

Inequality of Telecommunication access and coverage within rural Vanuatu

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Manager's Statement

The paper has been compiled solely by this officer with minimal supervision from the manager responsible for all the daily official activities. Nevertheless it was through the technical team from Statistics New Zealand as facilitator of the two modules that guided that candidate in all the steps from pre-planning stage of identifying a research topic right through data collection, final results and the write up. It is the vision of the National Statistics Office in establishing a research unit that will fully focus on certain phenomena of interest when releasing major undertakings for instance Census and surveys to engage in specific policy papers and indeed analysis on existing policies in alignment to good monitoring. In general the effort and eagerness shown in the project outcome is good therefore as an institution the knowledge and skill must be fully utilized to enhance the individual which should be very encouraging for Vanuatu National Statistics Office.

Acknowledgements

This research analysis of the inequality of telecommunication access and coverage within rural Vanuatu has been undertaken with the support and technical assistance provided by the research project assessment team of the statistics of the New Zealand government- acknowledge the generous support to the New Zealand government through Ministry of Foreign Affairs for Financial support, close collaboration with VNSO as a core partner in running the course and also Vanuatu government for partial financial support through VNSO.

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Acronyms

TC - Tropical Cyclone

VNSO – Vanuatu National Statistics Office

HIES - Household Income and Expenditure Survey

UAP - Universal Access Policy

ICT - Information and Communications Technology

TRR - Telecommunication Regulatory Authority

TVL - Telecom Vanuatu Limited

NDMO - National Disaster and Management Office

TCI - Telecom Cook Islands

Background

Vanuatu comprises of 83 islands divided into six (6) provinces -Torba, Sanma, Penama, Malampa, Shefa and Tafea. The two urban centres located in the northern province of Vanuatu are Luganville in Sanma and Port Vila in Shefa in the southern province.

Telecommunication services were operated by Telecom Vanuatu Limited as a monopoly since 1992. The telecommunication Act was amended in 2007. The government now requires open markets to allow more competition in response to the global liberation and the rapid development in telecommunication technology for a result of better network coverage which would be more convenient (lower cost/price) for the whole population in the future.

The Vanuatu government has developed a Universal Access Policy (UAP) by working with the private sector for joint coordination and collaboration to achieve the goals of this policy. The policy was adopted to ensure that ICTs and telecommunication services can reach areas that are under served with access to ICT by establishing a Telecommunication Regulatory Authority (TRR).

Based on the UAP deployment plans, the telecommunication providers (Telecom Vanuatu Limited-TVL and Digicel Vanuatu Limited-Digicel) and the TRR have estimated mobile coverage to reach the desired goal of at least 98 percent population coverage as stated under the required level of access to telecommunication services

"...By 1 January 2018, 98 percent of Vanuatu population shall have (and continue having after this date) access..." (UAP, p.7)

The 2016 Post Pam Mini-Census Report, Volume 1 recorded a total population of 272,459. Overall household's access to mobile networks, called *'inside the house & just outside the house'*, in Vanuatu at that time was 86%. Urban access is 100% and rural is 82%.

To establish household communication, question C2a of the 2016 Mini-Census Report asked: can you make phone calls inside this house? Which requires (Yes/No) answer? Question C2b asks: if not, where do you usually go? which provides options (1. Just outside the house, 2. Not too far, 3. Very far).

The purpose of this research project is to gain a formal measure of the level of inequality of telecommunication access and coverage within rural Vanuatu. The research also aims to show the significant differences in equality of telecommunication access and coverage by comparison of household expenditures on telecommunication between regions (urban, semi-urban/provincial centres and rural) assuming the highest expenses on telecommunication by region justify the strength of network coverage from highest to lowest.

This research is important because telecommunication access has positive impacts on the country's development. It offers a great potential in education by providing access to tools and platforms for enhancing the learning module, extending and improving government services, helping people to be more resilient during natural disasters, promoting culture and also providing opportunities for new business by enhancing farmers with useful information on market access. In addition, it also strengthens the livelihoods of the population. (June 2017, 7th Public Report on implementation of UAP, p.5-9).

Research Question(s)

1. What are the differences in access to telecommunication between regions (Provinces, urban & rural) in particular mobile phone and internet usage?
2. Are there any differences in household average expenditure on telecommunications between regions (provinces, urban & rural) over time?

Literature Review

Achieving the policy goals of telecommunications market liberalisation in Pacific developing countries such as Vanuatu and the Cook Islands over the past years (2012-2015) has been challenging due to their remote geography, small size and narrow economic base compared to developed countries of the world such as New Zealand and Australia.

For example, comparing Vanuatu with the Cook Islands, Telecom Cook Islands (TCI) is the only operator and it is owned by joint-venture agreement between Cook Islands government (40%) and the Telecom New Zealand (60%) monopoly Spark New Zealand which is looking to sell its 60% interest in ICT process to a buyer out of the three applicants; Irish-owned Digicel and two Cook Islands consortiums (Kukicel-Distacom and Baudinet-Somaon telco BlueSky).

The discussion on liberalising the telecom markets has been ongoing since 2006 and negotiations between the Cook Islands government and Spark New Zealand has not been easy.

Developing Pacific countries like Vanuatu and Cook Islands have been relatively slow to respond and benefit (mobile and internet use is still limited) to the global revolution in ICTS when compared to more developed countries such as New Zealand and Australia. In New Zealand, telecommunication has become a key staple of modern life with access to world class telecommunication networks through sensible future investment, innovation and competitive markets (Geoff Thorn, TCF- Telecommunication Industry Sector Report, 2017-03. P. 2)

Research Plan and Methods

1. The main objective of this research is to gain a formal measure of the level of inequality of telecommunication access and coverage within rural Vanuatu and to compare the differences in household expenditures on telecommunication between regions (provinces, urban & rural).
2. Information collected in this research is based on Vanuatu National Censuses - specifically the 2016 Post Pam Mini Census and HIES 2006 & 2010. The HIES data is completed approximately every 4-5 years except for the mini census in 2016 which was purposely to update the household list and collect basic progression indicators of government policies and services (Mini census in 2016 p.i).
3. Most of the data in this report is secondary data reported from the census and survey reports which had been collected via face to face interviews using written questionnaires as well as tablets.
4. The target population in this research is all people living in private households. The data sets selected focus on levels of equality of Telecommunication access and coverage especially within the rural Vanuatu regions (provinces, urban & rural).
5. The sample frame in this report is focused on the provincial clusters which are further broken down to the urban and rural areas. The sample size of this research is all private households using the three datasets of HIES 2006 & 2010 and the latest 2016 min-census.
6. Information collected in this report includes the number of private households in each province in Vanuatu between HIES 2006 and HIES 2010, the average household expenditure.

Legal or Ethical Issues

The data contained in this report was from the Vanuatu National Statistics Office published reports which is mandated by the Statistics Act Cap 83 and revised in 2013 to collect and disseminate census information on population and housing characteristics.

The information represented in this report is aggregated by total private households by provinces, urban and rural and is not specifically by individuals.

The National Statistics Office ensures that the confidentiality and privacy rules are managed to make sure that personal information is not exposed and legal issues are taken into consideration.

Constraints/Limitations

1. Telecommunication Access by definitions and purpose for conducting the Census (2009 & 2016) report at the particular time was different. This may have affected the representation of information about the levels of inequality of telecommunication access and coverage within rural Vanuatu.
2. There is limited data on equality of Telecommunication coverage and internet usage within rural Vanuatu due to the differences in the telecommunication questions used in the 2009 & 2016 Census reports. This will need to be improved in similar future report or specific research will need to be conducted in the future to allow for standardised data treatment.

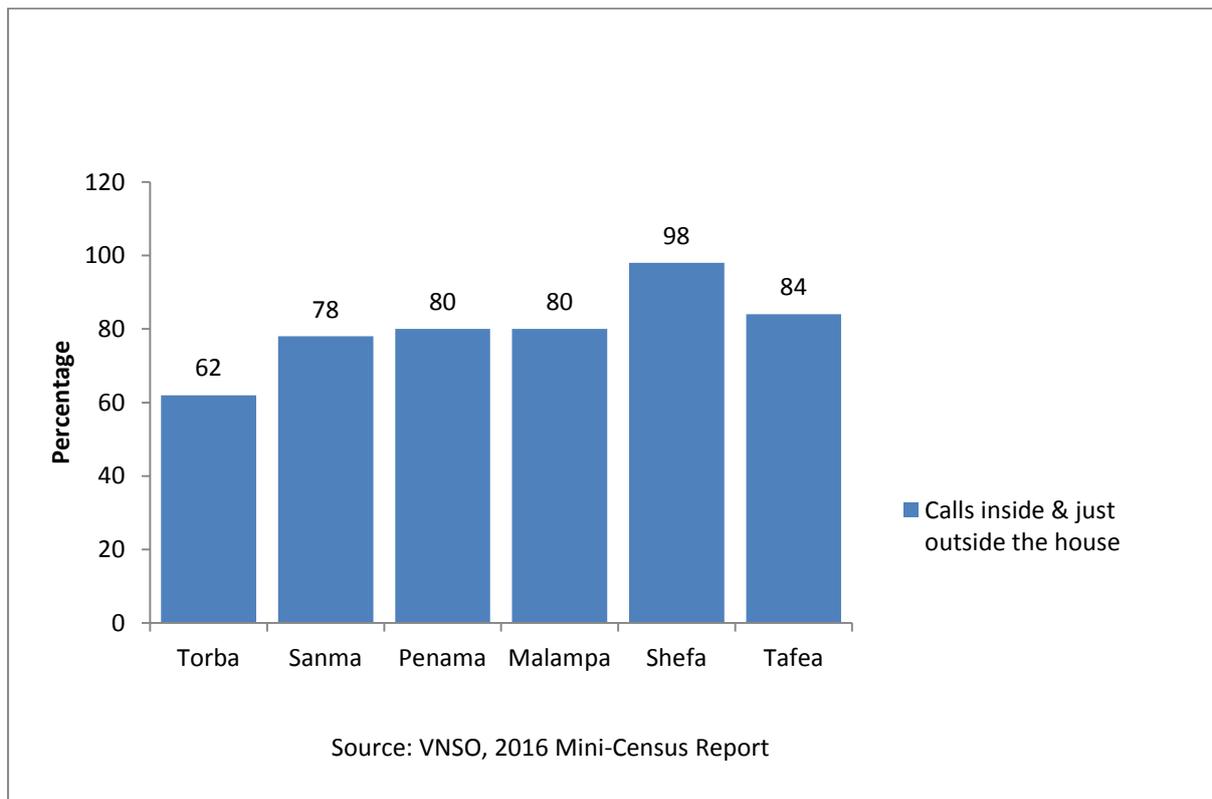
Data Analysis

Data collections is challenging and is quite difficult for analysis due to changes in definition of inequality of telecommunication access and coverage within rural Vanuatu and to compare the differences in household expenditures on telecommunication between regions (provinces, urban & rural).

The data used in this report was taken from the 2016 TC Pam Mini-Census and the HIES 2006 & 2010 reports. These were used in make some analysis on the inequality of telecommunication access and coverage within rural Vanuatu.

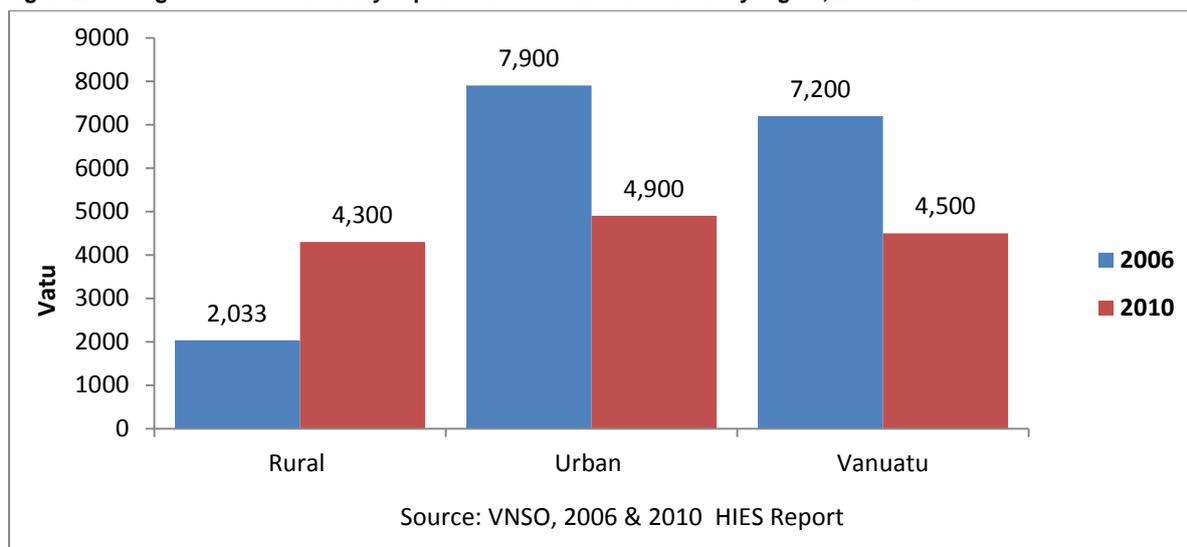
Figure1 shows that the highest percentage of household access to mobile network is provided in the most highly populated provinces of Shefa(98%), Tafea (84%), Malampa and Penama (80%), Sanma (78%) and the lowest province is Torba (62%). As would be expected, the provinces with higher percentage of population contain large urban centers with easy access to mobile network compared with lower percentages when located in more remote areas away from urban areas.

Figure1: Household access to mobile net-work can 'Calls inside & just outside the house' by provinces, 2016



The differences in household average expenditure on telecommunications between regions (provinces, urban & rural) over time - based on the HIES 2006 & 2010 reports - shows the inequality of telecommunication access and coverage within rural Vanuatu as shown by figure 2 below. There is higher average household monthly expenditures on communications in urban centres with higher population of households and also the household ability to afford the cost of telecommunication access than rural areas based on the HIES 2006 & 2010 reports.

Figure2: Average household monthly expenditure on communications by region, 2006 & 2010



Note: 1. Households who have access to mobile phone including telephones (public & private), HIES 2006.
 2. Households expenditures on communication which was mostly cellular phone and fix telephone charges, HIES 2010.

Table1: Household access to mobile net-work can' call inside & just outside the house' by regions, 2016

Province	Total households	Make calls inside House	Just outside house
Vanuatu	55285	45540	2050
Urban	13989	13676	267
Rural	41296	31864	1783
Torba	1960	1125	83
Sanma	10704	7790	514
Penama	6959	5258	323
Malampa	8896	6846	302
Shefa	19913	18865	608
Tafea	6853	5518	220

Source: VNSO, 2016 Mini-Census Report

Note: Household who have access to can make mobile calls inside and just outside the house (excluding 'not too far and very far' from their house)

The above table1 shows higher number of households in provinces with large urban centres allowing access compared to households in remote rural areas and provinces with limited telecommunication access and coverage of mobile- lower strength to mobile net-work coverage areas.

Table2-1 shows that there has been increase in total household's usual means of communication and access to information by province from 2006 & 2010 HIES, especially in urban areas are higher with easy access than rural areas due to limited access of mobile net-work. And also, there is decrease particularly in telephone (private & public) for both urban and rural areas.

Table 2-1 Usual means of communication and access to information by province, 2006 & 2010 HIES

Regions	Communication means	Usual Means of communication		Means of Access to information	
		2006	2010	2006	2010
Rural	Mobile use	1,090	31,390	0	0
	Internet	70	10	70	180
	Telephone-private	1,640	300	0	0
	Telephone-public	25,640	640	0	0
Total		28,440	32,340	70	180
Urban	Mobile use	4,500	11,770	0	0
	Internet	120	0	120	600
	Telephone-private	810	200	0	0
	Telephone-public	3,990	240	0	0
Total		9,420	12,210	120	600
Vanuatu	Mobile use	5,680	43,160	0	0
	Internet	190	10	190	780
	Telephone-private	2,460	500	0	0
	Telephone-public	29,630	880	0	0
Total		37,960	44,550	190	780

Source: VNSO, 2006 & 2010 HIES Report

Table 2-2 Usual means of communication by province, 2006 & 2010 HIES

Year	Communication Means	province					
		Torba	Sanma	Penama	Malampa	shefa	Tafea
2006	Mobile use	0	80	0	110	890	0
	Internet	0	30	0	0	20	10
	Telephone-private	50	60	500	190	700	150
	Telephone-public	940	2,670	5,870	6,810	3,760	5,590
2010	Mobile use	1,330	5,580	5,670	7,680	6,240	4,890
	Internet	10	0	0	0	0	0
	Telephone-private	40	50	70	60	50	40
	Telephone-public	40	70	60	130	150	190

Source: VNSO, 2006 & 2010 HIES Report

Table2-2 above shows that there has been increase in the number of household's usual means of communication by province between 2006 and 2010, especially mobile use with higher number of households of the provinces of Shefa, Sanma, malampa and Penama which are located closer to the urban centres compared to the provinces of Torba and Tafea that are located in the remote rural and with lower number of households usual means of communication shows lower strength to mobile net-work coverage areas.

The data also shows a decrease particularly in telephone (private & public) for all the provinces from the year 2006 to 2010.

Key results:

- The 2016 Post Pam Mini-Census shows that the provinces with urban centers have a higher percentage of households with easy access to mobile networks compared with lower percentage of households which are located in the remote areas away from urban areas.
- According to the HIES 2006 & 2010 reports, there is higher average household monthly expenditure on communications in urban than rural areas. Figure 2 above shows that the household's ability to afford the cost of telecommunication access, especially in the rural and with low-income areas. This is similar to the Cook islands HIES Report 2005-6 which shows that annual expenditure on household telecommunication (Telephone charges, cell phone/prepaid mobile & E-mail or internet charges) by region is higher (4, 356,900) in urban centres (Raratonga) than the rural areas (Southern group & Northern group) is lower(1,141,900).(Vanuatu HIES Report 2006[76, 84] & 2010[p.65, 68]) and Cook Islands HIES Report 2005_6 (Table1.3) . Annual expenditure of all Household expenditure by group, sub group and then item and region [from p.30...]). This is evidence of the significant difference in equality of telecommunication access and coverage between regions, between provinces and between urban and rural areas.

The 2016 Post Pam Mini-Census report shows that the higher percentage of household's access to mobile network which can call '*inside the house & just outside the house*' in Vanuatu with easy access are located close to urban centers compared with lower percentage are located in remote areas which are far away from the urban areas and, as a result, have limited access-lower strength to mobile net-work coverage.

The average household monthly expenditures on communications by regions is higher in urban areas/centres with households more able (because of greater employment opportunities) to afford the cost of telecommunications than rural-remote provinces (based on the HIES 2006 & 2010 reports). These results strongly suggest that households, especially in the rural and with low-expenditures areas of remote provinces, can't afford the cost of telecommunication services.

Conclusion

Telecommunication Access definitions and purpose for conducting the Census (2009 & 2016) report were different at the particular times of each census and this may have affected the representation of information about the inequality of telecommunication access and coverage within rural Vanuatu. However, the relation between geography and access and between affordability and access strongly suggests that any limitations in the available data have not significantly affected the outcomes of this report.

Universal access issues are significant especially for the developing Pacific countries like Vanuatu and Cook Islands. This report shows that inequality of Telecommunications access and coverage within Vanuatu is quite challenging – both technically and economically.

Successful achievement of the goals of UAP policy objectives remain difficult due to the remote geography and narrow economic base compared to developed countries of the world such as New Zealand and Australia.

Recommendations

There is limited data on equality of Telecommunication coverage and internet usage within rural Vanuatu due to the differences in the telecommunication question for 2009 & 2016 Census report. This will need to be improved in similar reports or specific research conducted in the future.

The limitations on analysis of the data in this report suggests that it would be valuable for the Vanuatu government UAP to consider some further research to review/redesign the existing policy Framework by providing opportunities for innovations to suit local context (lower cost telecom-services particularly in the developing Pacific countries like Vanuatu and Cook islands for more research development to build resilient infrastructure and ICT to improve the standard of living [Cook Islands National Sustainable Development plan, 2016-2020 p.28-29]) in order to successfully achieving the goals of the policy (UAP) objectives in the future.

Future works

Telecommunications access and coverage within Vanuatu are quite challenging for universal access are significant especially for the developing pacific countries like Vanuatu and Cook Islands to successfully achieving the goals of the policy (UAP) objectives due to the remote geography and narrow economic.

The inequality of telecommunication access and coverage within rural Vanuatu by definitions and purpose for conducting the Census (2009 & 2016) and surveys (2006 & 2010) report at the particular time was different which may affect the representation of information which needs to be improved in similar report or specific research conducted in the future.

Appendix

Annex 1: Total number of household access to communication use by region and urban-rural residence

Communication use type					
Region	Mobile phone	Radio	Internet	TV	Newspaper
VANUATU	46,865	22,684	10,533	7,287	10,595
<i>URBAN</i>	<i>13,685</i>	<i>9,704</i>	<i>6,509</i>	<i>5,447</i>	<i>7,471</i>
<i>RURAL</i>	<i>33,180</i>	<i>12,980</i>	<i>4,024</i>	<i>1,840</i>	<i>3,124</i>
TORBA	1,372	301	85		
SANMA	8,617	4,156	1,657	1,211	1,446
PENAMA	5,705	1,885	445	32	99
MALAMPA	7,629	3,057	546	85	74
SHEFA	18,978	12,287	7,490	5,821	8,849
TAFEA	4,567	1,337	325	142	104

* Private households only

Annex 2: Usual means of communication by province, 2010 HIES (Vanuatu)

Usual means of communications	Province										
	Torba	Sanma	Penama	Malampa	Shefa	Tafea	Rural	Luganville	Port Vila	Urban	Vanuatu
Mobile Phone	1,330	5,580	5,670	7,680	6,240	4,890	31,390	2,550	9,220	11,770	43,160
Other	300	1,160	1,090	780	370	1,620	5,320	60	100	160	5,470
Telephone – Public	40	70	60	130	150	190	640	60	190	240	880
Telephone – Private	40	50	70	60	50	40	300	30	170	200	500
Tele-radio	60	50				90	200	10	50	60	260
Postage		40	10		30	10	80		30	30	120
E-mail	10						10				10
Not stated	20	90	30	20	130	40	330				330
Total	1,790	7,040	6,930	8,680	6,960	6,880	38,270	2,700	9,760	12,470	50,740

Annex 3: Usual means of access to information by province, 2010 HIES (Vanuatu)

Province	Means of accessing information				
	Radio	Others	Newspaper	Television	Internet
Torba	640	910	550		
Sanma	4,570	2,180	240	80	20
Penama	2,770	5,140	660	10	10
Malampa	3,420	5,000	590		10
Shefa	4,350	3,840	1,760	2,130	130
Tafea	2,780	3,400	700		
Rural	18,520	20,480	4,510	2,220	180
Luganville	2,280	90	550	320	20
Port Vila	7,060	3,480	5,680	6,470	570
Urban	9,340	3,570	6,220	6,790	600
Vanuatu	27,860	24,050	10,740	9,010	780

Annex 4: Usual means of communication by province, 2006 HIES (Vanuatu)

Usual means of communications	Province										Total
	Torba	Sanma (rural)	Penama	Malampa	Shefa (rural)	Tafea	Rural	Luganville	Port Vila	Urban	
Telephone - private	50	60	500	190	700	150	1,640	140	680	810	2,460
Telephone - public	940	2,670	5,870	6,810	3,760	5,590	25,640	1,350	2,640	3,990	29,630
Mobile phone	0	80		110	890		1,090	840	3,750	4,590	5,680
Tele-radio	770	860		10			1,640	10	20	30	1,670
Postage	20	380					400	10	40	40	440
Other	10	1,860	80	230	290	840	3,310	10	110	120	3,430
Total	1,800	5,910	6,450	7,350	5,640	6,580	33,730	2,360	7,230	9,580	43,310

Annex 5: Usual means of access to information by province, 2006 HIES (Vanuatu)

Usual means of accessing information	Province										Total
	Torba	Sanma (rural)	Penama	Malampa	Shefa (rural)	Tafea	Rural	Luganville	Port Vila	Urban	
Television	10	30	40	120	950	30	1,170	680	4,480	5,160	6,330
Radio	1,610	5,010	4,990	5,570	2,740	4,190	24,100	1,100	1,750	2,850	26,950
Newspaper	60	150	240	490	640	470	2,050	460	620	1,080	3,130
Internet	0	30	0	0	20	10	70	10	110	120	190
Other	120	680	1,180	1,170	1,290	1,860	6,300	110	270	380	6,680
Not stated	0	10	0	0	0	20	30	0	0	0	30
Total	1,800	5,910	6,450	7,350	5,640	6,580	33,730	2,360	7,230	9,580	43,310

Annex 6: Annual Expenditure of Households communication type, by region, 2005-6 HIES (Cook Islands)

Communication use type			
Region	Telephone(including fax)	Cell phone/prepaid mobile	Email or internet charges
Cook Islands(\$)	4,596,100	594,200	308,600
Raratonga(\$)	3,516,000	569,000	271,900
Southern Group(\$)	718,800	25,200	32,200
Northern Group(\$)	361,200	-	4,500
Total	9,192,100	1,188,400	617,200

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