted against the initial $ lost for all 462 clients, and a "line of best fit" plotted through the data (solid line). This line is restricted to pass through the origin.
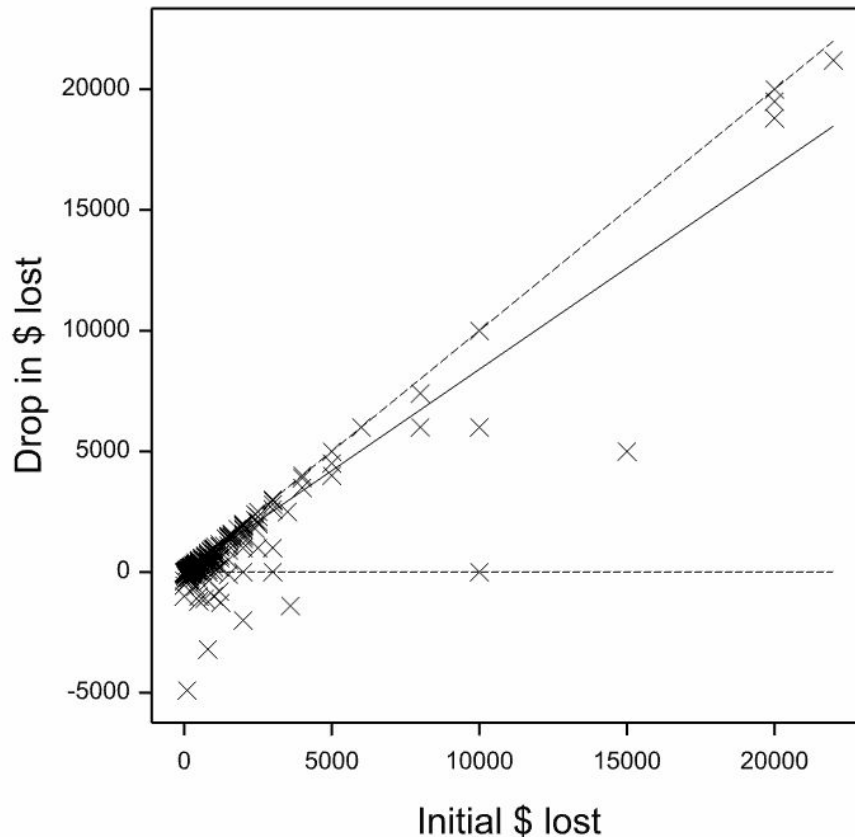
In words, those clients with the highest initial $ lost had the most potential for reduction, and the *solid line* on the graph shows that on average they did reduce more than clients with low initial $ lost.

To further interpret this graph, the upper dashed line indicates the *maximum improvement* that a client can achieve, given their initial $ lost. For example, a client with an initial $ lost of $500 can only improve by a maximum of $500 (down to 0), while a client with an initial $ lost of $5,000 can improve by a maximum of $5,000 (down to 0). [There are no bounds on how much a client can deteriorate, so no lower dashed line is given.]

The *horizontal* dashed line at "y=change in $ lost=0" is the boundary between clients who improved in the $ lost measure during the seminar or course (and the ensuing 12-month period) and those who deteriorated in the $ lost measure. As tabulated in section 1 above, there were 36 clients on this line of no change, 376 clients who

improved (these are above the line y=0), and 50 clients whose $ lost values deteriorated (these are below the line y=0).

Note that if the seminars and courses had been totally *ineffective*, the above graph would be a "<" shape centred on the horizontal line y=0, since positive and negative changes in $ lost would be roughly equal in number. If the seminars and courses had a positive effect for *all* clients, then all points would be above the line y=0 (i.e., all $ lost measures reduce, with no increases in $ lost measure). In the graph shown above, most points are above the line y=0, reflecting the fact that the $ lost measure improved for 81% of clients who responded at the 12-month follow-up assessment.

In the extreme hypothetical case that all 12-month $ lost values are zero (seminars and course were *100% effective* for all clients), then all of the points would lie on the 1:1 line though the origin (upper dashed line with slope=1). To get an estimate of the percentage effectiveness (as an average over the clients), the line of best fit was constrained so that it passed through the origin. The estimated slope of the line was 0.840, suggesting that the *percentage effectiveness* of the seminar or courses in terms of reducing $ lost was 84.0%.

Details of fitted regression line shown on graph
- The *equation* of the fitted line is:
(Reduction in $ lost) = 0.840 x (Initial $ lost)
- The slope of this line is significantly different from zero at the 0.1% level of statistical significance.

(c) Control score

For the Control score, the reduction in score is plotted against the initial score for all 462 clients who responded at the 12-month follow-up, and a "line of best fit" plotted through the data (solid line). This line is restricted to pass through the point (1,0), since an initial score of 1 is as low as the scale goes. (Note that to make the 462 points more visible on the graph, a small amount of random noise has been added to each of the x and y values. If this had not been done, there would be only 16 points showing on the graph, with an unknown number of repetitions of each point.)

In words, those clients with the highest initial Control scores had the most potential for reduction, and the *solid line* on the graph shows that on average they did reduce more than clients with low initial Control scores.

To further interpret this graph, the upper and lower dashed lines indicate the bounds for the data. The *upper line* indicates the *maximum improvement* that a client can achieve, given their initial Control score. For example, a client with an initial score of 2 can only improve by a maximum of 1 unit (down to 1), while a client with an initial score of 4 can improve by a maximum of 3 units (down to 1).

The *lower line* indicates the maximum amount by which a client's score can *deteriorate*, given their initial Control score. Control scores must lie within the range 1 (perfect) to 4 (worst possible), so the maximum deterioration for a client with an initial Control score of "b" is (4-b). For example, a client with an initial Control score of 2 can deteriorate by a maximum of (4-2) = 2 units (up to 4), while a client with an

initial Control score of 3 can only deteriorate by a maximum of (4-3) = 1 unit (up to 4).

The *horizontal* dashed line at "y=change in Control=0" is the boundary between clients who improved in Control score during the seminar or course (and the ensuing 12-month period) and those who deteriorated in Control score. As tabulated in section 1 above, there are 153 clients on this line of no change, 280 clients whose scores improved (these are above the line y=0), and 29 clients whose score deteriorated (seen below the line y=0).

Note that if the seminars and courses had been totally *ineffective*, positive and negative changes in score would be roughly equal in number. If the seminars and courses had a positive effect for *all* clients, then all points would be above the line y=0 (i.e., all scores reduce, with no increases in score). In the graph shown above, over half of the points are above the line y=0, reflecting the fact that the Control score improved for 61% of clients.

In the extreme hypothetical case that all final Control scores are 1 (seminar or course was *100% effective* for all clients), then all of the points would lie on the 1:1 line though the point (1,0) (upper dashed line with slope=1). To get an estimate of the percentage effectiveness (as an average over the clients), the line of best fit was constrained so that it passed through the point (1,0). The estimated slope of the line was 0.662, suggesting that the *percentage effectiveness* of the seminars and courses in terms of reducing the Control score was 66.2%.

Details of fitted regression line shown on graph
- The *equation* of the fitted line is:
(Reduction in Control score) = 0.662 x (Initial Control score - 1)
- The slope of this line is significantly different from zero at the 0.1% level of statistical significance.