APPENDIX

A. Data structure

The data were gathered and entered into Microsoft Access database file called dengue mdb. There were created two main tables with household and container. Otherwise there were attribute tables. The relationships between tables were as follows.

The data in the household table consisted of identification of survey form, house number, village number, subdistrict areas, district areas, religion, type of village (transmission/non-transmission), member in house, member age 0-5 years, member age 6-15 years, drinking water source, washing water source, drinking water renewal, and washing water renewal. The data records were as follows.
<table>
<thead>
<tr>
<th>ID</th>
<th>House m</th>
<th>Village</th>
<th>Sub-district</th>
<th>District</th>
<th>Region</th>
<th>Type</th>
<th>Age</th>
<th>Age</th>
<th>d_water</th>
<th>wash_water</th>
<th>w_water</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>46/3</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>46/1</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>i</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>37/1</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>20/1</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>18/2</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>18/3</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>40/1</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The data in container table consisted of identification of survey form, identification of container, container type, larvae in container, lid, container material, place, size of container. The data records were as follows.

<table>
<thead>
<tr>
<th>id</th>
<th>id_num</th>
<th>Con_type</th>
<th>Larvae</th>
<th>Lid</th>
<th>material</th>
<th>place</th>
<th>size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

A query was used to create the data of the household can be obtained by this SQL command, as follows.

```
FROM Household;
```

After that these data were transferred to the dataset daphana.maw in the Notepad Editor for analysis of time of occurrence.
A query was used to create the data of the container, obtained by a SQL command, as follows.

```
SELECT Household.ID, Household.district, Household.religion, Household.type_vill,
    container.id_con, container.con_type, container.larvae, container.lid,
    container.material, container.place, container.size
FROM Household INNER JOIN container ON Household.ID = container.id;
```

After that these data were transferred to the datafile `data1.num` in Notepad for the analysis of time of occurrence.

**B. Programming preliminary result and statistical modeling**

Matlab version 5 and Asp (McNeil, 1998) were used for graphical presentation and statistical analysis. The programs were as follows.

**Program house.m** to create figures in chapter 3

```
% Program created the Figure 3.1
getfile dbfdatal
y=getnum;
describe his=1

% Stratify by variable for calculated percentage distribution of determinant variables
% over households that were shown in Table 3.1
% drinking source
setvar y=8 x=8
stratify
gennum res=1

% washing source
setvar y=9 x=9
stratify
gennum res=1

% drinking water renewal
setvar y=10 x=10
stratify
gennum res=1
```
% washing water renewal
setvar y=11 x=1;
getnum res=1

% Program created for Figure 3.2
getfile data1
y=getnum;
describe his=1

Stratify by variable for calculated percentage distribution of determinant variables over containers that were shown in Table 3.2

% container type
setvar y=6 x=6;
stratify ;
getnum res=1

% laeave
setvar y=7 x=7;
stratify ;
getnum res=1

% id
setvar y=8 x=8;
stratify ;
getnum res=1

% material
setvar y=9 x=9;
stratify ;
getnum res=1

% place
setvar y=10 x=10;
stratify ;
getnum res=1

% container size
setvar y=11 x=11;
stratify ;
getnum res=1

Program plots odds ratio compare water consumption between transmission and non-transmission areas, Buddhist and Muslim.
Association between household determinants and stratification variable in Table 3.6
and Table 3.8

getfile uhffdata
y=getnum;

% goup data for some categories had very few number
other=y(,8)=""I y(,8)=4 ly(,8)=5;
y(,other,8)=3+0*y(other,8);
other(,9)=31 y(,9)=41 y(,9)=5;
y(,other,9)=2+0*y(,other,9);
other(,10)=41 y(,10)=5;
y(,other,10)=4+0*y(,other,10);
other(,11)=41 y(,11)=5;
y(,other,11)=4+0*y(,other,11);
pnum(y);

lab=getlab;
lab[8]="1 Well '2 Tap water '3 others';
lab[9]="1 Well '2 Tap water '3 Others';
lab[10]="1 Every day '2 2-3 days '3 4-6 days '4 Others';
lab[11]="1 Every day '2 2-3 days '3 4-6 days '4 Others';
putlab(id);

Compare household determinants between transmission and non-transmission that
were shown in Table 3.6

% drinking source
setvar y=8 'x=8' 8;
stratify ;
group res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

% washing source
setvar y=9 'x=9' 9;
stratify ;
group res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8 trim=0

% drinking water renewal
setvar y=10 'x=10';
stratify ;
group res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8
% washing water renewal
setvar y=11 x=11 ;
stratify ;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

Compare household determinants between Buddhist and Muslim that were shown in Table 3.8

% drinking source
setvar y=8 x=3 8 ;
stratify ;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

% washing source
setvar y=9 x=3 9 ;
stratify ;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

% drinking water renewal
setvar y=10 x=3 10 ;
stratify ;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

% washing water renewal
setvar y=11 x=3 11 ;
stratify ;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

Program association between container determinants and stratification variable in Table 3.7 and Table 3.9

gsfile data1 ;
y=setnum ;
% group data for some categories had very few number
plant(y,6)=3 \mathrm{y}(y,6)=4 \mathrm{y}(y,6)=5 \mathrm{y}(y,6)=6; 
\mathrm{y}(\text{plant},6)=340*\mathrm{y}(\text{plant},6); 
\text{un}(\mathrm{y},6)=7; 
\text{y}(\text{un},6)=440*\mathrm{y}(\text{un},6); 
\text{alum}(\mathrm{y},9)=4 \mathrm{y}(\mathrm{y},9)=5; 
\mathrm{y}(\text{alum},9)=440*\mathrm{y}(\text{alum},9); 
\text{putnum}(\mathrm{y}); 
\text{lab}=\text{getlab}; 
lab[6]=\{1 \text{'drink'} , 2 \text{'wash'} , 3 \text{'others'} , 4 \text{'unsafe'}\}; 
lab[9]=\{1 \text{'Clay'} , 2 \text{'Cement'} , 3 \text{'Plastic'} , 4 \text{'Other'}\}; 
\text{ylabel}(\text{lab}); 

\begin{verbatim}
Compare container determinants between transmission and non-transmission that were shown in Table 3.7

\% container type
\text{setvar} \text{y}=6 \ x=4 \ 6; 
\text{stratify} ; 
\text{getnum} \text{res}=1 
\text{setvar} \text{y}=1 \ x=2 \ \text{res}=1 
\text{orplot} \text{res}=1 \ \text{log}=1 \ \text{font}=9 
\% lacte
\text{setvar} \text{y}=7 \ x=4 \ 7; 
\text{stratify} ; 
\text{getnum} \text{res}=1 
\text{setvar} \text{y}=2 \ x=1 \ \text{res}=1 
\text{orplot} \text{res}=1 \ \text{log}=1 \ \text{font}=9 
\% lid
\text{setvar} \text{y}=8 \ x=4 \ 8; 
\text{stratify} ; 
\text{getnum} \text{res}=1 
\text{setvar} \text{y}=2 \ x=1 \ \text{res}=1 
\text{orplot} \text{res}=1 \ \text{log}=1 \ \text{font}=9 
\% material
\text{setvar} \text{y}=9 \ x=4 \ 9; 
\text{stratify} ; 
\text{getnum} \text{res}=1 
\text{setvar} \text{y}=1 \ x=2 \ \text{res}=1 
\text{orplot} \text{res}=1 \ \text{log}=1 \ \text{font}=9 
\% place
\text{setvar} \text{y}=10 \ x=4 \ 10; 
\text{stratify} ; 
\text{getnum} \text{res}=1
\end{verbatim}

\text{setvar} \text{un}[10]='x=3 \ x=9';
setvar y=1 x=4 res=1
orplot res=1 log=x font=9

% container size
setvar y=11 'x=8 11';
stratify;
getnum res=1
setvar y=1 x=4 res=1
orplot res=1 log=x font=9

Compare container determinants between Buddhist and Muslim that were shown in
Table 3.9

% container type
setvar y=6 'x=3 6';
stratify;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=x font=8

% larvae
setvar y=7 'x=3 7';
stratify;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=x font=8 trim=0

% lid
setvar y=8 'x=3 8';
stratify;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=x font=8 trim=0

% material
setvar y=9 'x=3 9';
stratify;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=x font=8

% place
setvar y=10 'x=3 10';
stratify;
getnum res=1
setvar y=1 z=4 x=2 res=1
orplot res=1 log=x font=8
% container size
setvar y=1 'x=3 11';
stratify ;
getnum res=1;
setvar y=1 z=4 x=2 res=1
orplot res=1 log=1 font=8

Program ch4a.m to create Figures 4.1-4.6

getfile data1;
y=getnum;

% group data for some categories had very few number
plantexy(:,6)=3 1 y(:,6)=1 1 y(:,6)=-5 1 y(:,6)=6;
y(plant,6)=4+0.5*y(plant,6);
un=y(:,6)=-7;
y(un,6)=4+0.5*y(un,6);
alu=ylm(:,9)=4+1 y(:,9)=-5
ylm(:,9)=4+0.5*y(lum(:),9);
putnum(y);

lab=getlab;
lab[6] = \{'1 drink' 2 wash' 3 others' 4 unused'};
lab[9] = \{'1 Clay' 2 Cement 3 Plastic' 4 Others'};
putlab(lab);

y=1;
setvar y=7 x=2 3 4 6 8 9 10 11 7;
stratify ;
getnum res=1

% Figure 4.1, odds ratio larval? & Container type Adjust lid
setvar y=11 x=9 5 res=1
title('DHF risk factors: adjusted for lid')

% Figure 4.2, odds ratio larval? & Material between lid
setvar y=6 x=11 x=9 5 res=1
orplot strat=1 res=1 log=1 font=9

% Figure 4.3, odds ratio larval? & place between container
setvar y=7 x=11 x=9 5 res=1
orplot strat=1 res=1 log=1 font=9
title('DHF risk factors: adjusted for lid')
setvar y=x8 z=[1 1 9 9 '5' 5] res=1
orplot strat=1 res=1 log=1 font=9
title(DHF risk factors: adjusted for lid)

Program ci4cm to create Figures 4.6-4.7

getfile 'wa1';
y = getnum;
% recode use
% combine plant, flowerpot, ant trap, and other use
plant = y(:,6)>3 & y(:,6)<7;
y(plant,6) = 3+0* y(plant,6);
unused = y(:,6)==7;
y(unused,6) = 4+0*y(unused,6);

% recode material and lid into 5 categories
lid = y(:,8)==1;
claycement = y(:,9)==1 y(:,9)==2;
plastic = y(:,9)==3;
other = y(:,9)>3;
corlid = claycement & lid;
cemolid = claycement & ~lid;
plid = plastic & lid;
pnolid = plastic & ~lid;
y(pnolid,9) = 0*y(plid,9)+1;
y(pnolid,9) = 0*y(pnolid,9)+2;
y(cemolid,9) = 0*y(cemolid,9)+2;
y(other,9) = 0*y(other,9)+5;
putnum(y);
fn = getfn;
fn[9] = 'material and lid';
putfn(fn)
lab = getlab;
lab[9] = ['1, plastic' '2, plastic non-lid' '3, others' '4, clay/cem lid' '5, others'];
putlab(lab);

% Figure 4.5
setvar y=7 x=[9 4 3 2]
leg ref=[1 1 1 1 2]

% Figure 4.6
setvar y=7 x=[9 6 4 3 2];
log ref=1 1 1 1 2

% Figure 4.7
setvar y=x=[9 6 4 2],
log ref=1 1 1 2

Program ch4cm to create Figures 4.8

go file data1;
y = genssm;

% recode use
% combine plant, flowerpot, ant trap, and other use
plant = y(:,6)>3 & y(:,6)<7;
y(plant,6) = 3+0*y(plant,6);
unused = y(:,6)==7;
y(unused,6) = 4+0*y(unused,6);
pptuun(y);

% recode material and lid into 5 categories
lid = y(:,8)==1;
claycement = y(:,9)==11 y(:,9)==2;
plastic = y(:,9)==3;
other = y(:,9)==3;
celid = claycement & lid;
cconolid = claycement & ~lid;
plid = plastic & lid;
plolid = plastic & ~lid;
y(ploid,9) = 0*y(ploid,9)+1;
y(plolid,9) = 0*y(plolid,9)+2;
y(celid,9) = 0*y(celid,9)+3;
y(cconolid,9) = 0*y(cconolid,9)+4;
y(other,9) = 0*y(other,9)+5;

% recode container type and place into 12 categories
inside = y(:,10)==1;
cover = y(:,10)==2;
outdoor = y(:,10)==3;
drink = y(:,5)==1;
wash = y(:,6)==2;
other = y(:,6)==3;
unused = y(:,6)==4;
drinkin = drink & inside;
drinkco = drink & cover;
drinkou = drink & outdoor;
washin = wash & inside;
washco = wash & cover;
washou = wash & outdoor;
otherin = other & inside;
otherco = other & cover;
otherou = other & outdoor;
unusedin = unused & inside;
unusedco = unused & cover;
unusedou = unused & outdoor;
y(drinkin,6) = 0*y(drinkin,6)+1;
y(drinkco,6) = 0*y(drinkco,6)+2;
y(drinkou,6) = 0*y(drinkou,6)+3;
y(washin,6) = 0*y(washin,6)+4;
y(washco,6) = 0*y(washco,6)+5;
y(washou,6) = 0*y(washou,6)+6;
y(othertin,6) = 0*y(othertin,6)+7;
y(otherco,6) = 0*y(otherco,6)+8;
y(otherou,6) = 0*y(otherou,6)+9;
y(unusecin,6) = 0*y(unusecin,6)+10;
y(unusecoco,6) = 0*y(unusecoco,6)+11;
y(unusecou,6) = 0*y(unusecou,6)+12;
putnum(y);
fn = getfn;
fn{9} = 'material and lid';
fn{10} = 'cont type and place';
putfn(fn)
lab = getlab;
lab{6} = ['1 drink inside' '2 drink eaves' '3 drink outdoors' '4 wash inside' '5 wash eaves&outdoors' '6 others' '7 unused'];
lab{9} = ['1 plastic lid' '2 plastic non-lid' '3 clay/cem lid' '4 clay/cem non-lid' '5 others'];
putlab(lab);
% Figure 4.8
setvar y=7 x=[6 9 4 2]
reg near=13 'rel=1 1 2'
Aedes Survey Form

ID No. ...........

Name of surveyor: ........................................

House Number: .... Village No.: .... Subdistrict: .... District: .... Pattani Province

Authority area: (1) Municipality (2) Semi Municipality (3) Rural

Member in house: ....... Age 0-5 years: ....... Age 6-15 years: .......

Drinking water source: (1) well (2) tap water (3) rain (4) carefe water (5) others: .......

Washing water source: (1) well (2) tap water (3) rain (4) carefe water (5) others: .......

Period of drinking water renewal: 
(1) every day (2) 2-3 days (3) 4-6 days (4) every week (5) other: .......

Period of washing water renewal: 
(1) every day (2) 2-3 days (3) 4-6 days (4) every week (5) other: .......

<table>
<thead>
<tr>
<th>Cost No</th>
<th>Lid Yes/No</th>
<th>Place In/Out</th>
<th>Drinking Larvae</th>
<th>Washing Larvae</th>
<th>Ant Trap</th>
<th>Flower Pot</th>
<th>Other Used</th>
<th>In used</th>
<th>Larvae</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>In</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>In</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td>Out</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

During 1 October 1997 - 30 September 1998 Period, No. of DHF patient: .......

age 0-5 years: ....... age 6-15 years: ....... more than 15 years: .......

Remarks: ........................................................................................................

........................................................................................................