Meeting user needs- combining administrative data education statistics with census data, in support of planning

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The importance of Pacific Education Statistics

EDUCATION PLANNING AND DECISION SUPPORT

- Informing decision-makers and other users
- Identifying issues to be addressed by administrators and planners, schools
- Supporting policy planning

GOVERNMENT SERVICES

- Education – planning for new schools, classrooms, number location of teachers,
- Resource allocation and policy formation
- Research and monitoring of government policy

FUTURE WORKFORCE

- Better understanding the skills and utility of the countries future workforce

PROGRESS MONITORING AND EVALUATION

National reporting on education action plans and strategies

Funding / international agreements – MDGs, Donor interventions

Pacific Island populations will double in 35 years

	No of countries	Total Population	% Dist	Growth Rate	Doubling Time
Melanesia	5	9,615,100	87.2	2.1	33
Micronesia	7	525,100	5.8	1.6	43
Polynesia	10	650,070	7.0	0.8	87
All regions	22	107,90270	100	2.0	35

Population growth in the Pacific since 1947

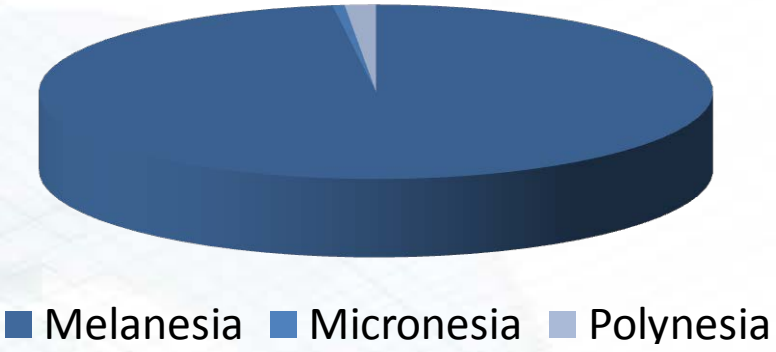
- 1947: 2.4 million people
- 1979: 4.7 million
- 2007: 9.3 million
- From 1947–79 (32'): 2.3 million increase
- From 1979–2007 (28'): 4.6 million increase
- Current annual (net) increase: 186,700 =populations of Samoa
- At current rate: about 1 million more people every 5.5 years
- Pacific population has nearly quadrupled in 60 years

Pressure on land increasing, especially in Micronesian sub-region

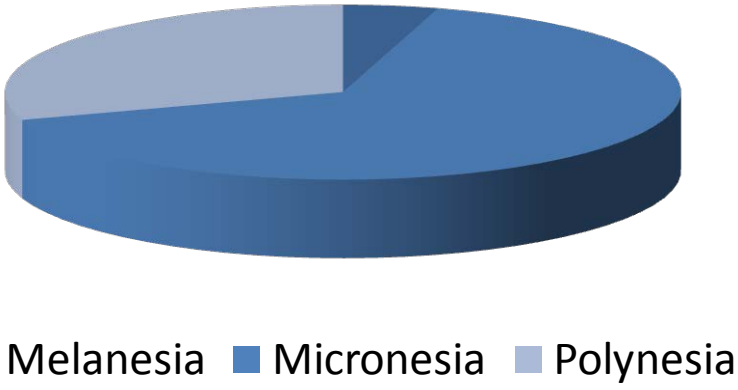
	Land (km2)	Population density	% Dist
Melanesia (5)	540,248	15	98.0
Micronesia (7)	3,214	170	0.6
Polynesia (10)	8,021	81	1.45
All regions (22)	551,483	17	100

Balance between population and land area

Land area distribution



Population density



Education

A Quick Preview

Impact of growing population on education

- Education enrolment major challenge in Melanesia sub-region
- 10-20% of children never enrol in primary school
- 40-50% drop out in primary school
- 50-70% drop out of secondary school
- Inadequate alternative education structure to accommodate those who never enter or who drop out of formal education

Impact of population growth Education capacity and facilities (based on 2007 population estimates)

PNG: 201,900 births/year
140,300 primary school age leavers/year
= >61,600 "surplus" = >5-6 primary classrooms/day

FIJI: 19,300 births/year
17,300 primary school age leavers/year
= >2,000 "surplus" = >5-6 primary classrooms/month

SOL: 17,100 births/year
10,700 primary school age leavers/year
= >6,400 "surplus" = >4 primary classrooms/week

Solomon Islands case study: Applying population data to resources

Primary schools

- 17,100 births/year: 10,700 primary school age leavers/year

- = >6,400 additional spaces required/year

= >213 additional classrooms/year (4/week)

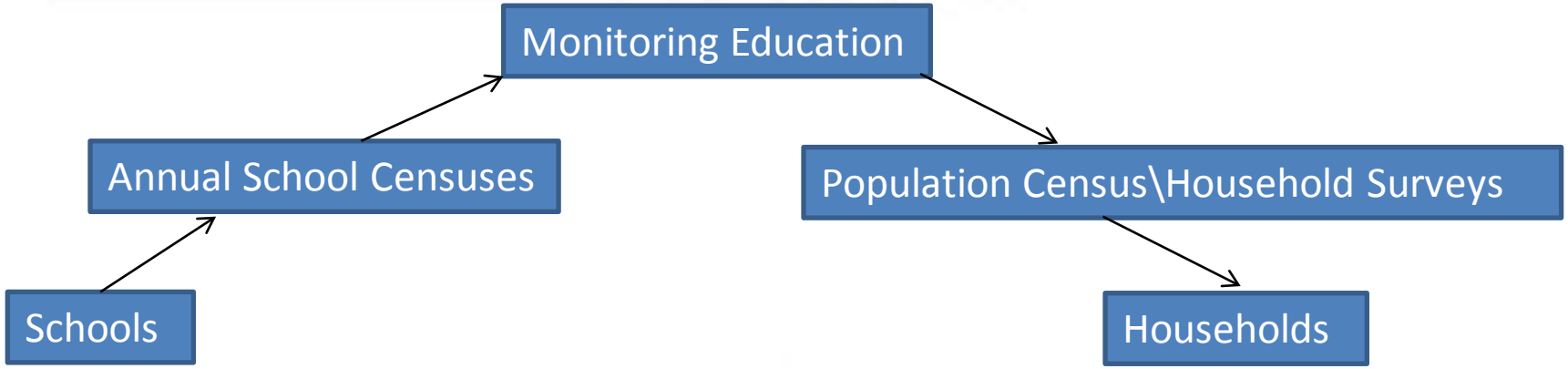
= >213 additional teachers/year

Solomon Islands case study: Applying population data to resources

- 213 classrooms @ 5,000 – US $1,065,000
- 213 teachers @ 3,000 – US $639,000

Additional $ for primary education US $1,704,000 *(or SI $13.6 million)*

Sources of Education Statistics



Education Statistics Based on Administrative Data (EMIS)

Administrative data typically provides limited information on the individual characteristics of pupils and little information on the characteristics of their households.

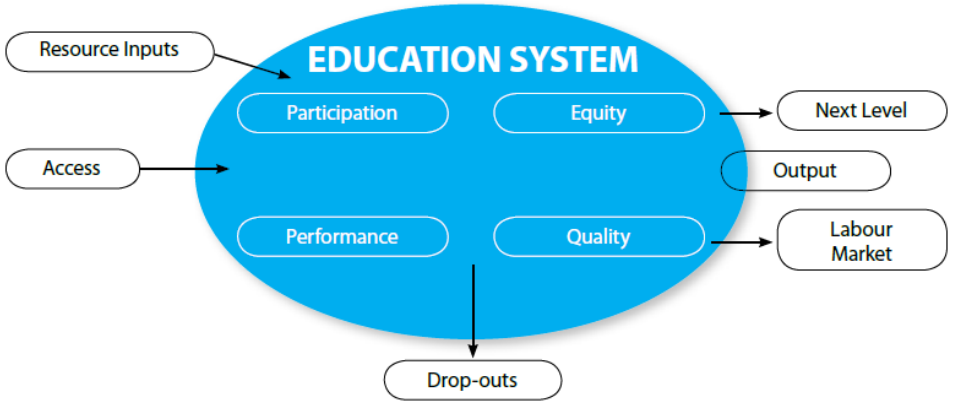
Household Survey and Population Census as a complement to Administrative Data

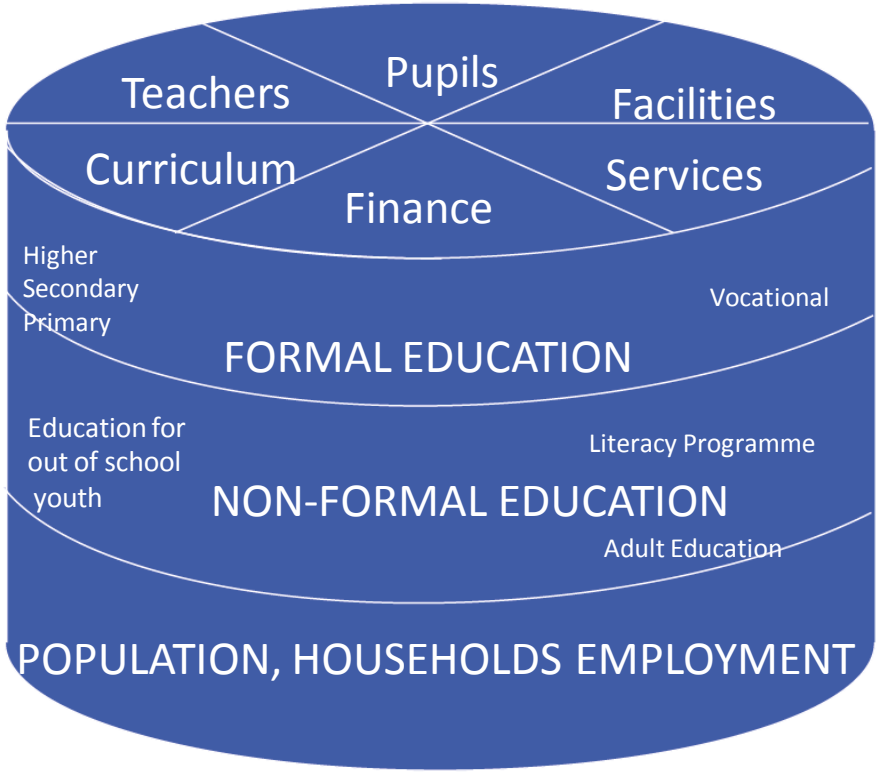
Moreover as school -based surveys and censuses focus on children who attend school there is no information on the individual characteristics and family backgrounds of children who do not attend.

What is EMIS?

Educational Management Information System

Not a software for storing data nor a data collection process





The objective of EMIS is not only to collect, store and process information but also to help in education policy- making by providing relevant and accessible information.

Methods for the collection of statistics in education?

Statistical information related to education can be collected in different ways.

One can basically list four ways, which are not mutually incompatible.

a) Annual school census of all the education and administrative establishments. (principle source of information for EMIS).

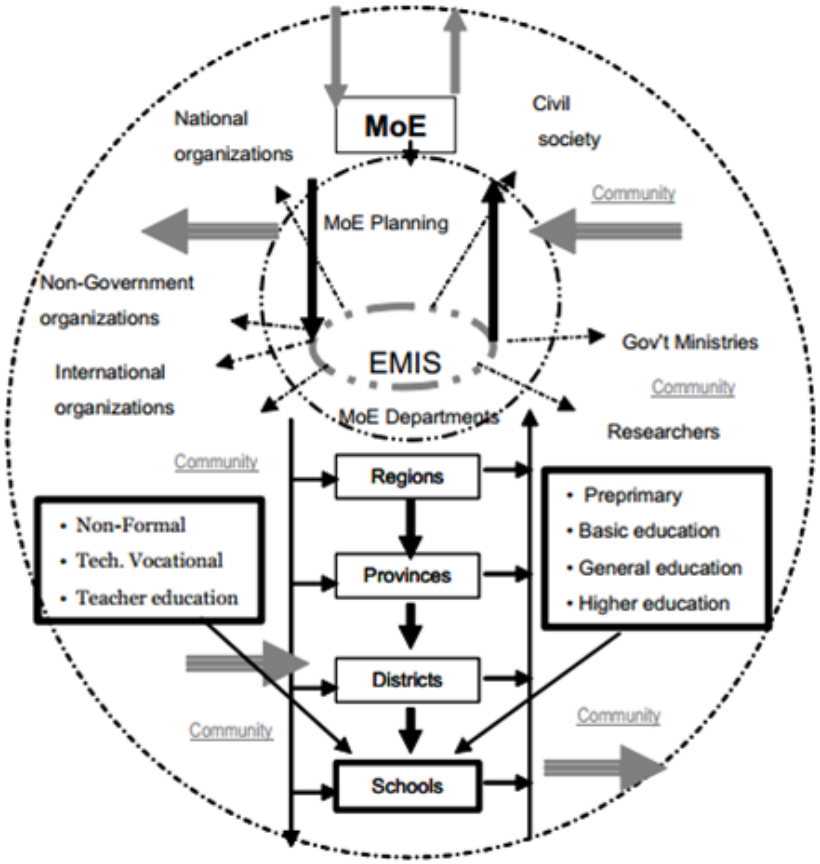
b) Systematic transmission of gathered and assembled data for administrative needs (school

c) Periodic or selective surveys based on a representative sample of schools and aimed to collect information on particular questions.

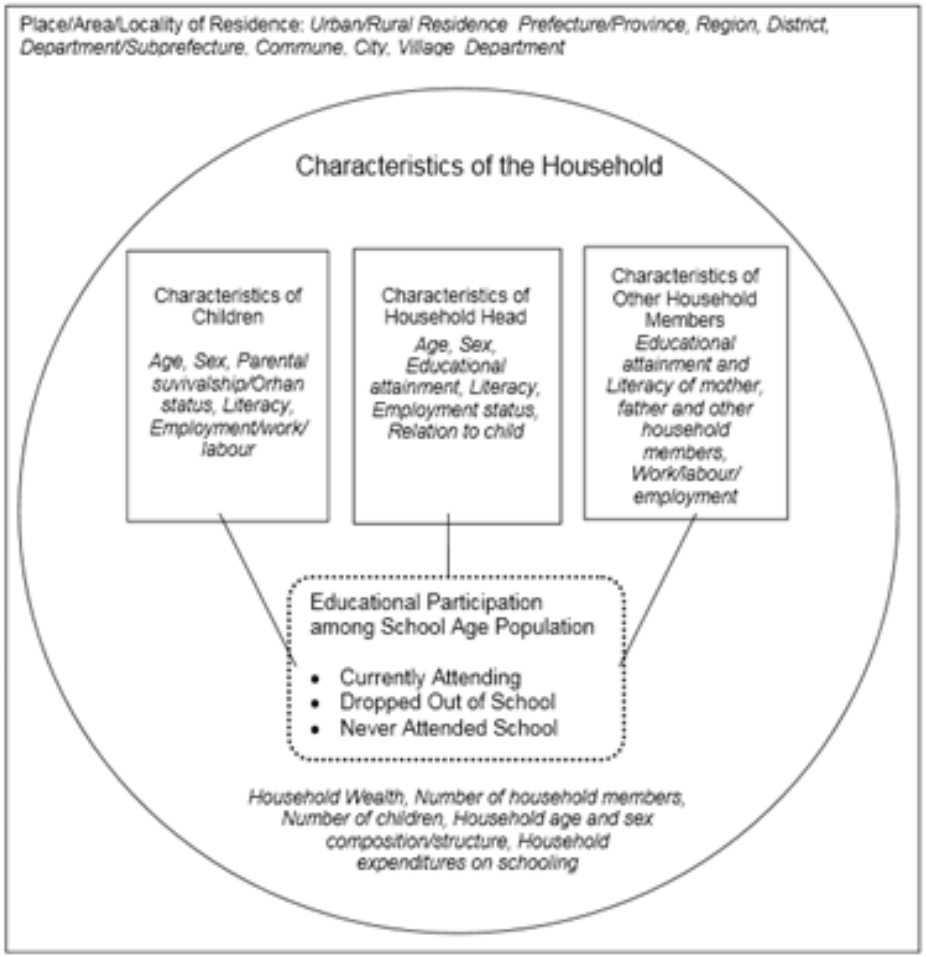
d) General population census or household surveys on questions other than those pertaining to education.

Framework for analysing education data

EMIS



HH Survey and Census



Data complementary

- Data from household surveys and censuses can complement the school-based data by providing information on aspects of children's background that may influence household schooling decisions.
- Censuses and multi-topic household surveys provide considerable information on household and individual household member characteristics, including data on children's school participation.
- These data on children's school enrollment or school attendance can then be analysed according to household and child characteristics

Why try to share information?

By opening channels for sharing information, local stakeholders will be encouraged to share other relevant information, including:

- **local population dynamics and issues especially about disadvantaged 'unreached' or 'Out of School Children'**
- **children and adults**
- **economic prospects and their impact on education**
- **changes in production and employment patterns**
- **social issues affecting the schools**
- **emerging needs for learning**
- **families with children facing difficulties in attending school**
- **Barriers to Education**

Comparing Education Indicators based on administrative statistics and Census and Survey data

- Administrative and household survey data sources measure educational participation in different ways
- Administrative data are based on school reporting at the beginning of the school year

HOWEVER

- Attending school is not necessarily the same as being enrolled in school.
- Ideally, household surveys collect data on enrolment and/or school attendance among a representative sample of children. Questions concerning children's school participation are typically asked of the head of household. Whereas……..
- A school census conducted at the beginning of the school year and a household survey collecting data at the end of the school year will likely find different rates of participation since some children will have enrolled in school without ever actually attending, and other children will have dropped out of school during the school year.

Education questions in Census

ASK P13 and P14 ONLY TO PERSONS 3 YEARS OF AGE AND OVER

P13 School Enrolment

1. Is this person currently attending school or pursuing other forms of education or training?
   1. Yes Full-time
   2. Yes Part-time
   3. No **> > GO TO P13.3**

2. What type of school is this person attending?
   1. Government or Public School
   2. Private or Church School

3. What is the highest level of schooling completed?
   0. Never been to school **> > GO TO P15**
   1. Pre-school / Kindergarten
   2. Primary school
   3. Secondary school (Form I - Form IV)
   4. Secondary school (Form V - Form VII)
   5. University
   6. Other post secondary
   7. Other

ASK Qs 10 – 19 ONLY TO THOSE 4 YEARS OF AGE AND OVER

(10) Are you currently attending an educational institution?	1. Yes *(Complete Q11 then go to Q14)* 2. No *(Go to Q12)*	(Write code)
(11) Which level of education are you currently attending?	1. ECE 2. Primary 3. Secondary (Yr 7 – Yr 11) 4. Secondary (yr 12 – Yr 13) 5. Tertiary 6. Other *(specify)*	(Write code)
(12) What is your highest level of schooling completed?	1. Primary 2. Secondary 3. Tertiary 4. No Formal Education	**(Write code)**
(13) What is your highest school qualification achieved?		*(E.g. certificate, diploma, BA, MA, etc)*

(14) What is the first language you learnt as a child and still understand?	1. Niuean 2. English	3. Niuean & English 4. Other *(specify)*			(Write code)
(15a) Can you speak Niuean?	1. Yes *(Go to Q. 15b)* 2. No 3. Just a little *(Go to Q. 15b)*	(Write code)	**15b) And how often do you speak it?**	1. Never 2. Not very often 3. Often 4. All the time	(Write code)
(16) Can you understand Niuean?	1.Yes *(Go to Q. 17a)* 2. No (Go to Q.18a) 3. Don't Know *(Go to Q. 17a)*				(Write code)

(17a) Can you read and write a simple sentence in Niuean?	1.Yes *(Go to Q. 17b)* 2. Just a little *(Go to Q.17b)* 3. No	(Write code)	**17b) And how often do you use it?**	1. Never 2. Not very often 3. Often 4. All the time	(Write code)
(18a) Can you read and write a simple sentence in English? *(Complete and go to Q. 20)*	1.Yes 2. Just a little 3. No	(Write code)	**18b) And how often do you use it?**	1. Never 2. Not very often 3. Often 4. All the time	(Write code)

D15. Is this person currently attending any formal ***educational institution***? *(Tick appropriate box)*	1. ☐ Full time *(Go to D16a)* 2. ☐ Part time *(Go to D16a)* 3. ☐ Left school *(Go to D16b)* 4. ☐ Never been *(Go to D18)*	☐
D16. a. What is the level of education this person is attending? *(Go to D17)*		☐☐
b. What is the highest level of education this person has completed?		☐☐
D17. ***For persons who have completed study at the tertiary or vocational level.***		
a. What is the main field of study this person has completed? *(State main field of study i.e. BA (Economics), Diploma (Motor Mechanic), Certificate (Primary Teaching), etc)*		☐☐☐☐
b. What is the name and location of the institution where this study was completed?		☐☐

13. SCHOOL ATTENDANCE		At school(AS), left school(LS), never been to school(NB)
14. EDUCATIONAL ATTAINMENT (qualification)		eg. Class 1-9,Form 1-7, Cert, Dip, Deg, Masters, PhD
15. IN WHAT AREA /FIELD/SUBJECT		accounting, education, science,economics, carpentry, OR none

Standardised survey module for Education

S1.3 - EDUCATIONAL STATUS (4+ years)

10300) Please provide the educational status of every member of this household aged 4 years and older.

[HM]	Have you ever attended a formal education institution?	Never attended: Why have you never attended school (main reason)?	Are you attending school now?	Already left school: Why have you left school (main reason)?	Already left school: What was the highest level/grade you have completed?	Currently attending school: What level/grade are you currently attending?	Currently attending school: Type of school	obs
	1.Yes ► 10303 2.No	code 10302 ► next [HM]	1.Yes ► 10306 2.No	code 10304	code 10305 ► next [HM]	code 10306	1. Government / 2. Private 3. Others (obs)	
10101	10301	10302	10303	10304	10305	10306	10307	10399
01	___	___	___	___	___	___	___	___
02	___	___	___	___	___	___	___	___
03	___	___	___	___	___	___	___	___
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09	___	___	___	___	___	___	___	___
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18	___	___	___	___	___	___	___	___
19	___	___	___	___	___	___	___	___
20	___	___	___	___	___	___	___	___
21	___	___	___	___	___	___	___	___
22	___	___	___	___	___	___	___	___

code 10302: never attended
1. Too young
2. School fees
3. Distance to travel
4. Family problems
5. Disability
6. Parents did not want
7. Other (obs)

code 10304: reason left
1. Completed desired schooling
2. Poor academic progress
3. No further schooling
4. Too expensive
5. Too far away
6. Find a job
7. Had to help at home
8. Personal reasons
9. Other reason (obs)

code 10305 : Highest level achieved
30. None completed
31. Preschool/ Kindergarten
01 to 11. 1st to 11th grade
12. High school graduate
14. Some college, no degree
15. AS -Occupational Program
16. AS -Academic program
17. Bachelor's degree
18. Master's degree
19. Prof. school degree
20. Doctorate degree
21. Other (obs)

code 10306 : Current level of school
31. Preschool/ Kindergarten
01 to 12. 1st to 12th grade
14. College
15. AS -Occupational Program
16. AS -Academic program
17. Bachelor's degree
18. Master's degree
19. Prof. school degree
20. Doctorate degree
21. Other (obs)

1.05

S3.1.2 - Education Identification

Reference period: last 12 months

30130) **Apart from the expenses mentioned as part of scholarship benefits**, did anyone from this household pay for any other school related items/services indicated below, either for a person in this household or someone else in a different household, in the last 12 months?

Yes ☐ (indicate expenses below) No ☐ (Go to S3.2.1)

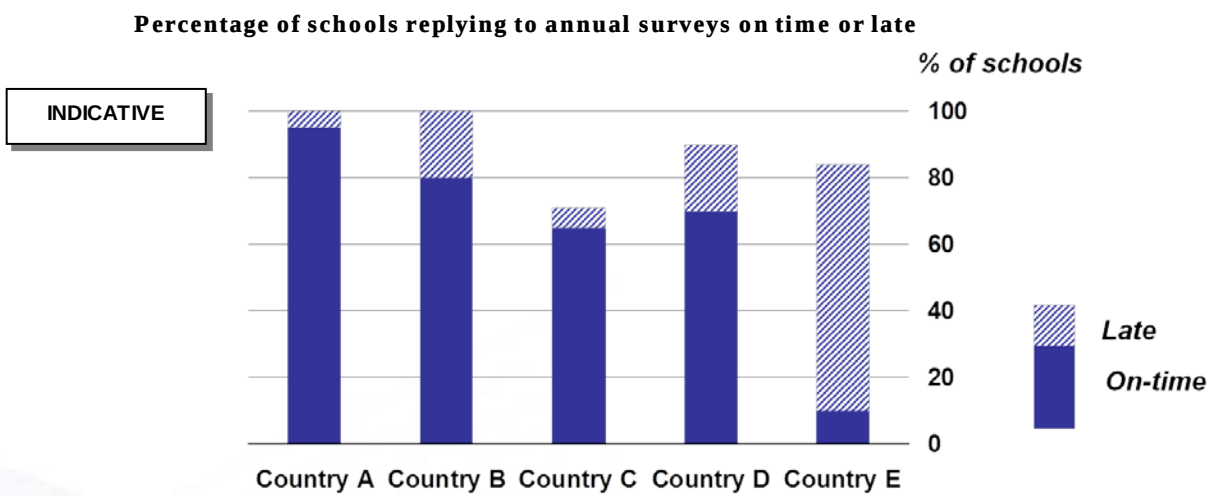
Don't forget expenses of persons listed in S1.6

Line Number/ HH Member [HM]	Tick "X" for the beneficiary of the expenditure during the past 12 months: Tuition: Elementary / Preschool	Tuition: High school	Tuition: COM-FSM	Tuition: Other Tertiary	Boarding	School Uniform	Text Books Exer. Books Stationary	Activity Expenses	Caps, Gown and Diploma	Tutoring	obs
expense code	1	2	3	4	5	6	7	8	9	10	
30131	30132	30133	30134	30135	30136	30137	30138	30139	30140	30141	30149
01	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
02	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
03	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
04	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
05	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
06	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
07	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
08	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
09	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
10	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
11	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
12	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
13	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
14	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
15	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
16	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
17	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
18	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
19	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
20	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
21	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
22	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
60	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___
90	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	___

3.03

Key Challenges – facing the use of education statistics in Ministries of Education

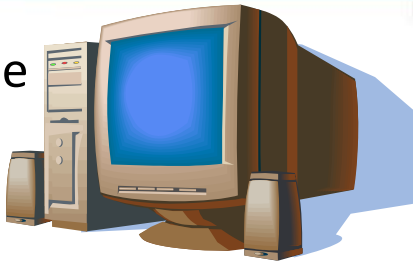
- **Late receipt of surveys from schools** due to remoteness of schools, which makes it difficult to reach them (physical transport) and communicate with them.



- **Capacity and resource challenges with EMIS teams, including their operations in the field**
- **Low coverage response rates, incomplete returns and unresolved quality issues**, which leads ministries and EMIS teams to delay publication to enable data quality to be improved. This compromises timeliness of data release.

Key Challenges – facing the use of education statistics in Ministries of Education

There is no common IT system in use across the region, and the scope and nature of these systems vary significantly.



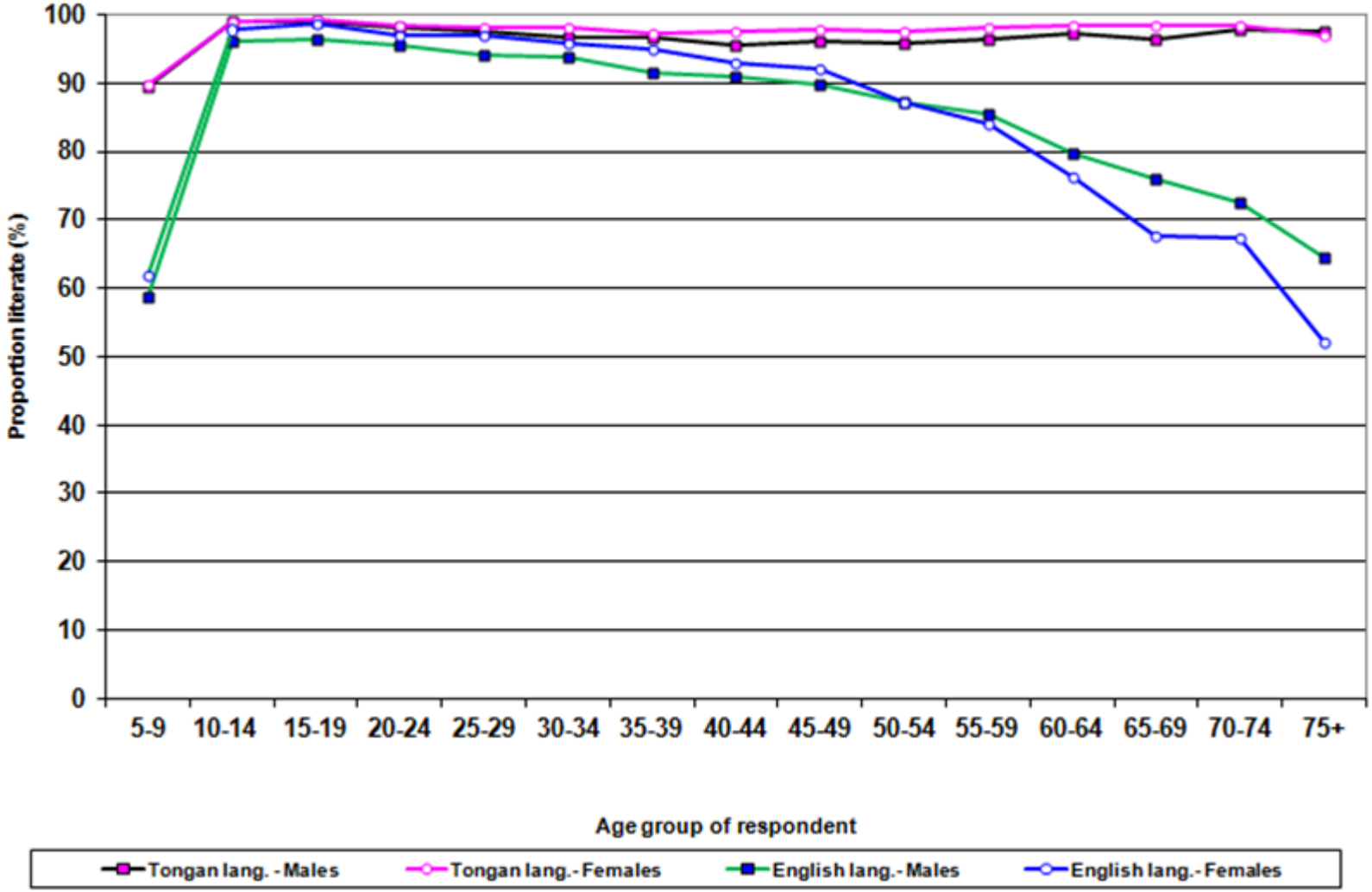
- Lack of a **coordinated approa**ch to support EMIS in the Pacific.
- Low **quality** of data and **incomplete coverage** and **delay** in reporting
- **Demand** for data (to be applied to policy-making/planning)
- **Transforming data into information** and how to use it in policy and decision making
- Inadequate resources
- Delayed data release
- Inaccurate data because of technical reasons
- Distorted data because of administrative data use
- **Lack of user-friendly publications**
- Lack of **analysis**
- **Lack of feedback** to data providers

What education data can we extract from Census?

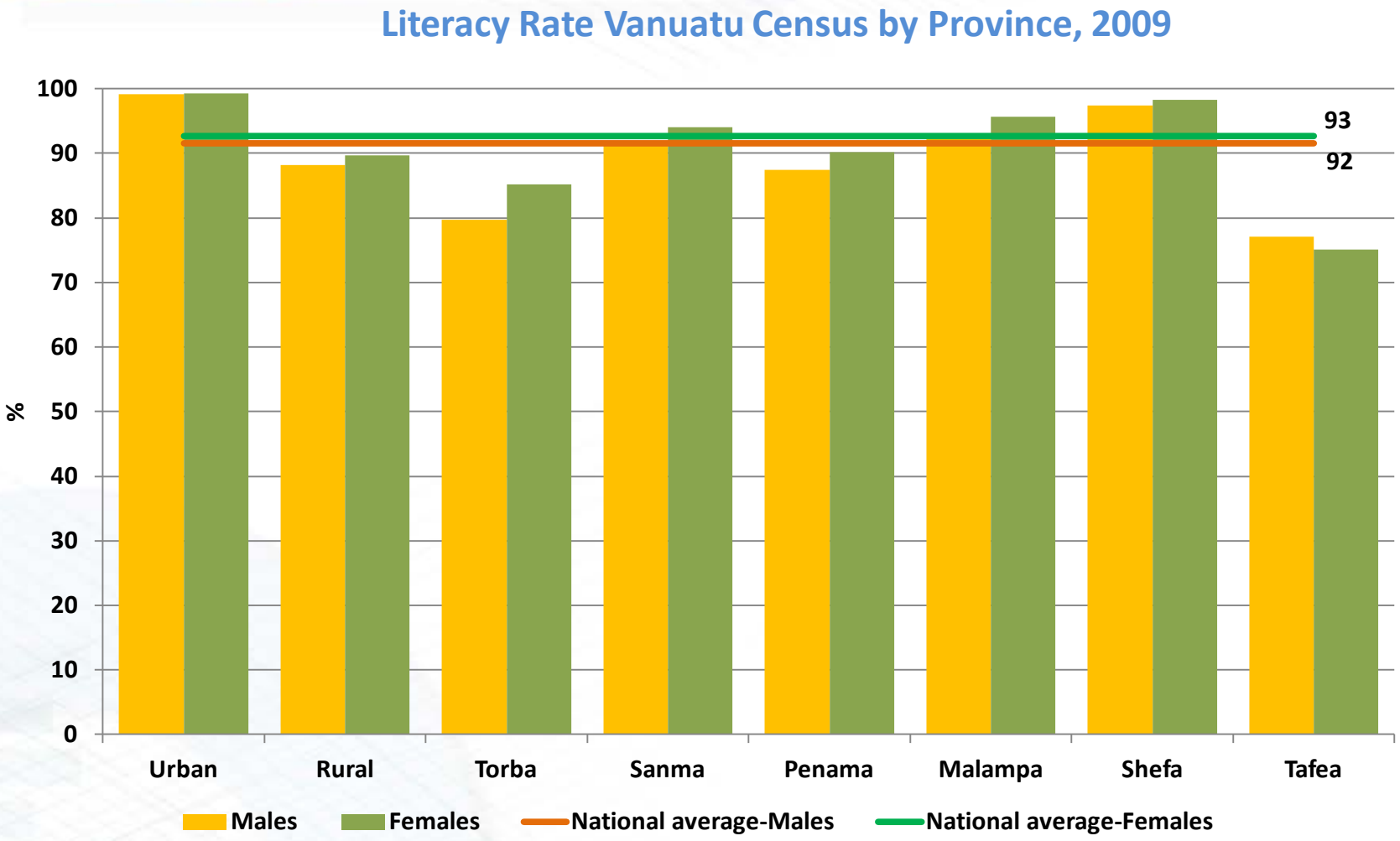
- Adult literacy rates youth literacy rate
- Enrolment ratios-age, gender, urban/rural pop Educational attainment by gender (Net Enrolment Rate, Gross Enrolment Rate)
- Current education statistics and trends (preschool, primary and secondary enrolments)
- Highest educational level attained of population 14 years and over
- Estimated out of school children

What education data can we extract from Census?

Figure 36: Population aged 6 and older by sex and whether literate in Tongan or English (in %), Tonga: 2011

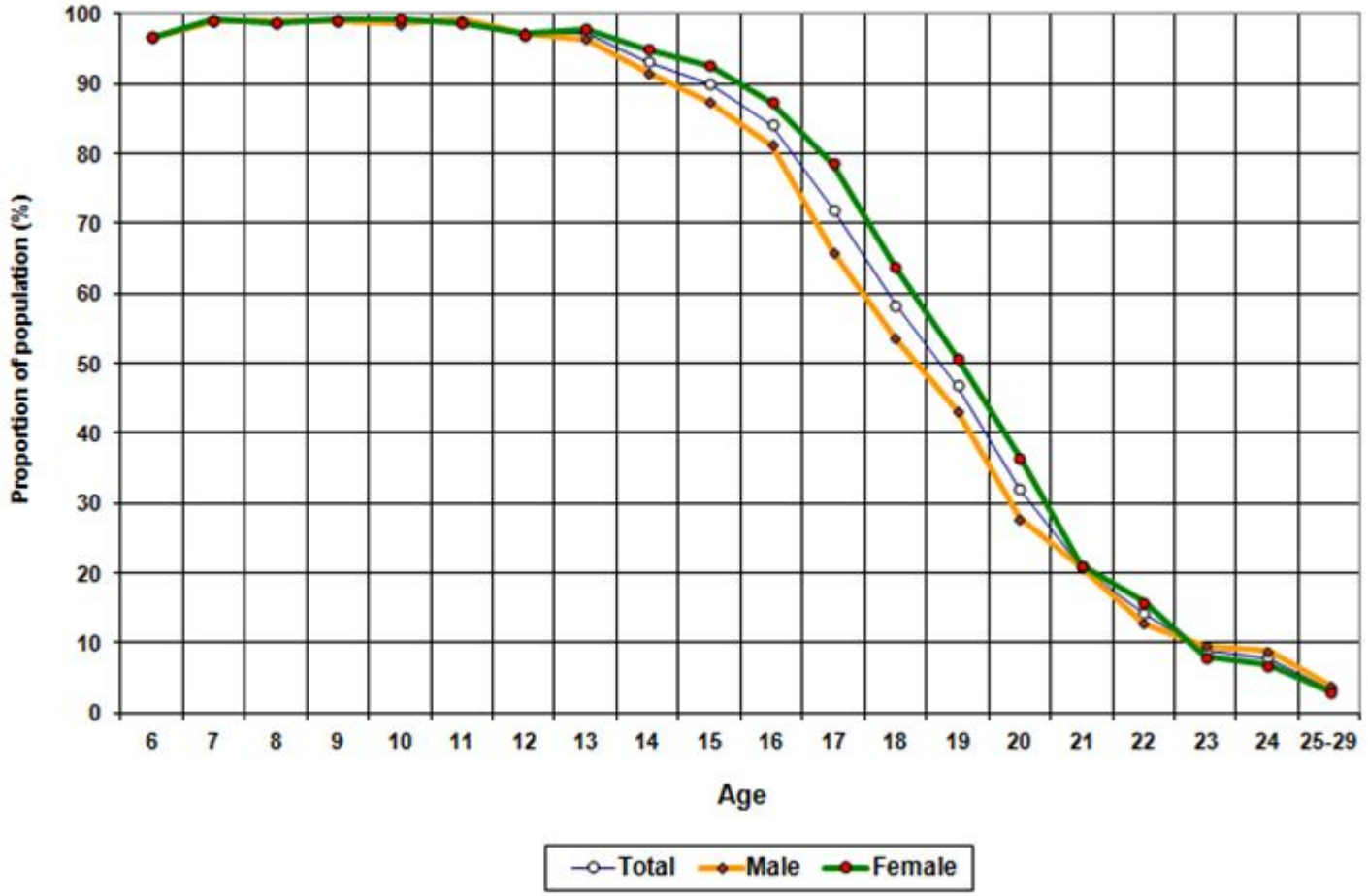


What education data can we extract from Census?



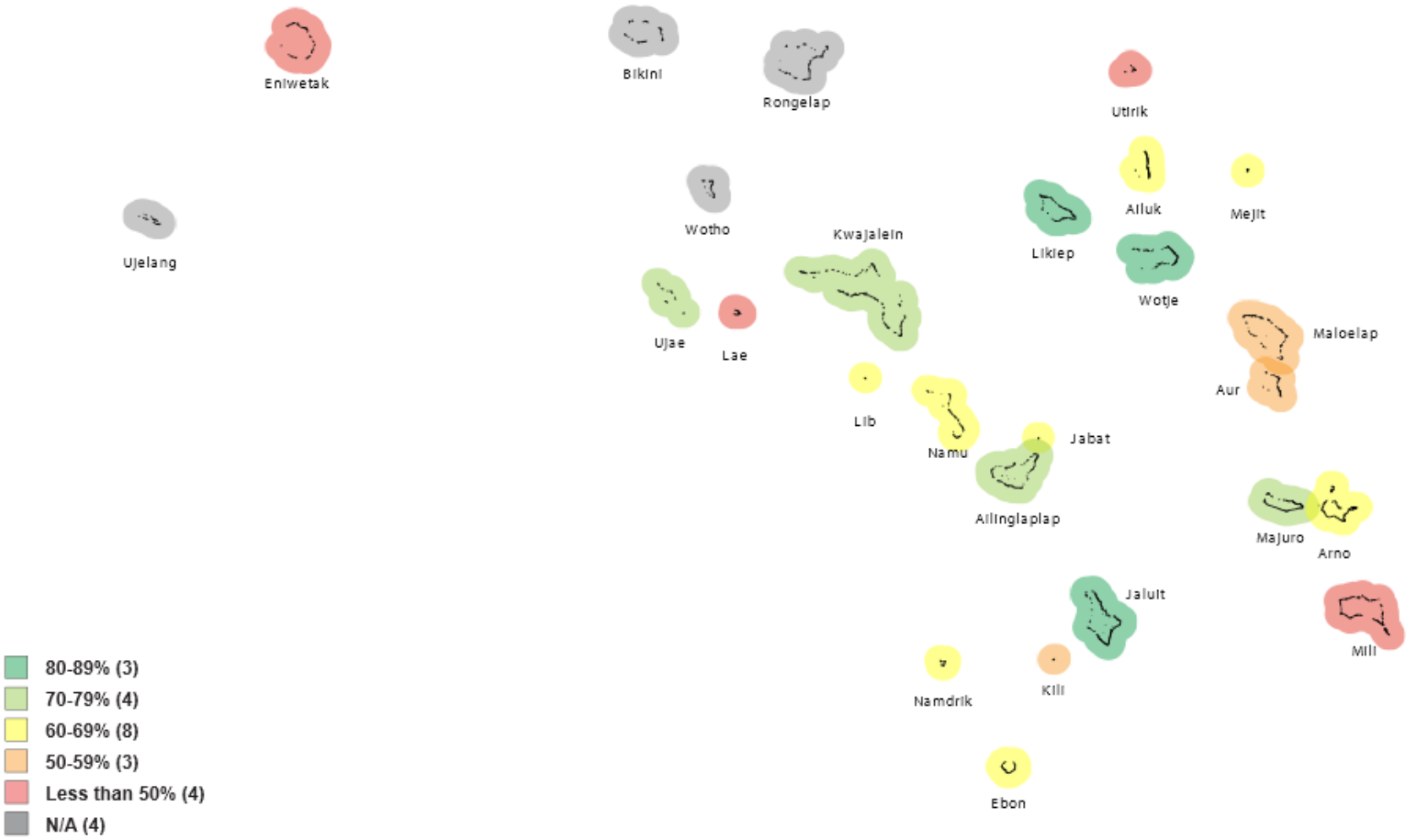
What education data can we extract from Census?

Figure 31: Population aged 6 and older (by sex) attending school, Tonga: 2011



Geographic disparities in access to secondary education across atoll islands

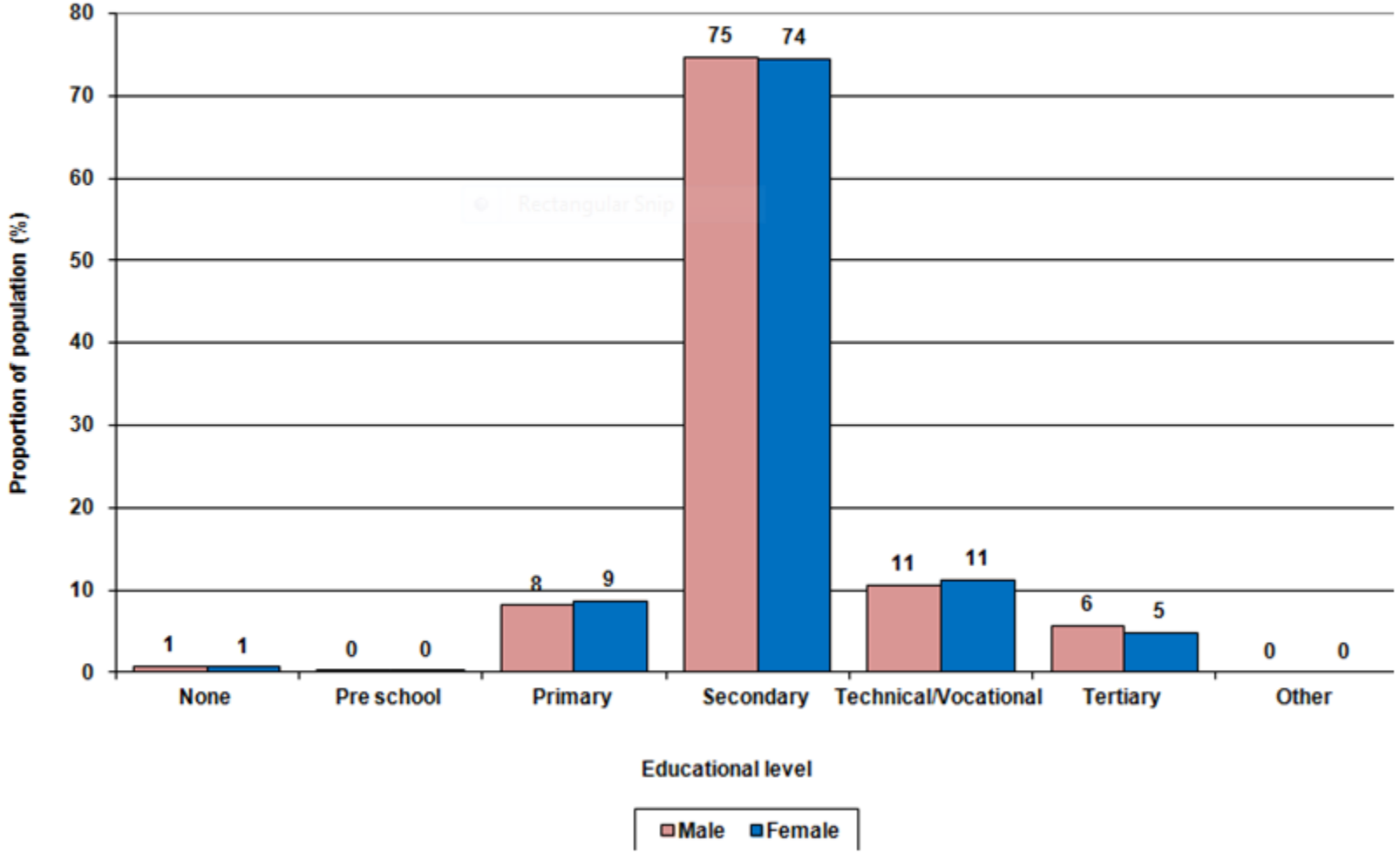
Percentage of children aged 14-18 years attending school by atoll island, 2011

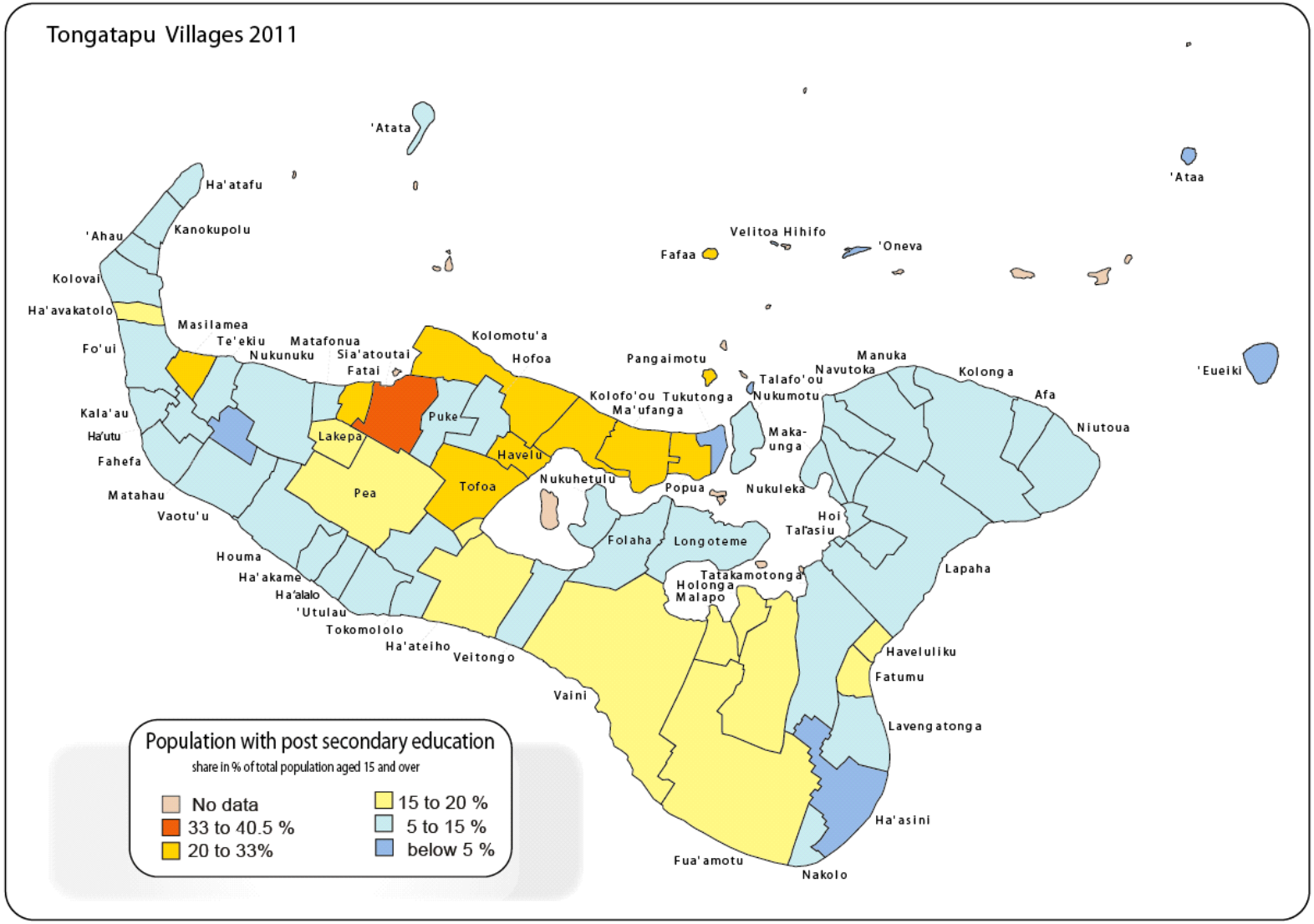


Source: 2011 RMI Census of Population and Housing, EPPSO

What education data can we extract from Census?

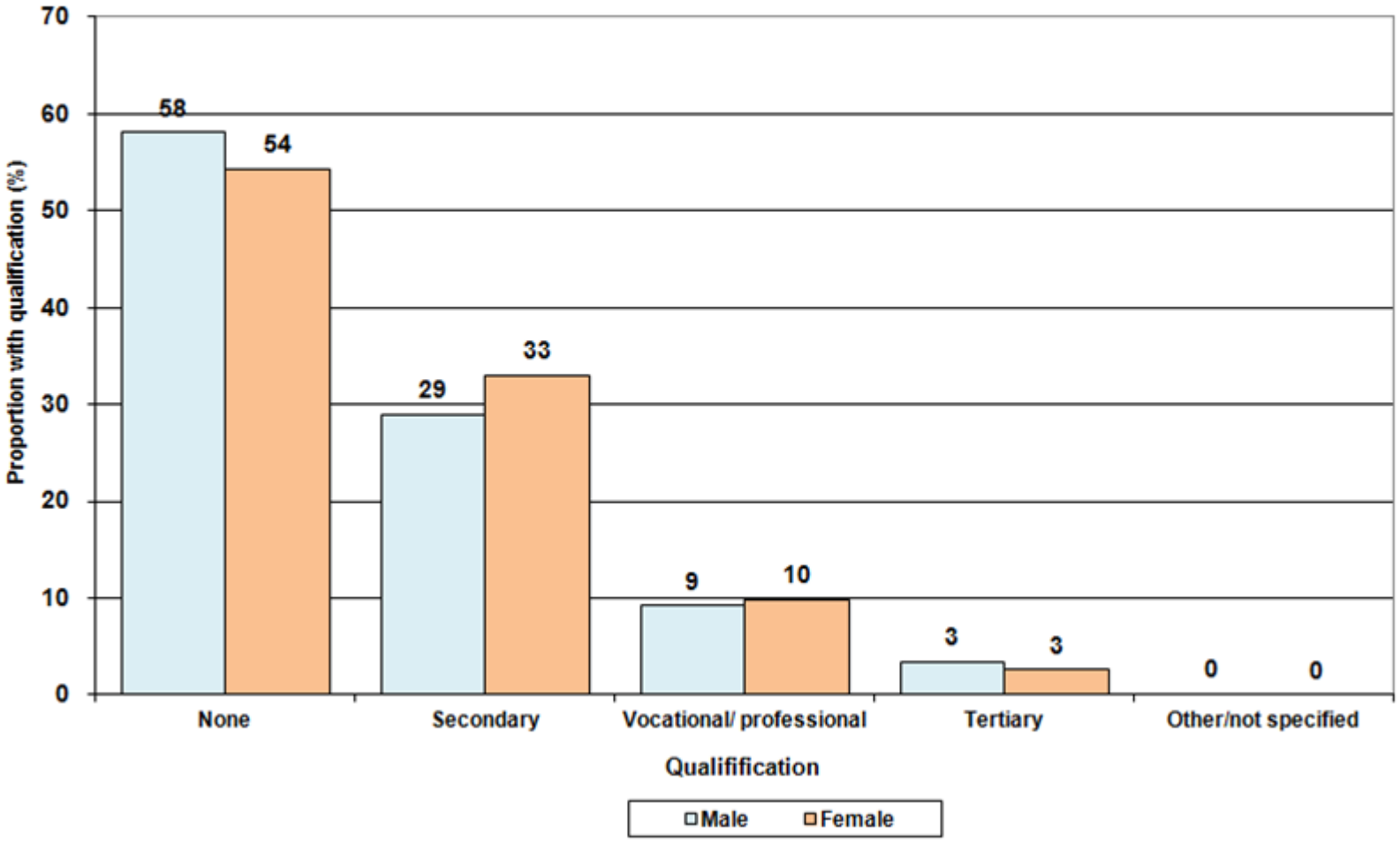
Figure 33: Population aged 15 and older by sex and educational attainment (in %), Tonga: 2011




Tongatapu Villages 2011
'Atata
'Ataa
Ha'atafu
'Ahau
Kanokupolu
Velitoa Hihifo
'Oneva
Fafaa
Kolovai
Ha'avakatolo
Masilamea
Te'ekiu
Matafonua
Kolomotu'a
Fo'ui
Nukunuku
Sia'atoutai
Hofoa
Pangaimotu
Manuka
Navutoka
Kolonga
'Eueiki
Talafo'ou
Fatai
Afa
Kolofo'ou
Tukutonga
Nukumotu
Kala'au
Ma'ufanga
Puke
Niutoua
Maka-
unga
Ha'utu
Lakepa
Havelu
Fahefa
Nukuhetulu
Tofoa
Pea
Popua
Nukuleka
Matahau
Hoi
Vaotu'u
Ta'asiu
Folaha
Longoteme
Houma
Lapaha
Ha'akame
Tatakamotonga
Holonga
Ha'alalo
Malapo
'Utulau
Tokomololo
Haveluliku
Ha'ateiho
Veitongo
Fatumu
Vaini
Lavengatonga
Ha'asini
Fua'amotu
Nakolo
Population with post secondary education
share in % of total population aged 15 and over
No data
33 to 40.5 %
20 to 33%
15 to 20 %
5 to 15 %
below 5 %

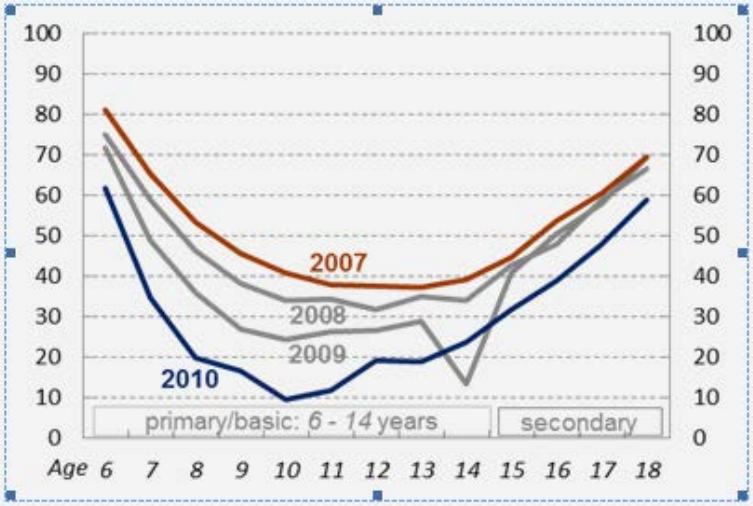
What education data can we extract from Census?

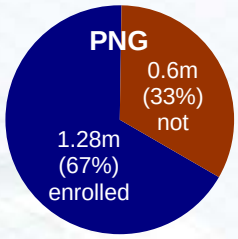
Figure 36: Population aged 15 and older by sex and educational qualification (in %), Tonga: 2011



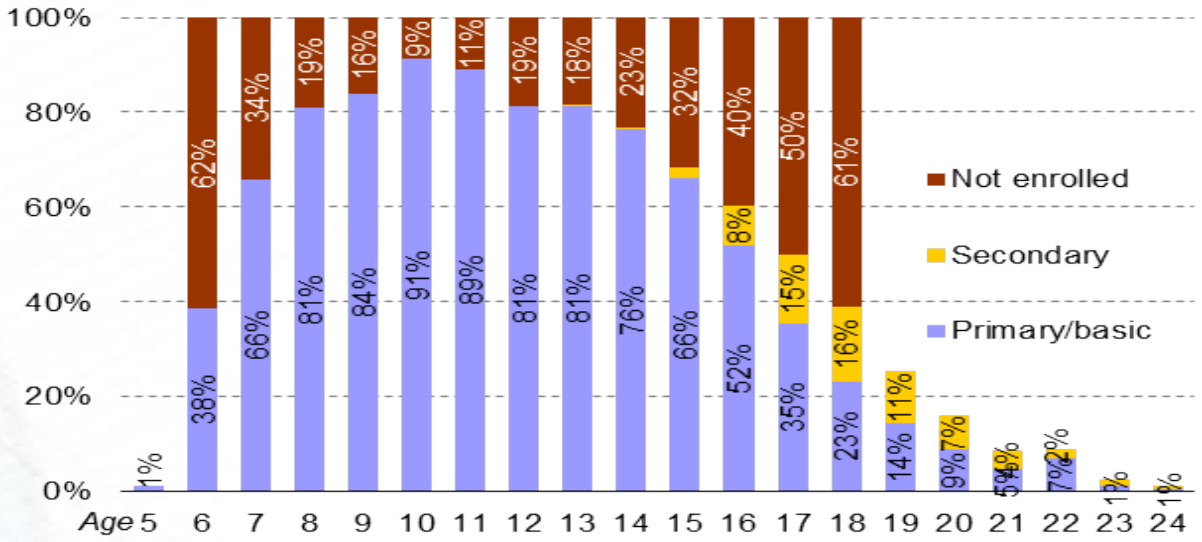
What education data can we extract from Census? Out of school Analysis

Bringing together recent school survey and population census data provides new evidence on children out of school in PNG and the Pacific to give a consolidated profile of who is out of school.

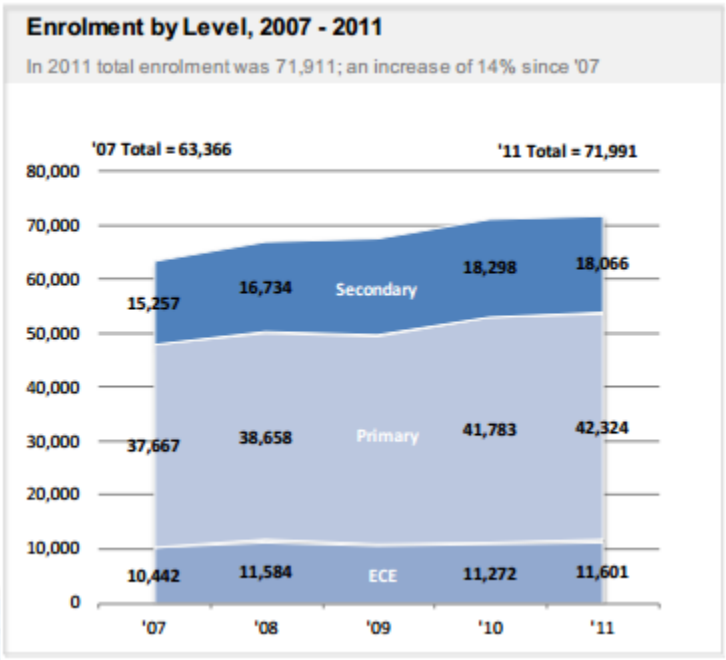


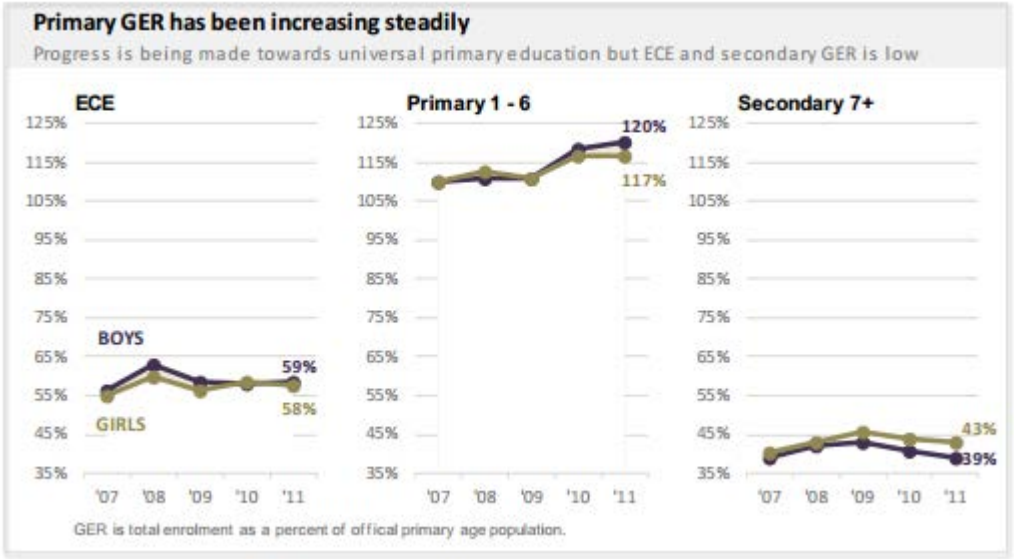


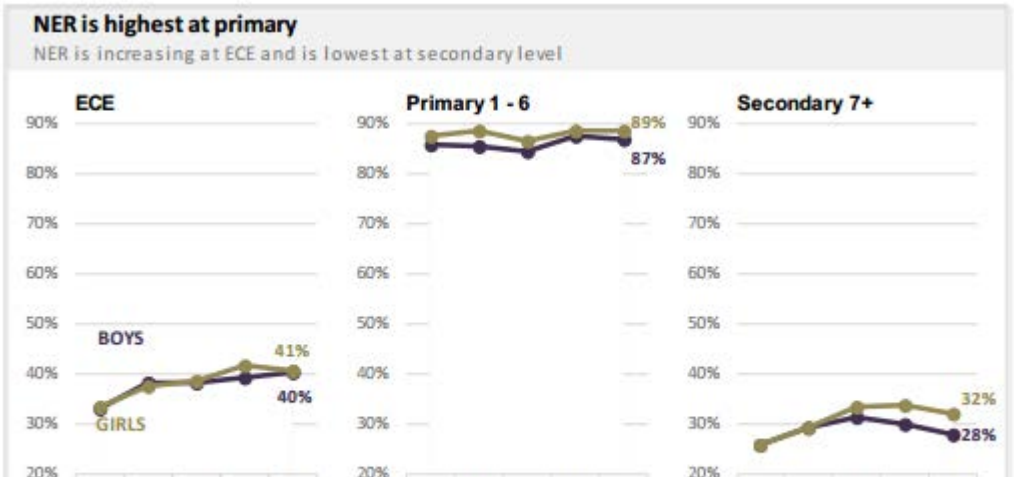
Of PNG's 1.9 million school-age children, 33 per cent are not enrolled.

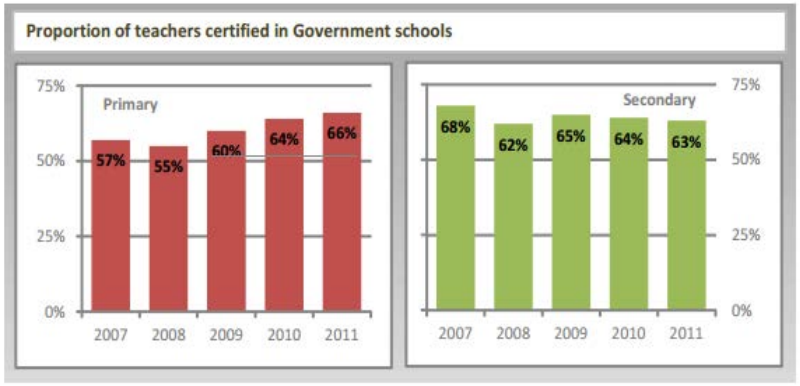


What kind of data can we get from Administrative sources?

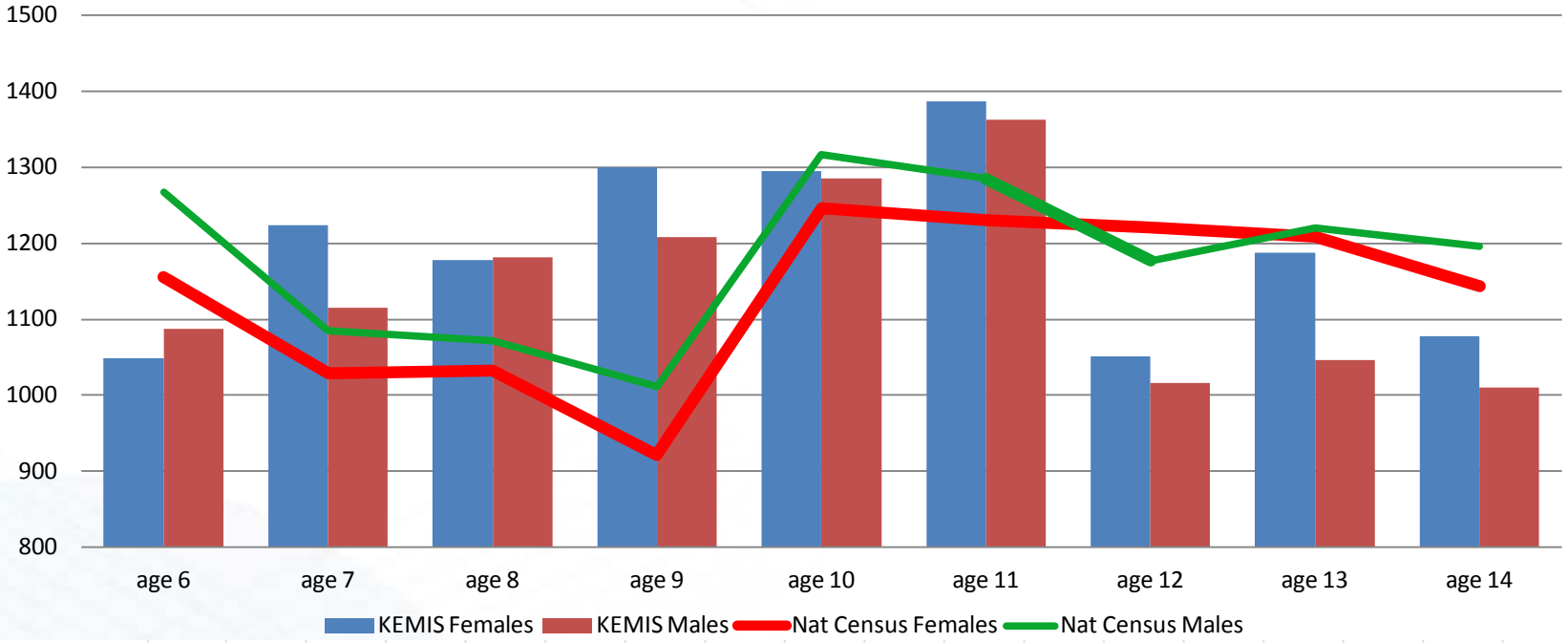








Comparison between Education data (EMIS) and Census Population



	age 6	age 7	age 8	age 9	age 10	age 11	age 12	age 13	age 14	age 15	age 16	age 17	age 18	Total 6 to 11	Total 12 to 14	Total 15 to 18
KEMIS Females	1049	1224	1178	1300	1295	1387	1051	1187	1078	784	793	635	382	7433	3316	2594
KEMIS Males	1087	1115	1182	1208	1285	1362	1016	1046	1010	689	661	502	322	7239	3072	2174
KEMIS All Persons	2136	2339	2360	2508	2580	2749	2067	2233	2088	1473	1454	1137	704	14672	6388	4768
Nat Census Females	1155	1029	1033	922	1246	1230	1221	1209	1144	1085	1041	1060	1113	6615	3574	4299
Nat Census Males	1267	1085	1072	1011	1316	1285	1177	1220	1196	1182	1052	1092	1240	7036	3593	4566
National Census All persons	2422	2114	2105	1933	2562	2515	2398	2429	2340	2267	2093	2152	2353	13651	7167	8865
													Gap	-1021	779	4097	3855

Comparison of Census Data and EMIS Data of 2011 by age, sex and

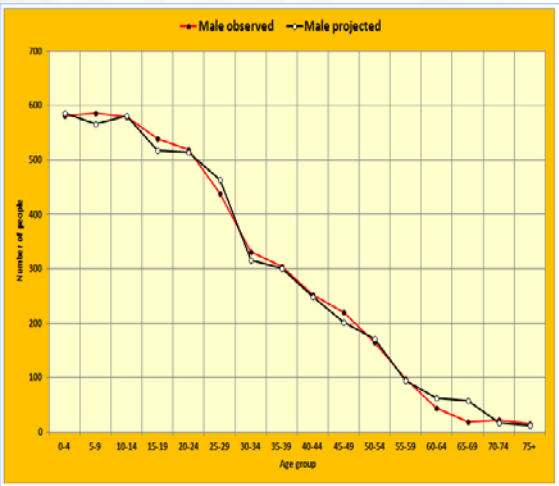
	Census			EMIS				
Age	**Total**	**Male**	**Female**	**Age**	**Male**	**Female**	**Total**	**Difference**
5 years	1,775	941	834	5	571	548	1119	656
6 years	2,499	1,296	1,203	6	1337	1210	2547	-48
7 years	2,609	1,323	1,286	7	1386	1295	2681	-72
8 years	2,561	1,350	1,211	8	1398	1302	2700	-139
9 years	2,522	1,288	1,234	9	1357	1196	2553	-31
10 years	2,490	1,315	1,175	10	1349	1170	2519	-29
11 years	2,646	1,359	1,287	11	1062	992	2054	592
12 years	2,342	1,250	1,092	12	738	721	1459	883
13 years	2,325	1,227	1,098	13	941	954	1895	430
14 years	2,249	1,194	1,055	14	949	985	1934	315
15 years	2,276	1,159	1,117	15	904	905	1809	467
16 years	2,441	1,251	1,190	16	934	871	1805	636
17 years	2,111	1,085	1,026	17	847	733	1580	531
18 years	2,106	1,103	1,003	18	597	531	1128	978
19 years	1,987	1,048	939	19	293	337	630	1,357
20 years	1,811	934	877	20	106	146	252	1,559

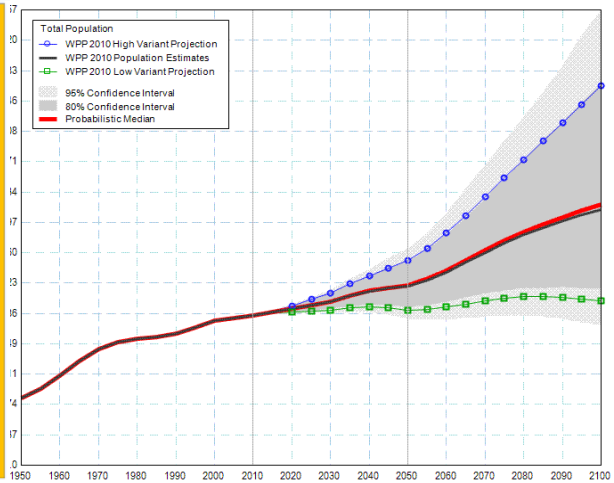
Production of school age population projections

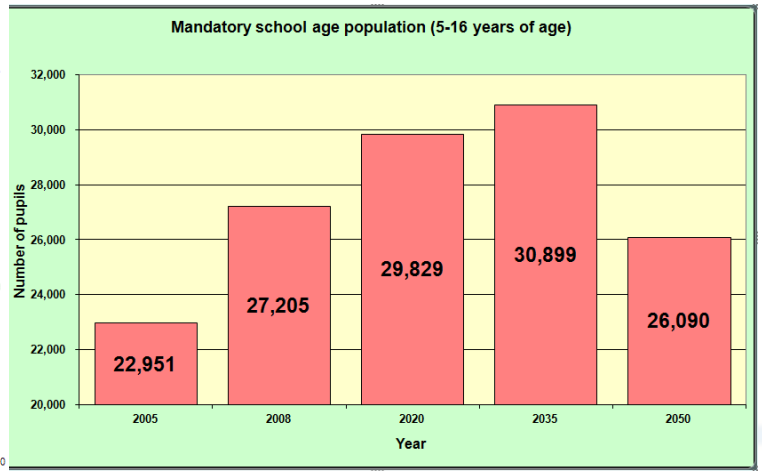
Education ministries require robust of school age population projections by single year of age and gender for national and sub- national level.

It is important that any effort to improve EMIS data quality and analysis incorporates up-to-date and reliable age-sex population projection data given its application in a number of calculations of MDG indicators.

One of the most important tasks to undertake revolves around ensuring that student data (sourced from EMIS) is aligned with individual age-sex population data at the smallest possible level of detail (derived from demographic models ands analysis using population census data as the base).







What kind of data can we get from Administrative sources?

Age by Grade a key piece of information for planners

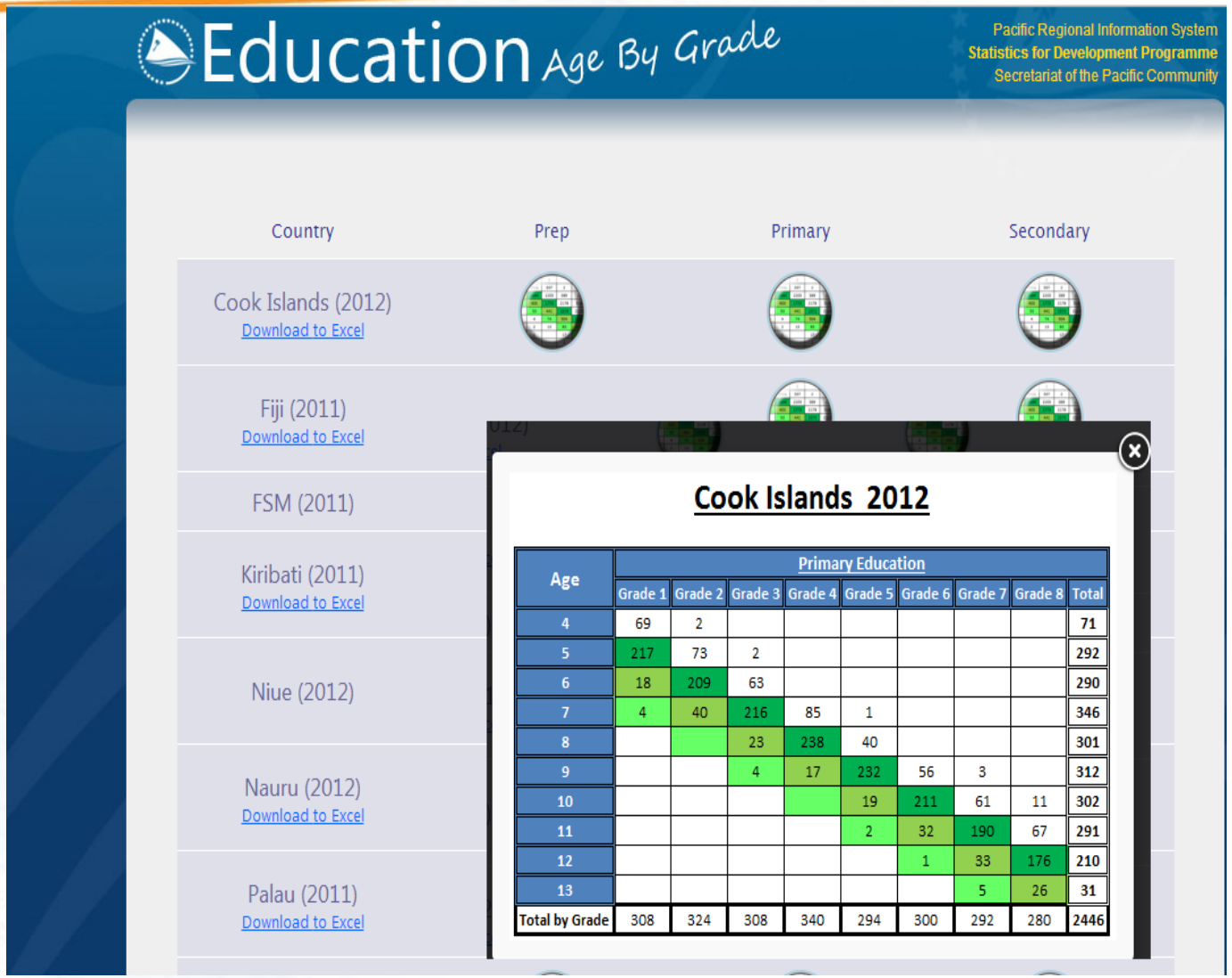
Example 2. Sample of reference table

Enrolment by age, grade and sex

Age	Grade 1		Grade 2		Grade 3		Grade 4		Grade 5		Grade 6		Grade 1-6		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Total
Below 6	3	0	1	0	0	0	0	0	0	0	0	0	4	0	4
6 Years	66	46	89	76	7	3	2	0	0	0	0	0	164	125	289
7 Years	32	45	123	99	12	4	22	12	13	2	0	0	202	162	364
8 Years	22	32	48	44	86	69	13	9	3	4	0	0	172	158	330
9 Years	12	28	32	21	65	34	103	87	23	34	0	0	235	204	439
10 Years	8	1	12	8	15	3	87	65	124	99	0	0	246	176	422
11 Years	0	0	2	2	11	15	22	43	22	56	2	0	48	116	164
12 Years	0	0	1	3	2	0	12	4	11	6	64	23	88	36	124
Above 12	0	0	0	0	1	0	0	1	1	4	45	37	47	42	89
Total Enrolment	143	152	308	253	199	128	261	221	402	205	111	60	1424	1019	2443

What kind of data can we get from Administrative sources?

Age by Grade a key piece of information for planners



http://www.spc.int/nmdi/education/agebygrade.aspx

Exercise calculation of Net Enrolment Rate

Net primary enrolment rate in primary education is the number of children of official primary school age who are enrolled in primary education as a percentage of the total children of the official school age population.

Definition

Goal: Goal 2. Achieve universal primary education

Target: Target 2.A: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Indicator Name: **2.1 Net enrolment ratio in primary education**

Net Enrolment Rate

$$\frac{\text{Students enrolled by school age}}{\text{Population of school age}} \times 100$$

Using age by grade table from http://www.spc.int/nmdi/education/agebygrade.aspx
And SPC population projections by single year of age and gender

Extract the relevant data needed to calculate Net Enrolment rate for your country