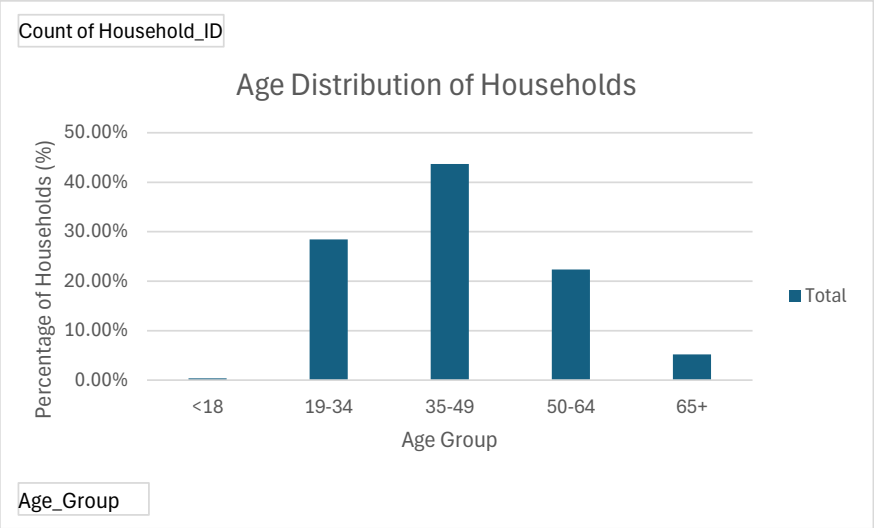
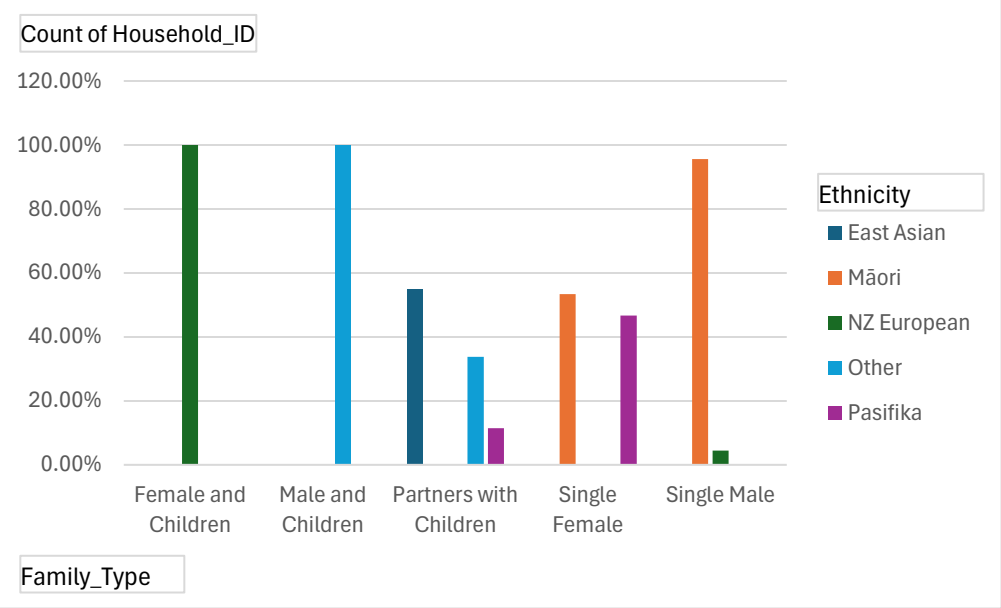
Row Labels	Count of Household_ID
<18	0.34%
19-34	28.43%
35-49	43.71%
50-64	22.36%
65+	5.17%
Grand Total	**100.00%**

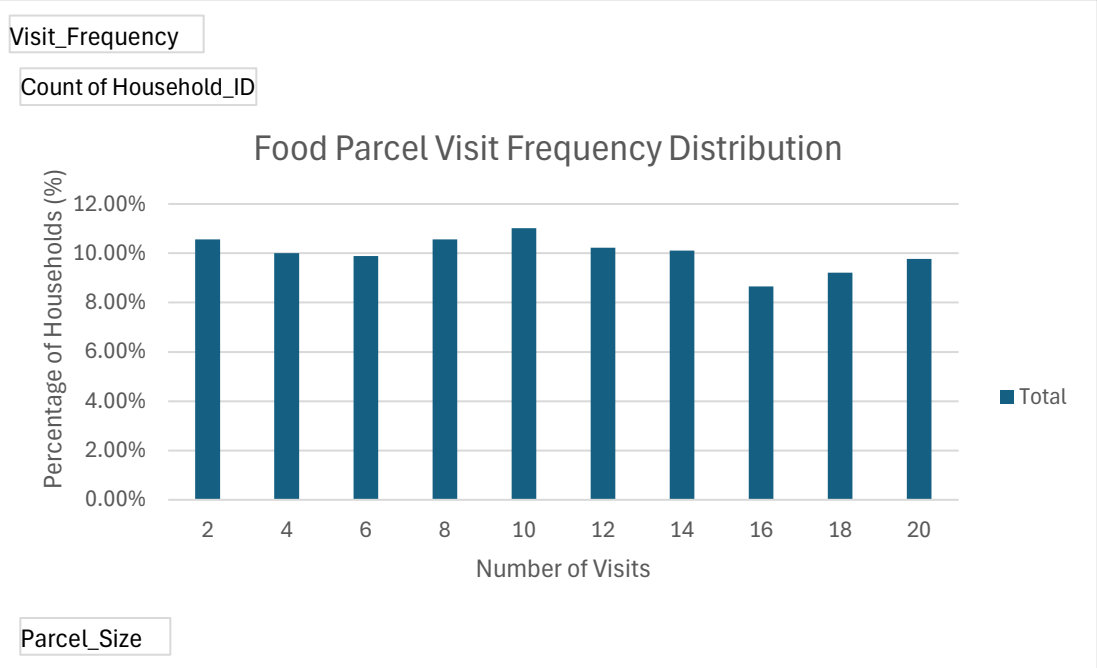


Count of Household_ID	Column Labels					
Row Labels	**East Asian**	**Māori**	**NZ European**	**Other**	**Pasifika**	**Grand Total**
Female and Children	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%
Male and Children	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%
Partners with Children	54.78%	0.00%	0.00%	33.76%	11.46%	100.00%
Single Female	0.00%	53.38%	0.00%	0.00%	46.62%	100.00%
Single Male	0.00%	95.58%	4.42%	0.00%	0.00%	100.00%
Grand Total	**9.66%**	**33.15%**	**37.53%**	**9.89%**	**9.78%**	**100.00%**



Visit_Frequency	(All)

Row Labels	Count of Household_ID
2	10.56%
4	10.00%
6	9.89%
8	10.56%
10	11.01%
12	10.22%
14	10.11%
16	8.65%
18	9.21%
20	9.78%
Grand Total	**100.00%**



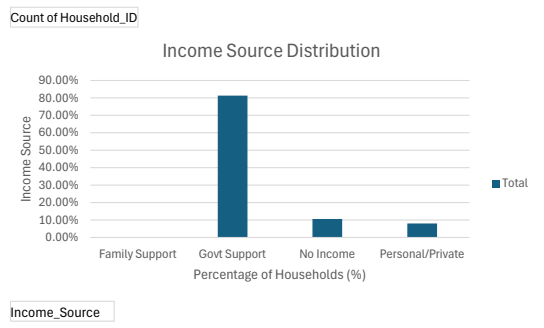
Key Referral Metrics	
Total Referrals	288
Referral Rate	32.36%

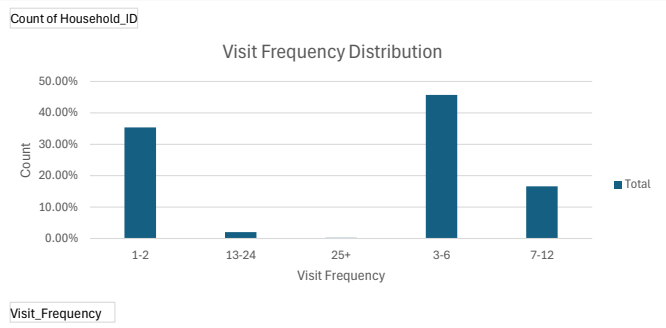
Income Source Data

Row Labels	Count of Household_ID
Family Support	0.11%
Govt Support	81.35%
No Income	10.56%
Personal/Private	7.98%
Grand Total	**100.00%**

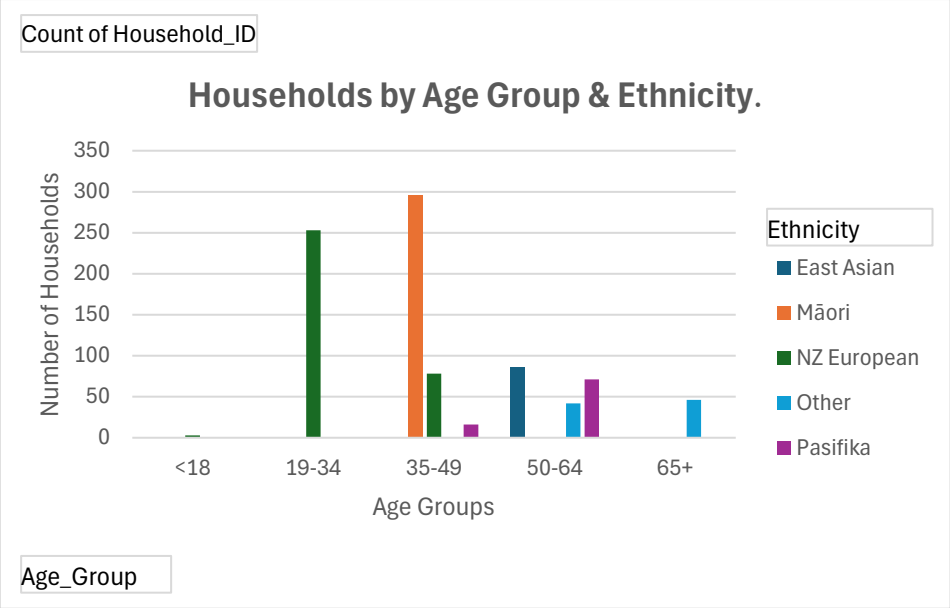
Visit Frequency Data

Row Labels	Count of Household_ID
1-2	35.39%
13-24	2.02%
25+	0.22%
3-6	45.73%
7-12	16.63%
Grand Total	**100.00%**





Count of Household_ID	Column Labels					
Row Labels	**East Asian**	**Māori**	**NZ European**	**Other**	**Pasifika**	**Grand Total**
<18			3			3
19-34			253			253
35-49		295	78		16	389
50-64	86			42	71	199
65+				46		46
Grand Total	**86**	**295**	**334**	**88**	**87**	**890**



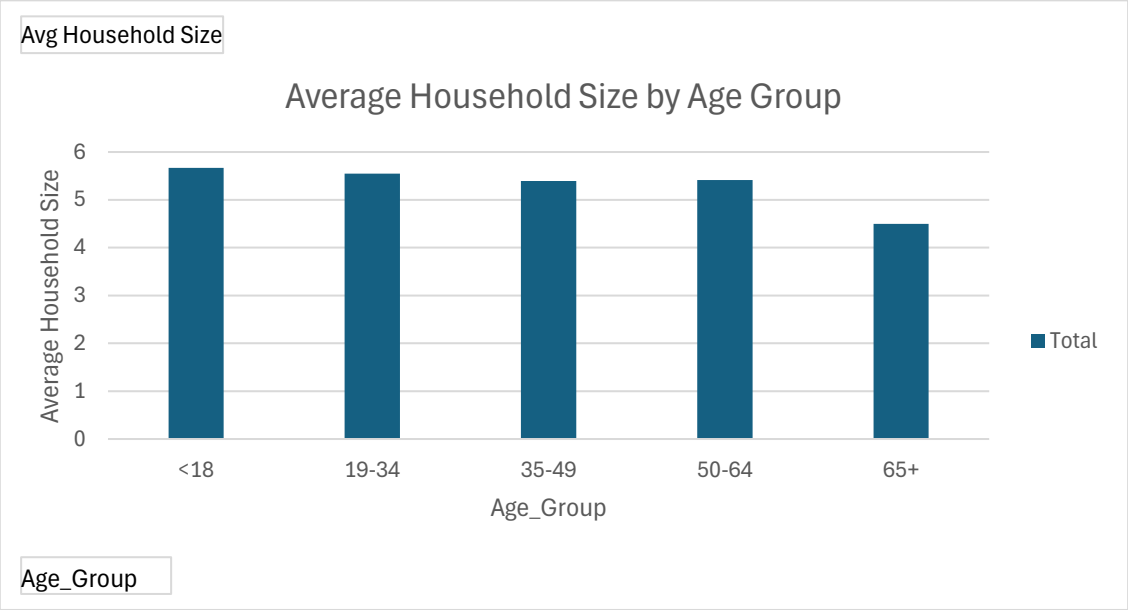
Family_Type

- Female and Children
- Male and Children
- Partners with Children
- Single Female
- Single Male

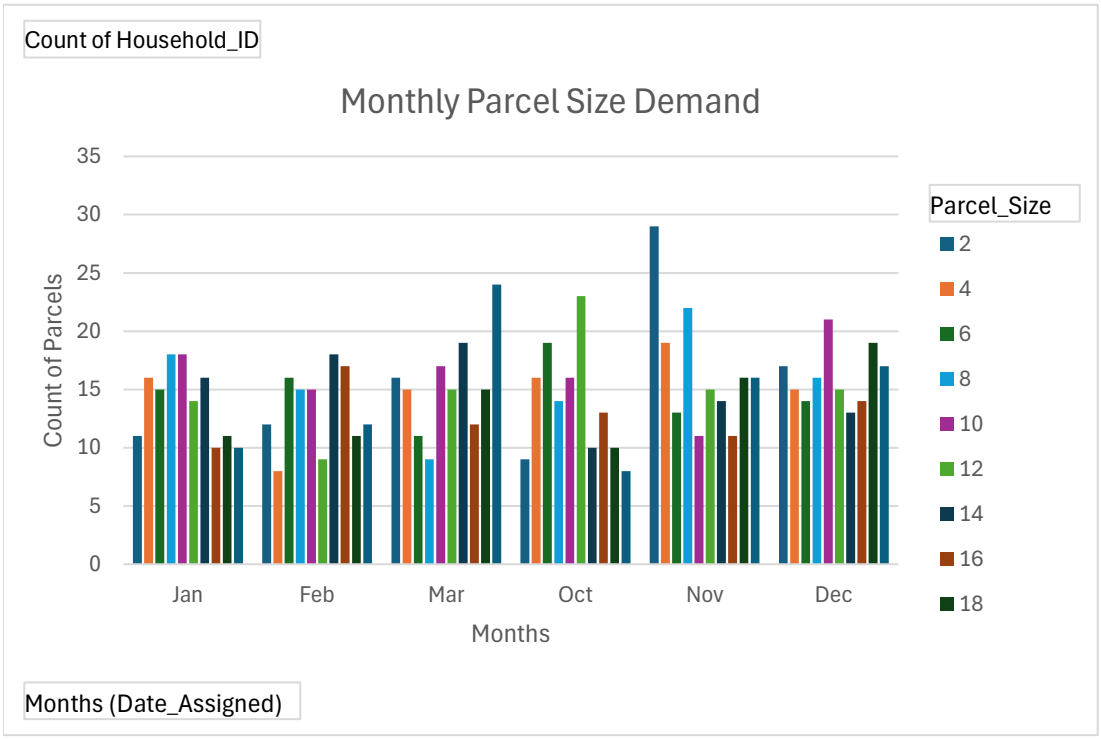
Income_Source

- Family Support
- Govt Support
- No Income
- Personal/Private

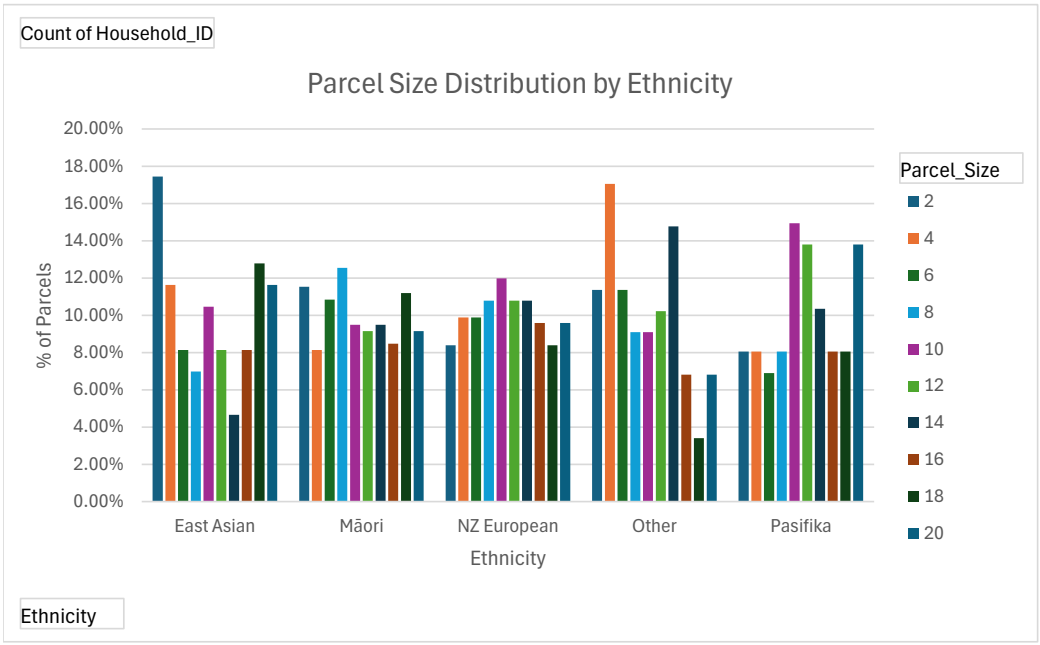
Row Labels	Avg Household Size
<18	5.7
19-34	5.5
35-49	5.4
50-64	5.4
65+	4.5
Grand Total	**5.4**



Count of Household_ID	Column Labels										
Row Labels	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**Grand Total**
Jan	11	16	15	18	18	14	16	10	11	10	139
Feb	12	8	16	15	15	9	18	17	11	12	133
Mar	16	15	11	9	17	15	19	12	15	24	153
Oct	9	16	19	14	16	23	10	13	10	8	138
Nov	29	19	13	22	11	15	14	11	16	16	166
Dec	17	15	14	16	21	15	13	14	19	17	161
Grand Total	**94**	**89**	**88**	**94**	**98**	**91**	**90**	**77**	**82**	**87**	**890**

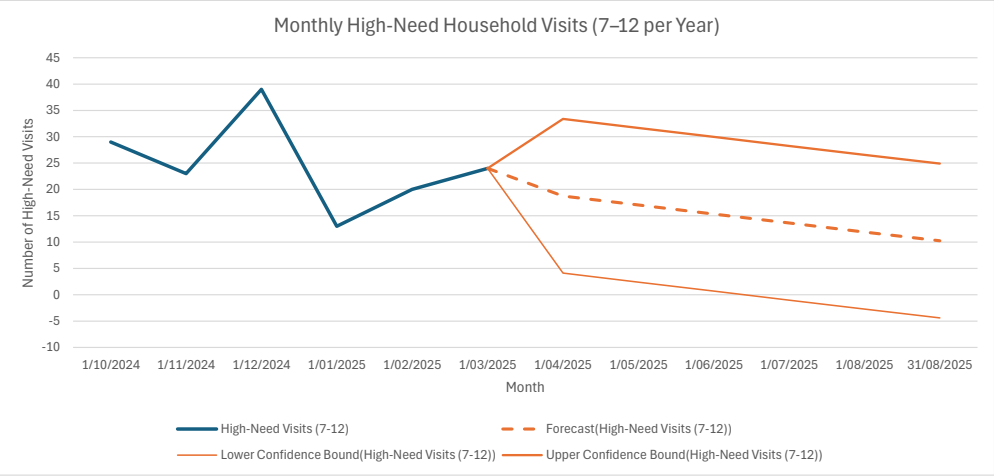


Count of Household_ID	Column Labels										
Row Labels	**2**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**Grand Total**
East Asian	17.44%	11.63%	8.14%	6.98%	10.47%	8.14%	4.65%	8.14%	12.79%	11.63%	100.00%
Māori	11.53%	8.14%	10.85%	12.54%	9.49%	9.15%	9.49%	8.47%	11.19%	9.15%	100.00%
NZ European	8.38%	9.88%	9.88%	10.78%	11.98%	10.78%	10.78%	9.58%	8.38%	9.58%	100.00%
Other	11.36%	17.05%	11.36%	9.09%	9.09%	10.23%	14.77%	6.82%	3.41%	6.82%	100.00%
Pasifika	8.05%	8.05%	6.90%	8.05%	14.94%	13.79%	10.34%	8.05%	8.05%	13.79%	100.00%
Grand Total	**10.56%**	**10.00%**	**9.89%**	**10.56%**	**11.01%**	**10.22%**	**10.11%**	**8.65%**	**9.21%**	**9.78%**	**100.00%**

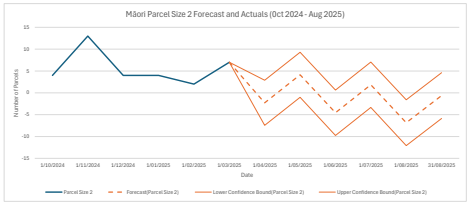


Date	Monthly Visits (Age 35–49, 3–6 Visits)	Forecast(Monthly Visits (Age 35–49, 3–6 Visits))	Lower Confidence Bound(Monthly Visits (Age 35–49, 3–6 Visits))	Upper Confidence Bound(Monthly Visits (Age 35–49, 3–6 Visits))
1/10/2024	54			
1/11/2024	64			
1/12/2024	44			
1/01/2025	58			
1/02/2025	51			
1/03/2025	59	59	59	59
1/04/2025		45	36	54
1/05/2025		59	49	69
1/06/2025		43	32	54
1/07/2025		57	45	69
1/08/2025		42	29	54
1/09/2025		56	42	69
1/10/2025		40	26	54
1/11/2025		54	39	69
1/12/2025		39	23	54
31/12/2025		52	36	68

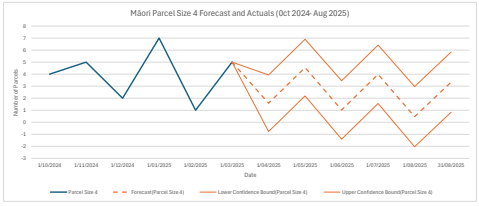
Month	High-Need Visits (7-12)	Forecast(High-Need Visits (7-12))	Lower Confidence Bound(High-Need Visits (7-12))	Upper Confidence Bound(High-Need Visits (7-12))
1/10/2024	29			
1/11/2024	23			
1/12/2024	39			
1/01/2025	13			
1/02/2025	20			
1/03/2025	24	24	24.00	24.00
1/04/2025		18.74298412	4.10	33.38
1/05/2025		17.03343702	2.39	31.68
1/06/2025		15.32388992	0.68	29.97
1/07/2025		13.61434282	-1.03	28.26
1/08/2025		11.90479572	-2.74	26.55
31/08/2025		10.2503953	-4.39	24.89



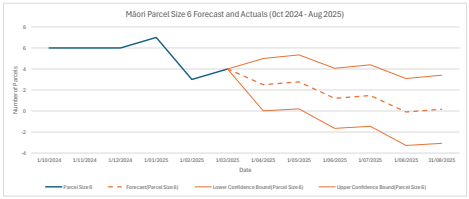
Date	Parcel Size 2	Forecast(Parcel Size 2)	Lower Confidence Bound(Parcel Size 2)	Upper Confidence Bound(Parcel Size 2)
1/10/2024	4			
1/11/2024	13			
1/12/2024	4			
1/01/2025	4			
1/02/2025	2			
1/03/2025	7	7	7	7
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



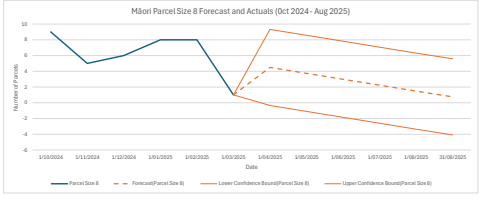
Date	Parcel Size 4	Forecast(Parcel Size 4)	Lower Confidence Bound(Parcel Size 4)	Upper Confidence Bound(Parcel Size 4)
1/10/2024	4			
1/11/2024	5			
1/12/2024	2			
1/01/2025	7			
1/02/2025	1			
1/03/2025	5	5	5	5
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



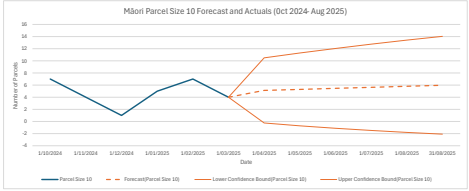
Date	Parcel Size 6	Forecast(Parcel Size 6)	Lower Confidence Bound(Parcel Size 6)	Upper Confidence Bound(Parcel Size 6)
1/10/2024	6			
1/11/2024	6			
1/12/2024	6			
1/01/2025	7			
1/02/2025	3			
1/03/2025	4	4	4	4
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



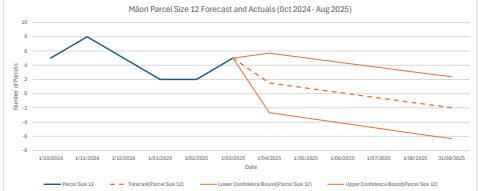
Date	Parcel Size 8	Forecast(Parcel Size 8)	Lower Confidence Bound(Parcel Size 8)	Upper Confidence Bound(Parcel Size 8)
1/10/2024	9			
1/11/2024	5			
1/12/2024	6			
1/01/2025	8			
1/02/2025	8			
1/03/2025	1	1	1	1
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



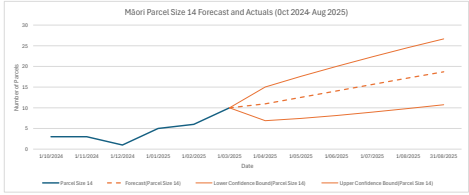
Date	Parcel Size 10	Forecast(Parcel Size 10)	Lower Confidence Bound(Parcel Size 10)	Upper Confidence Bound(Parcel Size 10)
1/10/2024	7			
1/11/2024	4			
1/12/2024	1			
1/01/2025	5			
1/02/2025	7			
1/03/2025	4	4	4	4
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



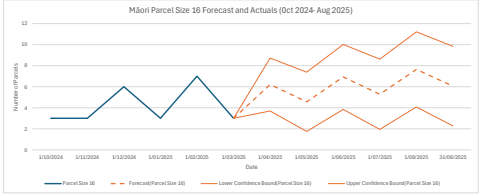
Date	Parcel Size 12	Forecast(Parcel Size 12)	Lower Confidence Bound(Parcel Size 12)	Upper Confidence Bound(Parcel Size 12)
1/10/2024	5			
1/11/2024	8			
1/12/2024	5			
1/01/2025	2			
1/02/2025	2			
1/03/2025	5	5	5	5
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



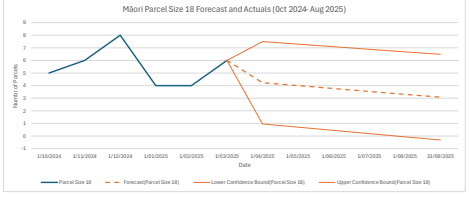
Date	Parcel Size 14	Forecast(Parcel Size 14)	Lower Confidence Bound(Parcel Size 14)	Upper Confidence Bound(Parcel Size 14)
1/10/2024	3			
1/11/2024	3			
1/12/2024	1			
1/01/2025	5			
1/02/2025	6			
1/03/2025	10	10	10	10
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



Date	Parcel Size 16	Forecast(Parcel Size 16)	Lower Confidence Bound(Parcel Size 16)	Upper Confidence Bound(Parcel Size 16)
1/10/2024	3			
1/11/2024	3			
1/12/2024	6			
1/01/2025	3			
1/02/2025	7			
1/03/2025	3	3	3	3
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



Date	Parcel Size 18	Forecast(Parcel Size 18)	Lower Confidence Bound(Parcel Size 18)	Upper Confidence Bound(Parcel Size 18)
1/10/2024	5			
1/11/2024	6			
1/12/2024	8			
1/01/2025	4			
1/02/2025	4			
1/03/2025	6	6	6	6
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5



Date	Parcel Size 20	Forecast(Parcel Size 20)	Lower Confidence Bound(Parcel Size 20)	Upper Confidence Bound(Parcel Size 20)
1/10/2024	2			
1/11/2024	6			
1/12/2024	4			
1/01/2025	3			
1/02/2025	3			
1/03/2025	9	9	9	9
1/04/2025		-2	-7	3
1/05/2025		4	-1	9
1/06/2025		-5	-10	1
1/07/2025		2	-3	7
1/08/2025		-7	-12	-2
31/08/2025		-1	-6	5

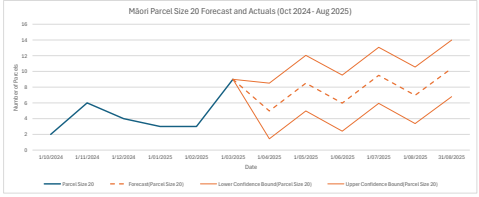


Table 1: Parcel Cost Inflation (2023–2025)

For Salvation Army NZ to apply in Q3 2025

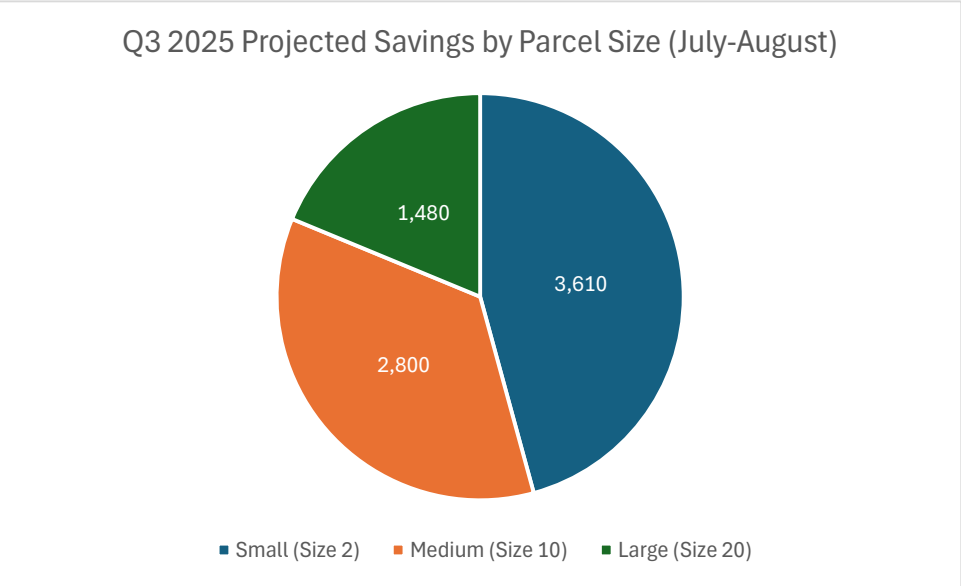
Parcel Size	2023 Cost	2024 Cost	Q3 2025 Projected Cost	Inflation Rate
Small (size 2)	$30	$100	$125	+25% (100→125)
Medium (Size 10)	$60	$160	$200	+25% (160→200)
Large (Size 20)	$90	$220	$275	+25% (220→275)

Assumes consistent 25% annual inflation from 2024. Actual 2025 costs may vary.

Table 2: Q3 2025 Savings Projection Actionable for Salvation Army NZ in August 2025 (Q3)

Metric	Small (Size 2)	Medium (Size 10)	Large (Size 20)	Total
% of Parcels	10.56% (94)	11.01% (98)	9.78% (87)	-
Reduction Target	20%	10%	5%	-
Parcels Reduced/Month	19	10	4	33
Cost Avoided/Unit	$95	$140	$185	-
Monthly Savings	$1,805	$1,400	$740	3945
Q3 Savings (Aug Only)	$1,805	$1,400	$740	$3,945
Q3 Savings (Jul-Aug)	$3,610	$2,800	$1,480	$7,890

Parcel Size	Jul-Aug Savings	% of Total
Small (Size 2)	3,610	46%
Medium (Size 10)	2,800	35%
Large (Size 20)	1,480	19%



Executive Summary: Data Analytics Insights for Salvation Army Food Parcel Program Optimization

Prepared for: The Salvation Army New Zealand
Prepared by: Juliana Binondo
Date: 19 August 2025

Objective

This analysis utilizes a dataset of 890 Salvation Army household records to optimize food parcel distribution, improve referral program efficiency, and forecast demand - ensuring resource allocation aligns with community needs. By identifying key trends in demographics, visit frequency, and parcel demand, this project provides actionable insights to enhance service delivery while reducing operational costs.

Key Findings

1. Demographic Insights
• Primary Beneficiaries:
  - 72% of households served are aged 19–49 *(35–49: 43.71%, 19–34: 28.43%),* with the largest segment being 35–49 *(43.71%)* .
  - Ethnic Distribution: NZ European (37.53%) and Māori (33.15%) households are the most frequent service users.
• Family Structures: Māori single-parent households (e.g., 95.58% of single-male households) and families with children are highly represented.
Strategic Impact:
• Focus outreach on working-age adults and Māori communities.

2. Income & Financial Vulnerability
• 81.35% of households rely on government support, while 10.56% report no income.
• Only 32.36% of households receive financial mentoring referrals, indicating a gap in support services.
Strategic Impact:
• Expanding financial mentoring referrals could reduce long-term dependency by addressing root causes of food insecurity; Scale referrals for the 10.56% no-income group to reduce long-term dependency.

3. Visit Frequency & Demand Patterns
• 45.73% of households visit 3–6 times/year, while 16.63% are high-need (7–12 visits/year).
• Peak Demand Months: November (166 parcels) and March (153 parcels) require increased inventory.
Strategic Impact:
• Adjust stock levels seasonally and prioritize frequent visitors for additional support services.

4. Parcel Size & Ethnicity Trends
• Pasifika households more frequently require larger parcels (size 20: 13.79%), while East Asian households use smaller parcels (size 2: 17.44%).
• Forecasts indicate declining demand for Māori parcel size 2 (negative trend by Aug 2025), suggesting a reallocation to sizes 10/20.
Strategic Impact:
• Culturally tailored parcel distribution improves efficiency and reduces waste; reallocate donations to sizes 10/20 and reduce size-2 stock by 20%.

5. Household Composition & Parcel Sizing
• Average household size: 5.4 people (peaks at 5.7 for under-18 households).
• Households with 5+ members (e.g., Pasifika/NZ European) frequently require sizes 12-20.
Strategic Impact:
• Match parcel sizes to household density (e.g., prioritize size 18 for Pasifika families).

Strategic Recommendations

1. Inventory Optimization
• Reduce size-2 stock by 20% (forecasted Māori decline) and boost size 10/20 for Pasifika communities.
• Prepare +15% stock for November/March peaks.

2. Referral Program Expansion
• Target 100% of no-income households (10.56%) for financial mentoring.
• Pilot referrals for high-frequency visitors (7–12 visits/year).

3. Culturally Tailored Outreach
• Partner with Māori/Pasifika community leaders for parcel drives emphasizing sizes 10/20.

Conclusion

This analysis demonstrates how data-driven optimization of The Salvation Army NZ's food parcel program can mitigate rising costs while expanding community support. By implementing these strategies in Q3 2025 (July–August), the organization could achieve $7,890 in direct savings—equivalent to funding 65+ additional food parcels (based on current cost projections). These savings are derived from reducing overstocked parcel sizes (e.g., 19 fewer small parcels monthly) and avoiding inflated supply-chain expenses (e.g., $95 per small parcel under projected 2025 costs). When scaled year-round, these adjustments could yield ~$47K in annual savings, enabling more sustainable service delivery amid economic pressures. The insights further highlight opportunities to strengthen financial mentoring for high-need households and culturally tailor outreach to Māori and Pasifika communities. By acting on these recommendations, The Salvation Army can transform inflationary challenges into measurable social impact.

Next Steps for Project Advancement

To deepen insights and scalability, I will leverage additional tools in the next project phase:

1. SQL
• Migrate data to a relational database for complex queries (e.g., joining referral success with visit frequency).
• Calculate cross-tab metrics (e.g., avg parcel size by income source × ethnicity).

2. Python
• Build predictive models (ARIMA/Prophet) for parcel demand.
• Automate data cleaning and report generation.

3. Power BI
• Develop interactive dashboards tracking:
• Real-time referral rates by region
• Seasonal demand heatmaps
• Cost-saving impact of parcel optimization

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