



Data Analysis of Utility Support Program 2015 - 2019

Bruce Grey United Way

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Data Analytics and Summary Report by:
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Analysist's Notes

A few comments about the analysis:

- tables, graphs, and geo-spatial figures are presented without editorial comment, although each table and figure is accompanied with a description, and occasionally an observation about the findings.
- raw data contained 4891 client files which were reduced to 2550 client files, with non-relevant application files removed.¹
- final data set included 1711 unique clients (hereinafter "household-applicant") from 156 unique communities. (For the purpose of analysis, all unique communities were coded as one of the seventeen (17) municipalities and two First Nation communities².)
- there are 10 (plus one "miscellaneous") unique funders and 180 service providers.
- data used covers 2015, 2016, 2017, 2018, and part of 2019. All data from a raw data file provided by Bruce Grey United Way, unless otherwise referenced.
- applications per unique household-applicant: 1.49 (mean)
- each application are considered distinct, regardless if it comes from a person with multiple applications, over multiple years.
- data are analysed and summarised at the level of the Bruce-Grey (macro analysis) and at the community level (micro analysis).³

Terms

- *Completed* – the application has been finished and payment has been issued
- *In review* – an application has been made but not completed, no payment has been issued
- *Cancelled* – an application was made but the applicant did not complete the needed paperwork, attended and appointment or provided the requested information
- *Denied* – the program parameters determined the applicant was not eligible for support
- *OESP* – Ontario Energy Support Program
- *LEAP* – Low Income Energy Assistance Program
- *Wood* – includes cord wood as well as wood pellets

Income Source Acronyms

- *ODSP* – Ontario Disability Support Program
- *OW* – Ontario Works
- *EI* – Employment Insurance
- *CPP* or *CPPD* – Canada Pension Program, Canada Pension Program Disability
- *OAS* – Old Age Security

¹ Client files had no identifying information attached.

² The 156 unique communities, for the purposes of this report, have been assigned to one of the seventeen municipalities or one of two First Nations communities.

³ See footnote 2.

INTRODUCTION

This report presents summarised data for the United Way's energy support program.

In addition to the United Way, there are other organizations that process electricity and natural gas support applications, most notably the YMCA Housing Program and the Salvation Army in Wiarton. Their data is not reflected in this report.

For more information on this report please contact the United Way at 519-376-1560.

GREY-BRUCE

Table 1 presents data about the status of applications by county. Overall, about three-quarters (74.3) of the applications were marked as "complete". Almost one-quarter (24.3%) of applications were marked either "denied" or "cancelled".

Table 1: Application status by county - all years

County	Completed N (%)	In Review N (%)	Cancelled N (%)	Denied N (%)	Total N
Bruce	534 (68.6)	8 (1.0)	205 (26.3)	32 (4.1)	779
Grey	1359 (76.9)	27 (1.5)	336 (19.0)	46 (2.6)	1768
Total	1893 (74.3)	35 (1.4)	541 (21.2)	78 (3.1)	2547

Table 2 presents data about the status of applications by the year arrears payment was made. Some arrears are paid within the same year as application, while others may be paid in a subsequent year. Analysis of the delay between application year and payment year indicates that 67.1% are paid in the same year, 19.7% with one year delay, and 10.1% a two year delay.

Table 2: Application status by year of payment - Bruce and Grey

Year	Completed N (%)	In Review N (%)	Cancelled N (%)	Denied N (%)	Total N
2015	28 (1.5)	0 (0.0)	0 (0.0)	0 (0.0)	28
2016	243 (12.8)	2 (5.7)	37 (6.8)	10 (12.8)	292
2017	949 (50.1)	6 (17.1)	384 (71.0)	43 (55.2)	1382
2018	520 (27.5)	7 (20.0)	89 (16.5)	15 (19.2)	631
2019	153 (8.1)	20 (57.2)	31 (5.7)	10 (12.8)	214
Total	1893 (100.0)	35 (100.0)	541 (100.0)	78 (100.0)	2547

Table 3 presents data about cohorts by county and by application year. A household-application is defined as representing, for example, one (1) application or three (3) applications by the same person over several years is three person-applications. Owen Sound has the highest number of applications and arrears payments (n=610 person-applications) (Table 6). The next highest is Arran-Elderslie with 187 person-applications (Table 6).

Table 3: Person-applications cohorts by application year - all years

County	Adult N	Senior N	Children N
Bruce	623	70	253
Grey	1543	131	681
Total	2166	201	934
Minimum *	1	1	1
Maximum **	5	2	7

* Minimum means lowest count within a family unit ** Maximum means the highest count in a family unit

Table 4 presents data about sources of income as reported on applications. The largest single income source is ODSP (n=982) and followed by wages (n=729). Table 4b presents the same data for only completed files.

Table 4a: Monthly income sources for all applications - Bruce and Grey*

Income type	Total N	Mean \$	Lowest** \$	Highest*** \$
ODSP	982	476	1100	3400
Wage	729	452	598	6000
Ontario Works	431	136	688	2000
OAS	137	52	1007	2135
CPP	303	100	168	3800
CPPD	222	76	1022	1872
EI	143	77	1400	2954
WSIB	72	31	314	2050
Fixed income	59	9	530	1877
Employment	31	17	1598	2555
Other (unstated)	548	85	248	3102

*This table includes all years and person-clients with multiple applications. ** Lowest means lowest monthly dollar amount reported on application, which was not "zero". *** Highest means the highest monthly dollar amount reported on application.

Table 4b: Monthly income sources for completed applications - all years, Bruce and Grey*

Income type	Total N	Mean \$	Lowest** \$	Highest*** \$
ODSP	819	531	1128	3400
Wage	590	483	770	3400
Ontario Works	353	152	721	2000
OAS	115	56	1009	2135
CPP	240	96	256	3800
CPPD	189	86	33	1872
EI	108	77	1400	2954
WSIB	58	34	612	2050
Fixed income	50	476	39	1877
Employment	24	20	1918	2555
Other (unstated)	445	86	250	3102

*This table includes all years and person-clients with multiple applications. ** Lowest means lowest monthly dollar amount reported on application, which was not "zero". *** Highest means the highest monthly dollar amount reported on application.

Table 5 presents data for the year of application intake about income sources. The mean is somewhat "flat" over the five-year period. The "lowest" and "highest" have fluctuated.

Table 5a: Monthly income from all sources by year of application - Bruce and Grey

Year (Intake)	Mean \$	Lowest* \$	Highest** \$	Total Monthly Income \$
2015	1636	415	3241	106,368
2016	1737	886	4140	1,271,915
2017	1631	486	6000	1,132,251
2018	1671	717	5252	984,511
2019***	1708	917	3908	356,884

* Lowest means lowest monthly dollar amount reported on application, which was not "zero".

** Highest means the highest monthly dollar amount reported on application. *** This is a part year, covering up to early March.

Table 5b: Monthly income from all sources for completed applications - Bruce and Grey

Year (Intake)	Mean \$	Lowest* \$	Highest** \$	Total Monthly Income \$
2015	1738	662	3241	46,927
2016	1781	499	4056	427,491
2017	1653	500	6000	1,548,872
2018	1645	715	5252	827,667
2019***	1671	901	3900	244,000

* Lowest means lowest monthly dollar amount reported on application, which was not "zero".

** Highest means the highest monthly dollar amount reported on application. *** This is a part year, covering up to early March.

Table 6 presents data of the number of intakes each year, combined for Bruce and Grey. The years 2016 to 2018 show a modest general downward trend.

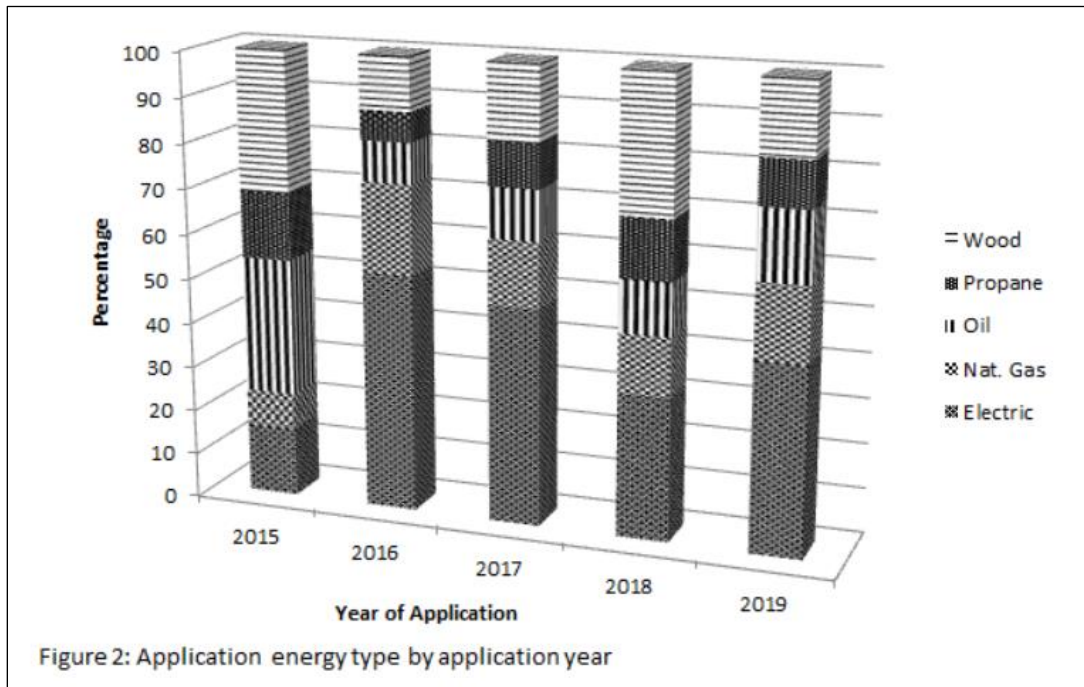
Table 6: Applications per intake year - Bruce and Grey

Year	2015	2016	2017	2018	2019*
Applications	256	760	704	612	218

* 2019 is a part year, up to early March.

Figure 2 shows fluctuations of applications by energy type. No general trend is evident, although propane and natural gas seem to be relatively stable in the past three years. Table 7a presents detailed data according to year of application. Table 7b presents the same data for completed applications (utility paid).

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**Table 7a: Utility type by year of application**

Energy type	2015 %	2016 %	2017 %	2018 %	2018 %
Electricity	15.3	52.7	48.0	31.7	41.7
Natural gas	8.2	20.0	14.6	13.1	16.5
Oil	30.4	9.0	11.1	11.6	15.6
Propane	14.8	6.6	9.7	13.4	10.1
Wood	31.3	11.7	16.6	30.2	16.1

Table 7b: Utility type by year for completed applications

Energy type	2015 %	2016 %	2017 %	2018 %	2018 %
Electricity	14.3	2.5	62.0	28.9	43.8
Natural gas	10.7	44.9	9.2	13.6	16.3
Oil	32.2	15.2	8.6	11.5	13.7
Propane	21.4	11.9	7.0	13.4	11.8
Wood	21.4	25.5	13.2	32.6	14.4

MUNICIPALITIES

Table 8a presents detailed data about by cohorts, applications, and application payments. Table 8b presents the same data for completed applications.

Table 8a: Selected variables by municipality - all years, all applications

Municipality	Family cohorts			Applications N	Total Support* \$ (N)
	Adults N	Seniors N	Children N		
Arran-Elderslie	209	19	90	250	101,234 (187)
Blue Mountains	18	10	0	28	12,107 (25)
Brockton	95	14	46	115	41,881 (77)
Chatsworth	141	21	58	174	76,211 (141)
Georgian Bluffs	61	16	35	75	28,880 (53)
Grey Highlands	173	19	49	49	90,573 (159)
Hanover	59	10	36	77	21,916 (47)
Huron-Kinloss	34	2	11	45	17,156 (30)
Kincardine	57	6	16	74	29,842 (52)
Meaford	126	7	54	140	60,644 (118)
Neyaashiinigmiing	20	3	9	25	12,092 (20)
Northern Bruce Peninsula	33	3	14	39	19,322 (35)
Owen Sound	716	27	330	764	279,425 (610)
Saugeen First Nations	5	0	1	5	2,700 (5)
Saugeen Shores	49	8	9	64	20,974 (39)
South Bruce	9	1	6	16	3,736 (7)
South Bruce Peninsula	112	13	52	144	62,743 (102)
Southgate	113	14	54	152	63,893 (108)
West Grey	135	8	64	153	65,965 (121)
Total	2,165	201	934	2,389	1,011,294 (1936)

* Total arrears payments and number of applications paid (xx).

Table 8b: Selected variables by municipality - all years, completed applications

Municipality	Family cohorts			Applications N	Total Support* \$ (N)
	Adults N	Seniors N	Children N		
Arran-Elderslie	168	11	71	250	101,234 (187)
Blue Mountains	16	10	0	28	12,107 (25)
Brockton	70	10	32	115	41,881 (77)
Chatsworth	121	17	50	174	76,211 (141)
Georgian Bluffs	44	12	25	75	28,880 (53)
Grey Highlands	145	14	41	49	90,573 (159)
Hanover	40	8	24	77	21,916 (47)
Huron-Kinloss	26	1	9	45	17,156 (30)
Kincardine	43	6	11	74	29,842 (52)
Meaford	108	6	48	140	60,644 (118)
Neyaashiinigmiing	17	2	8	25	12,092 (20)
Northern Bruce Peninsula	31	3	13	39	19,322 (35)
Owen Sound	584	22	226	764	279,425 (610)
Saugeen First Nations	5	0	1	5	2,700 (5)
Saugeen Shores	37	7	6	64	20,974 (39)
South Bruce	5	1	4	16	3,736 (7)
South Bruce Peninsula	82	9	35	144	62,743 (102)
Southgate	89	11	43	152	63,893 (108)
West Grey	113	5	56	153	65,965 (121)
Total	1744	155	703	2,389	1,011,294 (1936)

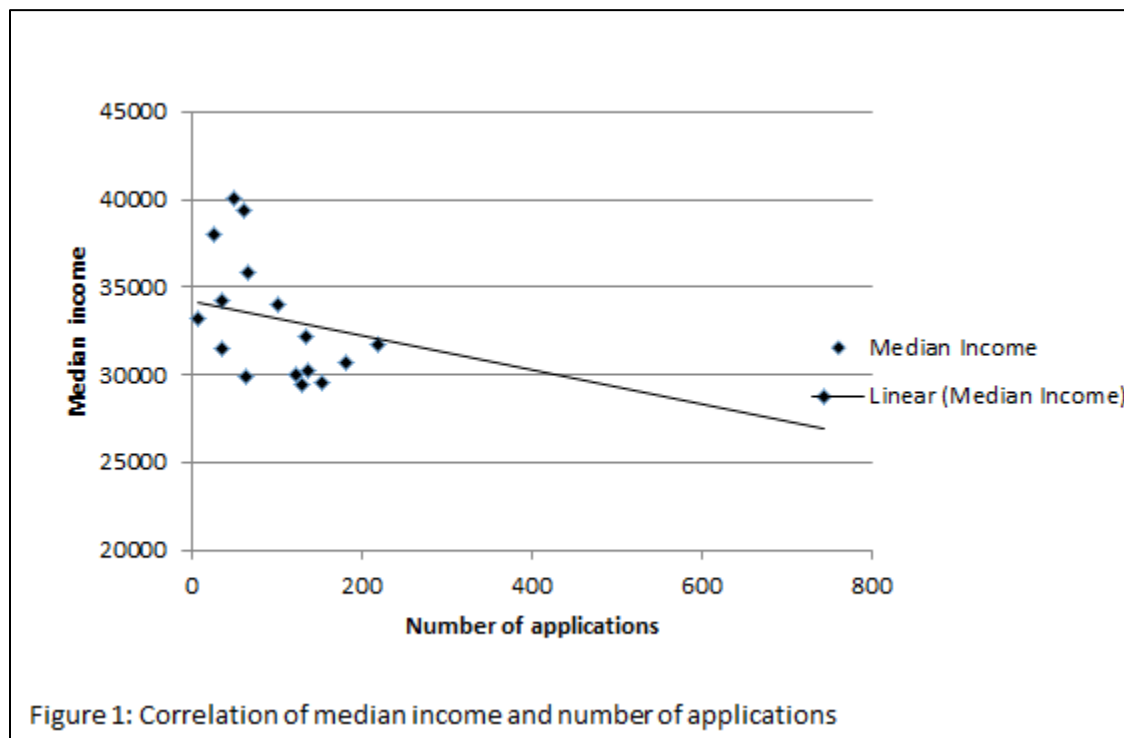
* Total arrears payments and number of applications paid (xx).

Test of Correlation for Applications and Median Income

The number of applications (except the two First Nations communities⁴) and median incomes (2016 census year) for each municipality were tested for correlation (Figure 1). The hypothesis is that lower median incomes may be correlated with higher numbers of applications. There is a moderate *negative* correlation ($r = -0.4552$, $p = 0.066$).⁵ This suggests there is a general trend that communities with *lower median incomes* are likely to generate *more applications* for energy bill relief (Figure 1).⁶ The regression is shown as a solid line.

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Recalculating the Pearson Correlation Coefficient (PCC) using applications per 1,000 population (instead of actual number of applications) and actual median income, results in $r = -0.626$, $p = 0.007$ (strong correlation). Again, as median income declines, applications per 1,000 population increases.



⁴ The two First Nations were added to the correlation of median income and application in a separate analysis. The median incomes are \$17,184 for Saugeen First Nation and \$17,184 for Neyaashiinigiing, which are about 53% of the median for Bruce and Grey (*without the two First Nations in the calculation*). With these low median incomes, as outliers, are included in the calculation, a non-statistically significant Pearson Correlation Coefficient results ($r = -0.0618$, $p = 0.801$).

⁵ Ideally, significance should be either 0.05 or 0.01, so 0.06 (rounded to 0.07) is still suggestive of a moderate relationship, edging toward significance.

Figure 2 illustrates the distribution of applications based on population by a Location Quotient (LQ). The mean for Bruce-Grey combined, is 14.2 applications per 1,000 population. The LQ calculation underlying assumption is that applications have an equal distribution, in this case based on population. If a municipality generated applications at the rate of 14.2 per 1,000 people, the LQ would be equal to 1.00. An LQ of more than 1.00 shows "over representation", and less than 1.00, "under representation". The two highest municipalities are Owen Sound (2.46) and Arran-Elderslie (2.27). The three lowest are South Bruce (0.11), Saugeen Shores (0.26), and The Blue Mountains (0.27). Table 8 sets out LQs for all municipalities, except the two First Nations communities.

Table 9 presents specific LQs for each municipality.

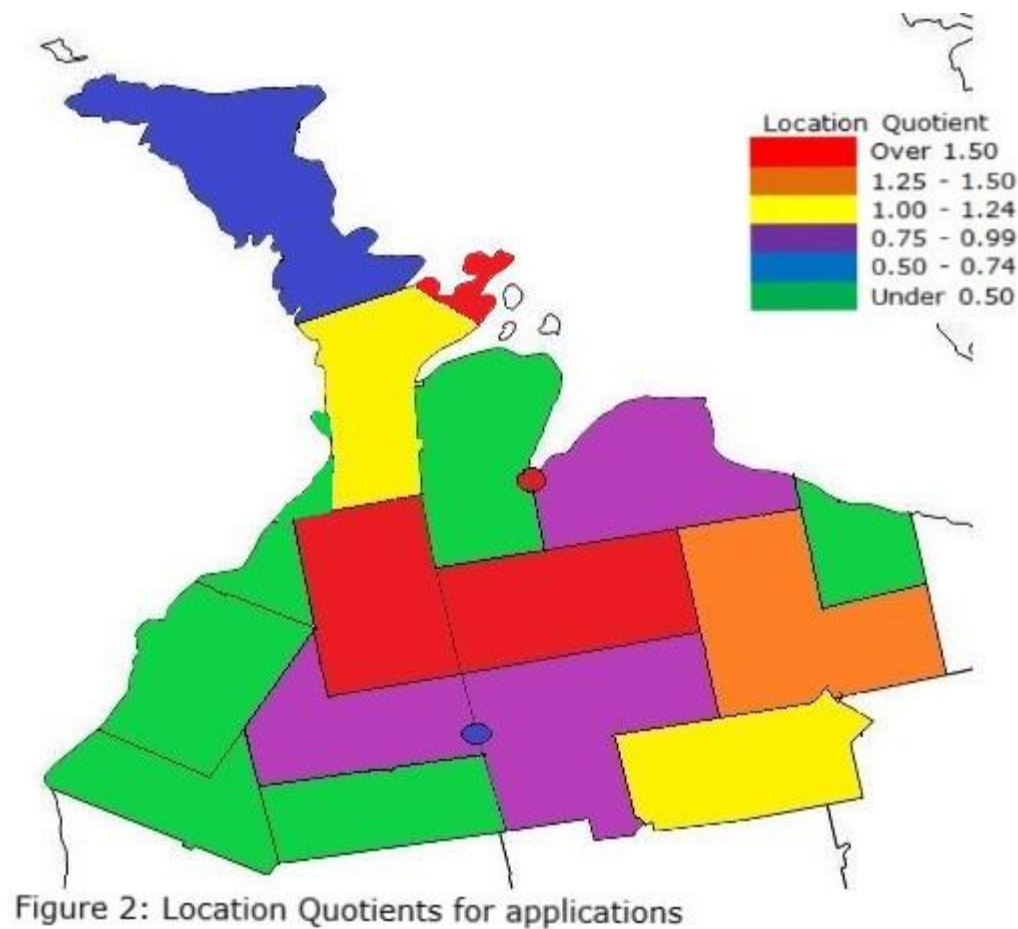


Table 9: Location Quotients for all applications

Municipality	LQ*
Neyaashiinigmiing	2.63
Owen Sound	2.46
Arran-Elderslie	2.27
Chatsworth	1.63
Grey Highlands	1.30
Southgate	1.18
South Bruce Peninsula	1.08
Meaford	0.86
West Grey	0.77
Brockton	0.77
Northern Bruce Peninsula	0.62
Hanover	0.59
Saugeen FN	0.47
Georgian Bluffs	0.45
Kincardine	0.38
Huron-Kinloss	0.36
Blue Mountains	0.27
Saugeen Shores	0.26
South Bruce	0.11

* An LQ of 1.50 means that there are 1-1/2 times more applications than expected based on equal distribution.

Test of correlation of low incomes and applications

To determine if there is a relationship of low incomes (LI) and the number of applications from each municipality a correlation was calculated using Pearson's Correlation Coefficient (PCC).^{1 1}

The correlation of the prevalence of low incomes (as a percentage) and number of applications per 1,000 population is "strong" ($r=0.6817$, $p=>0003$).¹

This means as the prevalence of LIs increase, the number of applications (per 1,000 of population) also increases. The PCC is affected by "outliers", of which Owen Sound is one.

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The rationale for stating this, is that Owen Sound has 13.3% of the total population of Grey and Bruce, combined, yet has 17.37% of all LIs people. Also, Owen Sound has 743 applications, which is more than three-times higher than the next highest (Arran-Elderslie with 219), and more than five-times higher than the average number of applications (134). The PCC was calculated *without* Owen Sound, resulting in a "moderate" correlation ($r=.5890$, $p=0.016$).

ANALYSIS OF MULTI-APPLICATION HOUSEHOLDS

Table 11 presents data about the multi-applications of households for all years and all applications. "Single year" means that the household-applicant made application in one year only. Multiple years are shown as 2, 3, 4, and 5 years.

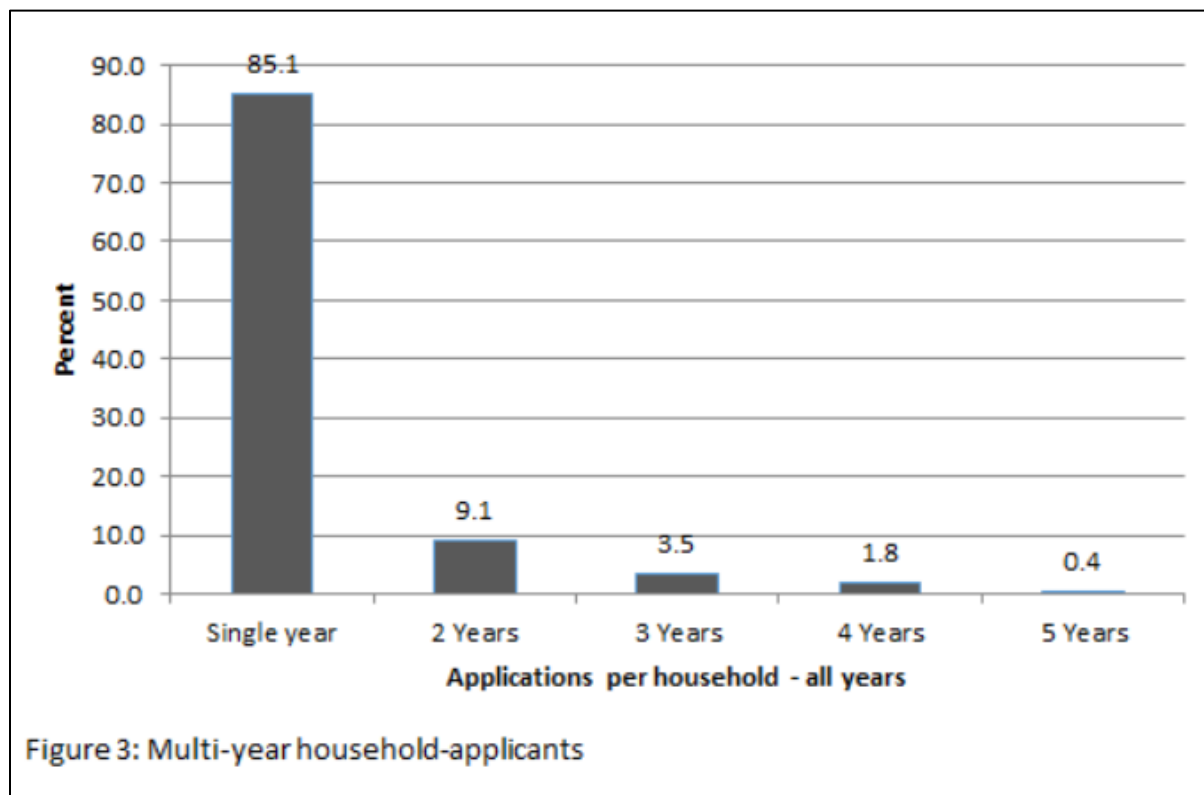
Figure 3 presents data of applications according to the number of years a household-applicant made application. The data includes all applications for all years.

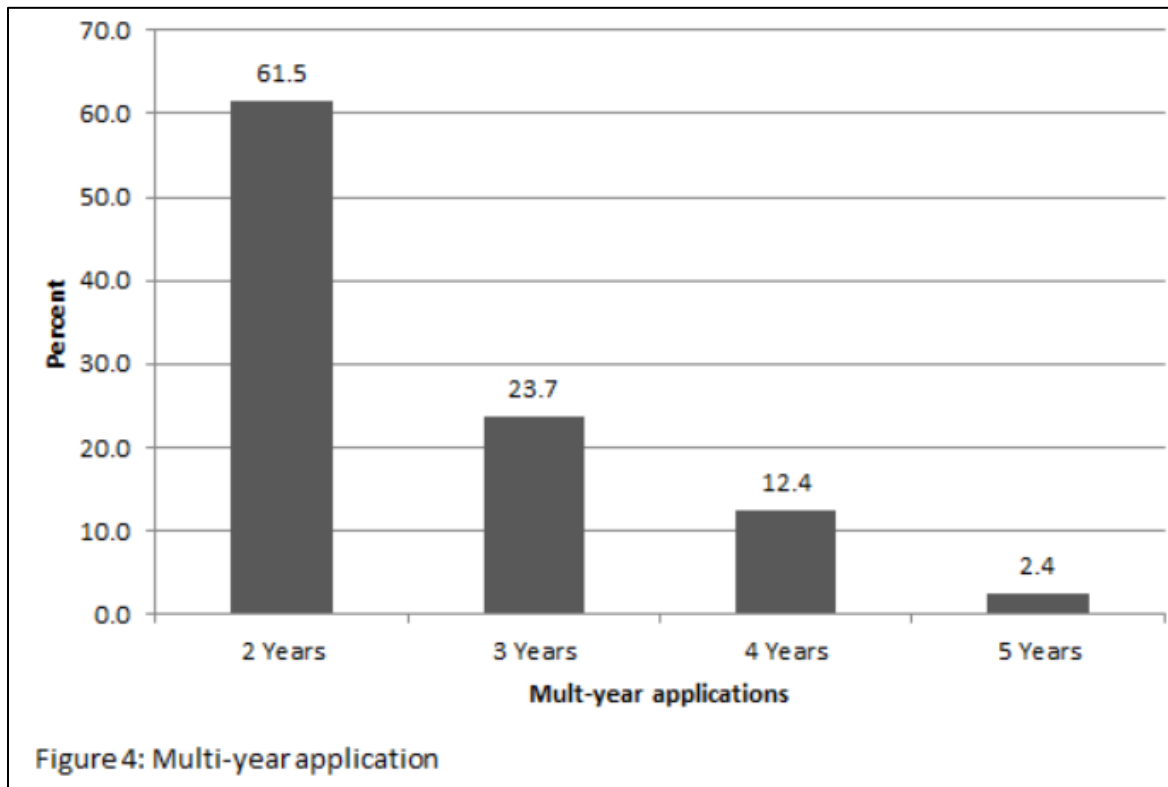
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Figure 4 presents data for only those household-applicants which made application in two or more years.

Table 11: Multi-application households by year

Number of years	2015 %	2016 %	2017 %	2018 %	2019 %
Single year	99.2	95.1	83.4	73.4	85.1
2 years	0.8	3.8	12.6	13.3	9.1
3 years	-	0.5	3.0	6.0	3.5
4 years	-	0.5	1.0	7.3	1.8
5 years	-	-	-	0.9	0.4





Background

Since 2006 the United Way of Bruce Grey has been providing support to low income energy consumers. Starting with a natural gas grant of \$7 000 the program expanded to electricity, furnace oil, propane and wood in 2009.

In the 13 years the United Way has processed \$2.5 million in support to the community.

Funding for the program comes from mandated programs through the Ontario Energy Board for natural gas and electricity, and community donations for furnace oil, propane and wood.

In 2015 the United Way invested in a database to manage the Utility Program which enabled this data report to be generated for a greater understanding of the program, it's impact and potential opportunities for utility assistance across the province.

In addition to the United Way, there are other organizations that process electricity and natural gas support applications, most notably the YMCA Housing Program and the Salvation Army in Wiarton. Their data is not reflected in this report.

For more information on this report please contact the United Way at 519-376-1560.