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The Economic Impact of Aged Care Facilities in New Zealand

Prepared for

NZ Aged Care Association

economics | research | forecasting | public policy

Authorship
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We help organisations to solve problems and make decisions using our core skills of economics, forecasting, research and public policy.

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Executive Summary

This report estimates the economic impact of constructing and operating an aged care facility in two hypothetical locations: one urban, one rural. It uses traditional input-output analysis to estimate the effects of the facility on regional output, GDP, income and employment over a 10-year timeframe.

The analysis draws heavily on the *Aged Care Service Review*, by Grant Thornton in 2010. Amongst other things, the *Review* estimated the costs of building and operating an efficient urban (greenfields) facility. These costs were used directly to estimate the economic impacts of the hypothetical urban facility, with a 10% premium added for the rural facility. This recognises that costs tend to be higher in more remote locations.

The costs of construction and operations were broken-down into several line items, and mapped to various industries of the regional economy. Next, we estimated the proportion of each line item's expenditures that would be captured by the regional economy versus the proportion that would 'leak' out. For the urban facility, we assumed that all capital and operating costs would be captured locally, while for the rural facility we assumed that 20% would leak elsewhere. This is consistent with the assumptions normally used for this type of analysis.

Having estimated regional expenditures, we then overlaid a set of regional industry multipliers to estimate the economic impacts of each line item. Finally, we aggregated the results and converted them to present values using a discount rate of 8%. The results are shown separately below.

Table 1: Estimated Impacts for the **Urban** Facility ($m)

Facility Stage	Output	GDP	Income	Employment
Construction	$30.6	$11.6	$5.2	140
Operation	$47.8	$24.3	$12.8	607
Total	**$78.4**	**$35.9**	**$18.0**	**747**

Table 2: Estimated Impacts for the **Rural** Facility ($m)

Facility Stage	Output	GDP	Income	Employment
Construction	$26.9	$10.2	$4.5	123
Operation	$42.1	$21.4	$11.3	534
Total	**$69.0**	**$31.6**	**$15.8**	**657**

The analysis suggests that the economic impacts of constructing and operating a new 80-bed facility over the next 10 years may range between a:

- $69 million to $78 million increase in regional output
- $31 million to $36 million increase in regional GDP
- $16 million to $18 million increase in household income, and
- 660 to 750 people-year increase in employment.

We consider these to be fair and reasonable assessments of potential economic effects.

1 Introduction

1.1 Purpose of this report

This report estimates the economic impact of constructing and operating an aged care facility in two hypothetical locations – one urban, and one rural.

1.2 Scope of this Report

This report is confined to the economic impacts of constructing and operating a facility, and does not consider the numerous other benefits associated with aged care itself.

1.3 Structure of this report

The remainder of this report is structured as follows:

- **Section two** describes the methodology used to estimate economic impacts.
- **Section three** introduces the data used in the analysis.
- **Sections four** and **five** present the estimated economic impacts.

2 Methodology

This section describes the methodology used to estimate economic impacts.

2.1 Approach

This report uses traditional "input-output analysis" to estimate the economic impacts of constructing and operating an aged care facility. It recognises that the various sectors of the economy are inter-linked, so that an increase in the output of one sector may cause an increase in the output of other sectors.

Consider the following example. Suppose a tyre manufacturer receives a new export order. The new order will have direct and obvious impacts on tyre production. However, to increase tyre production, the tyre manufacturer will need to source additional materials from its suppliers, such as rubber and steel. These suppliers, in turn, will require more materials from their suppliers, and so on. These inter-industry linkages will cause a chain of economic effects. As a result, the overall economic impact of the new export order will be much larger than the direct increase in tyre production itself.

To be more specific, the economic impacts derived in this report comprise three parts

- *Direct Effects* – the construction and operation of an aged care facility will have direct economic impacts, by increasing the level of outputs in many sectors. For instance, construction will cause an increase in the level of local construction activity, while operations will boost the level of aged care services provided in the area.

- *Indirect effects* – the construction and day-to-day today operation of the facility will also require inputs from a number of other industries. As noted in the example above, these suppliers will draw upon their own suppliers, and thus have a cascading effect. The sum of all these inter-industry effects is known as the indirect effect.

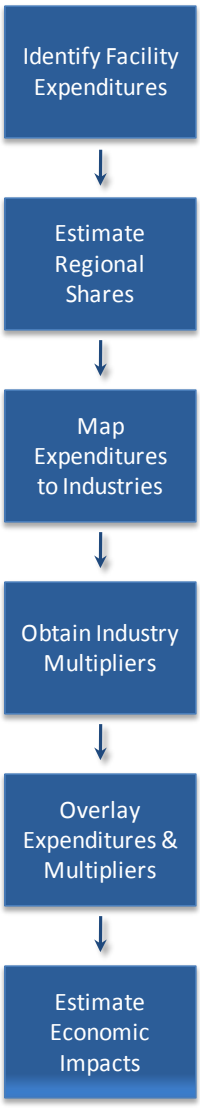
- *Induced effects* – the direct and indirect effects will result in increased employment, and hence increased household income. A proportion of this new income will be spent in the local economy, and give rise to further economic stimulus. This is known as the induced effect.

The economic impact of constructing and operating an aged care facility is the sum of these direct, indirect and induced effects.

2.2 Steps in the Analysis

The flowchart below shows the key steps in the analysis:

Figure 1: Steps to Estimate Economic Impact



2.3 Facility Size

The hypothetical facility used in our analysis was assumed to contain 80 beds. This matches the facility sizes for the Greenfield's operating models in the *Aged Care Service Review* by Grant Thornton.

2.4 Facility Expenditures

The costs of constructing and operating the urban facility were set equal to the greenfields costs identified in the *Aged Care Service Review*. To reflect the higher costs often felt in remote locations, however, rural facility costs were set 10% higher. See section 3 for further details.

2.5 Regional Shares

While this analysis is focused on regional economic impacts, some of the impacts of the new facility may leak outside the region. For example, the new facility may be built from timber that is sourced from a different area.

In practice, the degree of leakage will depend on a number of factors, including where the facility is located. In this analysis, we have assumed that the costs of constructing and operating the urban facility are fully retained by the local economy, while 20% of the costs of the rural facility leak elsewhere. This is the same as saying that urban economies tend to be more self-sufficient than rural ones.

2.6 Measures of Economic Impact

This report estimates the regional impacts of the facilities on:

- Output (revenue)
- GDP
- Employment, and
- Household income

2.7 Timeframe

The economic impacts presented in this report were estimated over a 10-year timeframe. Longer timeframes would have generated higher nominal impacts, but these would have been partially offset by discounting *i.e.* using net present values. Overall, ten years was considered to provide a reasonable balance between capturing ongoing economic effects and not straying too far into the (uncertain) future.

2.8 Discount Rate

As noted earlier, this report uses net present values to express economic impacts. These recognise that one dollar today is worth more than one dollar next year, and hence that money has a 'time value'.[1] To use net present values, we must select a discount rate. This is the rate at which future cash flows are converted to 'current dollar' terms.

The specific discount rate used in an analysis can have a significant impact on the results, but there are no set rules for which rate to use. In this analysis, we have used the discount rate advocated by the New Zealand Treasury for evaluating public-sector projects. It is currently set at 8% in real terms. *i.e.* adjusted for inflation

2.9 Crowding-out and Net Effects

The economic impacts presented in this report should be interpreted as gross effects, not net. The reason is that an increase in economic activity by one entity may reduce the

[1] This can be seen from two angles. First, one dollar today is worth more because it has greater purchasing power. Indeed, one dollar next will buy less than it can today due to inflation. Second, one dollar today can be invested and earn interest, so that there will be more than one dollar available next year.

economic activity of other entities. For instance, people that help to construct the new facility may be diverted from other work within the region.

These so-called "crowding-out" effects are particularly strong for very large projects or in times of economic boom (when unemployment is low). However, they are unlikely to be significant in this context given the relatively modest size of the new facility, and the current state of the economy. Nevertheless, some caution should be exercised when interpreting the results produced in this report.

2.10 Summary of Key Assumptions

Following are the key assumptions in the analysis:

Table 3: Summary of Assumptions

Parameter	Value
Facility size	80 beds
Timeframe	10 years
Discount rate	8% real
Urban vs Rural costs	Rural costs are 10% higher
Regional economic leakage	Urban – 0%, Rural – 20%.

3 Data

This section describes the data used in the analysis.

3.1 Capital Expenditures

The costs of constructing an aged care facility were sourced from the *Aged Care Service Review*, conducted by Grant Thornton in 2010. This estimated the cost of constructing an aged care facility at $132,750 per bed.[2] Assuming the new facility has 80 beds – as per the *Review's* greenfields operating models – this gives a capital cost of $10.62 million.

This construction cost estimate captures the overall cost of building and fitting-out a new facility. However, because different parts of the construction process may have differing effects on the local economy, we split it into three parts:

- Building work
- Fit out, and
- Professional fees *e.g.* consents, planning, legal etc.

According to the *Review,* the raw cost of constructing a facility excluding fit-out is between $101,250 and $117,000 per bed. Taking the midpoint and dividing by the total per bed ($132,750) gives an indication that building work may account for about 82%. We checked this against figures published in a recent report by *Price Waterhouse Coopers*,[3] which collated cost estimates from four separate reports. This suggested that building costs are typically 84% of construction costs, which fits well with the estimate produced by the *Review*. Further, the *Price Waterhouse Coopers* report showed that remaining costs are split fairly evenly between fit-out and professional fees. We therefore allocated the total cost of construction as follows:

- Building work – 84% ($8.92m)
- Fit out – 8% ($0.85m)
- Professional fees – 8% ($0.85m)

These are the figures we used to calculate the economic impact of constructing the urban facility. Rural facility construction costs were assumed to be 10% higher.

To clarify, we note this analysis ignores land costs. There are two reasons. First, land is often 'banked' for a very long time before being used, so the development of a new facility may not necessarily be preceded by a recent land transaction. Second, land purchases do not tend to initiate economic activity in other sectors, and thus have limited economic effects. Accordingly, they are relatively unimportant for this type of analysis.

[2] See table 4 on page 22.

[3] http://www.agedcare.org.au/PUBLICATIONS-&-RESOURCES/General-pdfs-images/Price%20Waterhouse%20Report.pdf

3.2 Operating Expenditures

Operating expenditures were also sourced from the *Aged Care Service Review*. Specifically, Section 6.8 of the report identifies daily operating expenditures for three hypothetical, efficiently-run (greenfields) facilities. They were:

- 80-bed hospital
- 40-bed rest home, co-located with hospital (total of 80 beds)
- 20-bed dementia facility, co-located with hospital or rest home (total of 80 beds).

Following are the estimated daily expenditures per resident for each facility.

Table 4: Greenfields Operating Costs (from the *Aged Care Service Review*)

Operating Costs per Resident	Hospital	Rest Home	Dementia
Care Costs	$85.50	$45.70	$65.50
Catering	$13.50	$9.10	$12.50
Cleaning	$4.80	$3.20	$3.80
Laundry	$3.20	$1.90	$2.15
Property/maintenance	$9.10	$8.30	$9.80
Administration	$10.50	$10.50	$10.50
Total	**$126.60**	**$78.70**	**$104.25**

We took averages across the facility types, and converted them to a **cost per bed per day** using an assumed occupancy rate of 93%.[4] Then, we multiplied the cost per bed day by the number of beds, and multiplied by 365 to estimate annual operating costs. These are shown in the table below.

Table 5: Estimated Annual Operating Costs

Annual Operating Costs	$000s
Care Costs	$1,781
Catering	$318
Cleaning	$107
Laundry	$66
Property/maintenance	$246
Administration	$285
Total	**$2,802**

These are the figures we used to determine the ongoing economic impacts of operations for the urban facility. The corresponding costs for the rural facility were assumed to be 10% higher.

3.3 Multipliers

Following are the multipliers that we used to convert facility construction and operating costs into measures of economic impact. These multipliers were sourced from a detailed input-output table produced for Christchurch City in 2008. It contained 111 industry sectors, and is one of the most detailed regional multiplier tables available.

[4] This is the occupancy figure used in the *Review's* greenfields analysis.

Table 6: Construction Cost Multipliers

	Output			GDP			Employment			Income		
Capex Multipliers	Direct	Type I	Type II	Direct	Type I	Type II	Direct	Type I	Type II	Direct	Type I	Type II
Building	1.00	2.40	2.97	0.26	3.11	4.24	2.88	3.43	4.50	0.12	3.20	4.00
Fit out	1.00	1.80	2.42	0.40	1.83	2.55	6.90	1.63	2.10	0.25	1.65	2.05
Professional Fees	1.00	1.80	2.42	0.40	1.83	2.55	6.90	1.63	2.10	0.25	1.65	2.05

Table 7: Operating Cost Multipliers

	Output			GDP			Employment			Income		
Opex Multipliers	Direct	Type I	Type II	Direct	Type I	Type II	Direct	Type I	Type II	Direct	Type I	Type II
Care Costs	1.00	1.54	2.39	0.64	1.40	2.04	27.48	1.16	1.32	0.44	1.28	1.60
Catering	1.00	1.86	2.48	0.44	1.71	2.38	18.65	1.18	1.36	0.28	1.44	1.80
Cleaning	1.00	1.31	2.19	0.69	1.23	1.84	21.74	1.15	1.36	0.50	1.18	1.47
Laundry	1.00	1.55	2.30	0.59	1.44	2.05	11.17	1.30	1.65	0.38	1.32	1.65
Property/maintenance	1.00	1.80	2.42	0.40	1.83	2.55	6.90	1.63	2.10	0.25	1.65	2.05
Administration	1.00	1.54	2.00	0.37	1.64	2.24	5.74	1.50	1.92	0.20	1.56	1.94

The 'direct' multipliers show the direct increase in output, GDP, and income resulting from each initial dollar of capital or operating expenditure. For instance, the first row of table 5 shows that each dollar spent on care costs directly results in:

- $1 more of regional output
- $0.64 more of regional GDP, and
- $0.44 more of household income.

The interpretation for the employment multipliers differs. These show the number of people employed per million dollars of capital or operating expenditure.

The "type 1" multipliers are used to estimate the indirect effects, while the "type 2" multipliers are used to estimate overall effects. Returning to the first row of table 5, the "type 2" multipliers show that the overall economic effects are:

- 2.39 times the direct effect for regional output
- 2.04 times the direct effect for regional GDP
- 1.32 times the direct effect for regional employment, and
- 1.60 times the direct effect for regional output

4 Results for the Urban Facility

This section presents the estimated economic impacts of the urban facility. All figures are expressed in present value terms.

4.1 Impact on Regional Output

The construction and operation of a new aged care facility is expected to boost regional economic output by $78 million over 10 years in present value terms. Around 39% of this relates to facility construction, and the other 61% to facility operations. The following table summarises these effects.

Table 8: Impacts on Regional Output ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$10.6	$13.8	$6.1	$30.6
Operation	$20.3	$12.0	$15.5	$47.8
Total	$30.9	$25.8	$21.6	$78.4

4.2 Impact on Regional GDP

The new facility is expected to increase regional GDP by almost $36 million over 10 years. Nearly one-third of this relates to construction, and just over two-thirds to operations.

Table 9: Impacts on Regional GDP ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$3.0	$5.5	$3.1	$11.6
Operation	$11.6	$5.4	$7.4	$24.3
Total	$14.6	$10.8	$10.5	$35.9

4.3 Impact on Regional Household Income

Regional household incomes are expected to increase by around $18 million over 10 years – 29% from construction, and 71% from operations.

Table 10: Impacts on Regional Household Income ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$1.5	$2.6	$1.0	$5.2
Operation	$7.7	$2.5	$2.6	$12.8
Total	$9.2	$5.2	$3.6	$18.0

4.4 Impact on Regional Employment

Construction and operation of the facility is expected to provide employment for nearly 750 people (for one year) over the next 10 years. Around 19% is generated by facility construction, and 81% by facility operation.

Table 11: Impacts on Regional Employment

Facility Stage	Direct	Indirect	Induced	Total
Construction	37	70	33	140
Operation	444	82	81	607
Total	481	152	114	747

4.5 Summary of Impacts

The following table summarises the estimated economic impacts of the new facility over a 10-year period.

Table 12: Summary of Economic Impacts ($m)

Facility Stage	Output	GDP	Income	Employment
Construction	$30.6	$11.6	$5.2	140
Operation	$47.8	$24.3	$12.8	607
Total	$78.4	$35.9	$18.0	747

5 Results for the Rural Facility

This section presents the estimated economic impacts of the rural facility. Again, all figures are expressed in present value terms.

5.1 Impact on Regional Output

The construction and operation of a new aged care facility is expected to boost regional economic output by $69 million over 10 years in present value terms. Around 39% of this relates to facility construction, and the other 61% to facility operations. The following table summarises these effects.

Table 13: Impacts on Regional Output ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$9.3	$12.2	$5.4	$26.9
Operation	$17.9	$10.6	$13.6	$42.1
Total	$27.2	$22.7	$19.0	$69.0

5.2 Impact on Regional GDP

The new facility is expected to increase regional GDP by almost $32 million over 10 years. Nearly one-third of this relates to construction, and just over two-thirds to operations.

Table 14: Impacts on Regional GDP ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$2.6	$4.8	$2.7	$10.2
Operation	$10.2	$4.7	$6.5	$21.4
Total	$12.8	$9.5	$9.3	$31.6

5.3 Impact on Regional Household Income

Regional household incomes are expected to increase by around $16 million over 10 years – 29% from construction, and 71% from operations.

Table 15: Impacts on Regional Household Income ($m)

Facility Stage	Direct	Indirect	Induced	Total
Construction	$1.3	$2.3	$0.9	$4.5
Operation	$6.8	$2.2	$2.2	$11.3
Total	$8.1	$4.5	$3.2	$15.8

5.4 Impact on Regional Employment

Construction and operation of the facility is expected to provide employment for nearly 660 people (for one year) over the next 10 years. Around 19% is generated by facility construction, and 81% by facility operation.

Table 16: Impacts on Regional Employment

Facility Stage	Direct	Indirect	Induced	Total
Construction	33	61	29	123
Operation	391	72	71	534
Total	424	134	100	657

5.5 Summary of Impacts

The following table summarises the estimated economic impacts of the new facility over a 10-year period.

Table 17: Summary of Economic Impacts ($m)

Facility Stage	Output	GDP	Income	Employment
Construction	$26.9	$10.2	$4.5	123
Operation	$42.1	$21.4	$11.3	534
Total	$69.0	$31.6	$15.8	657