VECTOR SURVEILLANCE IN NEW JERSEY

EEE, WNV, SLE, LAC, DENV, CHIK and ZIKV

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CDC WEEK 27: 3 July to 9 July, 2016

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Culiseta melanura and Eastern Equine Encephalitis

SITE/Boxes	Inland or Coastal	Historic Population Mean	Current Weekly Mean	Total Tested* (Collected)	Total Pools Tested* (Submitted)	EEE Isolation Pools	MFIR
Bass River (Burlington Co.)/5	**Coastal**	0.25	nd	0	0		
Green Bank (Burlington Co.)/25	**Coastal**	1.53	nd	2 (10)	2 (3)		
Corbin City (Atlantic Co.)/25	**Coastal**	0.61	0.24	45	6		
Dennisville (Cape May Co.)/50	**Coastal**	3.11	0.10	34	6		
Winslow (Camden Co.)/50	**Inland**	1.14	0.94	409	10		
Centerton (Salem Co.)/50	**Inland**	2.23	0.40	97	6		
Turkey Swamp (Monmouth Co.)/50	**Inland**	0.53	0.02	13 (14)	5 (6)		
Glassboro (Gloucester Co.)/50	**Inland**	0.57	0.12	66	6		

*Current week (in parentheses) results pending. ‡ corrected NC=no collection

Remarks: Currently, there are no reports of positive EEE pools in New Jersey. In 2015, the first detection of EEE in a pool of *Culiseta melanura* was collected at the Winslow resting box site on the 27th of July.

Traditional Resting Box Sites: 661 *Cs. melanura* from 41 pools have been tested for EEE, with 2 pools of 9 *Cs. melanura* to be tested. No positives have been detected. Statewide, 1395 *Cs. melanura* have been tested, with no positives. 5228 specimens from 10 other species have also been tested, with no reported positives.

	Additional *Cs. melanura* trapped by counties *traps with positives indicated in **BOLD.**				
County	**Trap types***	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Atlantic	Co_2, RB	9	72		
Burlington	Co_2	15	269		
Cape May	CDC, Co_2, GR, RB	30	62		
Cumberland	RB	2	8		
Middlesex	RB	17	295		
Ocean	Co_2, GR	8	23		
TOTAL		**81**	**729**		

Additional *Cs. melanura*: Counties maintain trap sites for *Cs. melanura* in other areas, using a variety of traps. No positives have been detected.

Species other than *Cs. melanura*	**Pools**	**Mosquitoes**	**Positives**	**MFIR**
Aedes cantator	15	41		
Aedes sollicitans	2	56		
Anopheles bradleyi	5	15		
Anopheles crucians	1	4		
Anopheles punctipennis	4	4		
Coquillettidia perturbans	27	386		
Culex erraticus	3	7		
Culex pipiens	256	3964		
Culex salinarius	65	695		
Culex sp.	20	56		
State Total	**398**	**5228**		

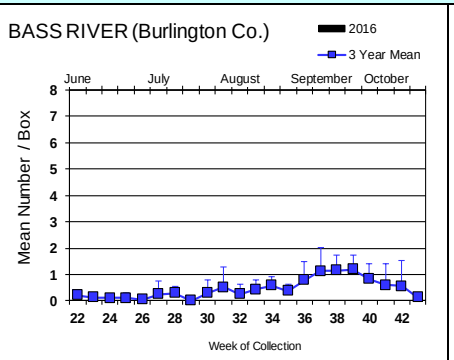
Additional Species: Ten additional species were tested for EEE. No positive pools have been detected.

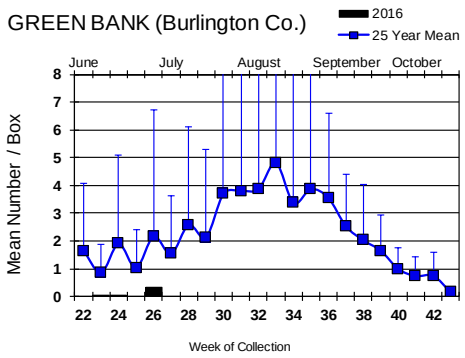
Horses and Humans: No positive horse or humans have been reported. Last year one positive horse was reported.

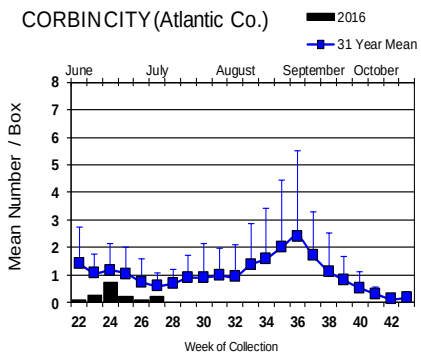
Horses and Vaccinations: The fate of unvaccinated equids reinforces the necessity of maintaining a vaccination schedule for arboviruses. For vaccination schedules recommended by the American Association of Equine Practices, see: http://www.aaep.org/vaccination_guidelines.htm

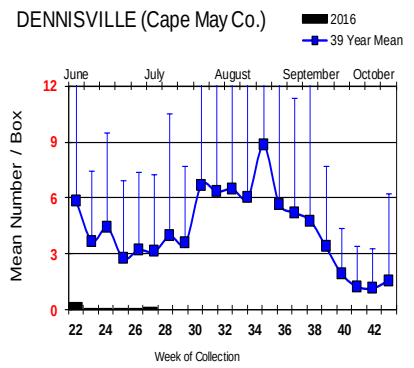
Culiseta melanura Population Graphs

Coastal

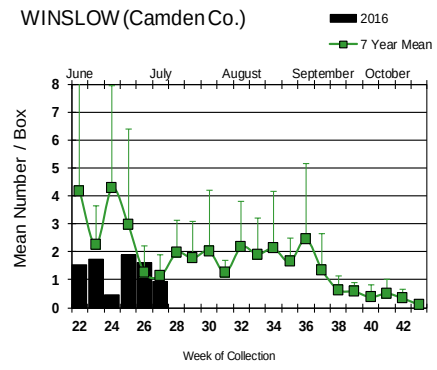


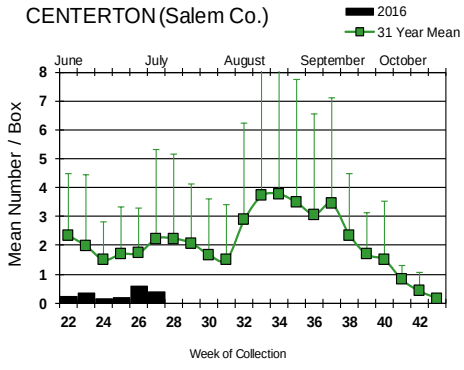


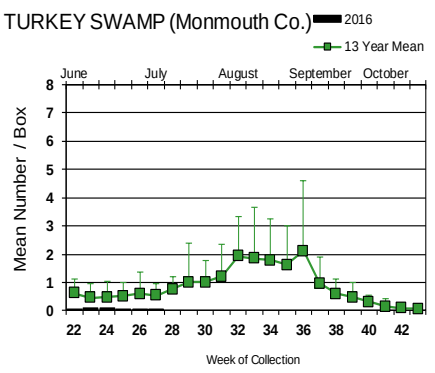


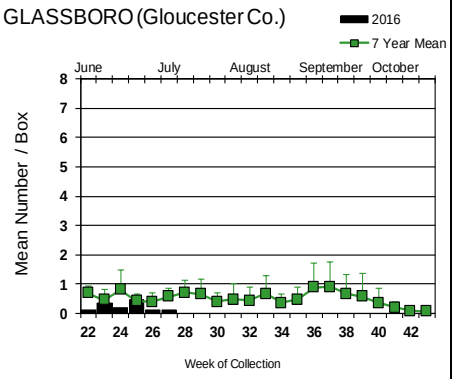


Inland









Currently, low or not significantly high numbers continue to be reported at all sites. No positive pools have been detected to date.

= Positive pool(s) detected (red = melanura, purple = other species).

EEE in US (2016 cumulative cases): (Black or Red = previous + new reported cases occurring)

- equine: FL(11) NC(1) SC(5) VA(1)
- mosquito pools:
- sentinel: FL(34) GA(2) TX(12)
- human:

West Nile Virus Positive Organisms in US, 2016

West Nile in US (2016 cumulative cases): Single black values indicate no change from previous week. Black values / red values equals previous week/New totals.
Note: Data reported by all states should be considered provisional and subject to change. Sources for this table can be found here.

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Alabama					
Alaska					
Arizona	0	8	0	0	8/17
Arkansas				0	0
California	372/436	433/607	7/12	1	0
Colorado					1
Connecticut		0			0
Delaware					
DC					
Florida		1	39	1	
Georgia		0			0
Hawaii					
Idaho	0	2/3		0	0
Illinois	2	23/54		0	1/2
Indiana	0	1/4		0	0
Iowa					
Kansas		0			0
Kentucky				0	
Louisiana					0
Maine		0			0
Maryland					
Mass.		3		0	0
Michigan					
Minnesota					
Mississippi		2			3/4
Missouri		0		0	0

	Birds	Mosquito Pools	Sentinels	Horses	Humans
Montana					
Nebraska	1	4/7		0	1
Nevada					
New Hampshire					
New Jersey		1		0	0
New Mexico					
New York		1/2			
North Carolina					
North Dakota	1/4	4		0	1
Ohio		1		0	0
Oklahoma		7			
Oregon	0	2	0	0	0
Pennsylvania	2	15/18			1
Rhode Island		0			
South Carolina					
South Dakota		2			1
Tennessee					
Texas		2/32		1	1/3
Utah		6			
Vermont					
Virginia					
Washington	0	6/11		0	0
West Virginia					
Wisconsin	1	0		0	0
Wyoming					0

* Can include other species (e.g., dogs, cows) reported positive.

Protocol: New Jersey Department of Health (NJDH Public Health Environmental and Agricultural Laboratories, PHEAL) and the Cape May County Department of Mosquito Control tests mosquito pools using RT-PCR Taqman techniques.

Mosquito Species Submitted and Tested for West Nile Virus Testing through 9 July 2016

Species	Pools	Mosquitoes	Positives	MFIR
Aedes albopictus	133	356		
Aedes atropalpus	9	24		
Aedes canadensis canadensis	19	372		
Aedes cantator	21	226		
Aedes grossbecki	1	1		
Aedes japonicus	164	628		
Aedes sollicitans	2	56		
Aedes taeniorhynchus	2	15		
Aedes triseriatus	52	108		
Aedes vexans	10	151		
Anopheles barberi	2	2		
Anopheles bradleyi	6	23		
Anopheles crucians	2	9		
Anopheles punctipennis	10	17		
Anopheles quadrimaculatus	15	93		
Coquillettidia perturbans	32	452		
Culex erraticus	4	11		
Culex pipiens	260	4133		
Culex restuans	402	5104		
Culex salinarius	67	767		
Culex spp.	481	19672	1	0.051
Culex territans	5	47		
Culiseta melanura	124	1397		
Psorophora ferox	1	1		
Grand Total	**1824**	**33665**	**1**	**0.030**

Remarks: To date, 1824 pools of 33,665 mosquitoes from 22 species have been tested, with one positive pool detected. This first positive pool of *Culex* Mix was collected on 14 June in Monmouth County.

Humans, Horses and Wild Birds: No humans or horses have been reported. Last year 26 humans and one horse were positive. Onset for humans began in early August and the onset for the horse case began in September. For further information, see http://www.state.nj.us/health/cd/westnile/techinfo.shtml.

Birds are no longer routinely tested in New Jersey.

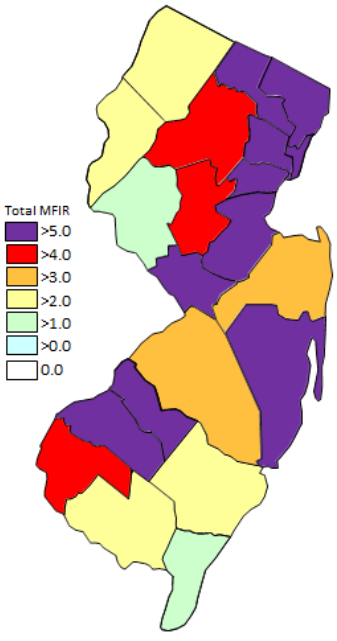
WNV Results by County through 9 July 2016

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**40**	**960**		
	Aedes albopictus	2	7		
	Aedes vexans	3	126		
	Coquillettidia perturbans	6	45		
	Culex pipiens	3	148		
	Culex restuans	2	47		
	Culex salinarius	2	72		
	Culex spp.	7	398		

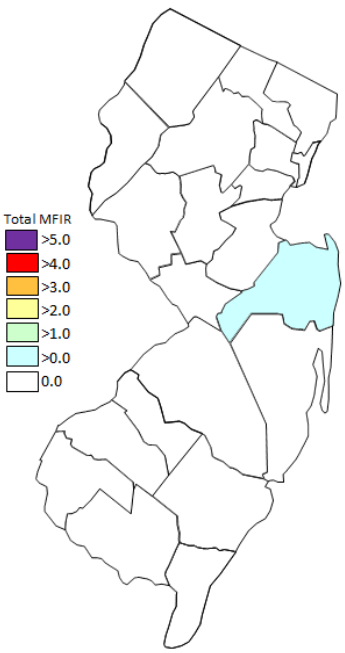
	Culiseta melanura	15	117		
Burlington		**61**	**2273**		
	Aedes albopictus	3	25		
	Aedes atropalpus	1	9		
	Aedes japonicus	4	86		
	Aedes triseriatus	4	10		
	Anopheles barberi	1	1		
	Anopheles crucians	1	4		
	Culex salinarius	8	263		
	Culex spp.	24	1606		
	Culiseta melanura	15	269		
Camden		**17**	**613**		
	Aedes japonicus	2	8		
	Culex spp.	5	196		
	Culiseta melanura	10	409		
Cape May		**944**	**8273**		
	Aedes albopictus	33	44		
	Aedes atropalpus	8	15		
	Aedes canadensis canadensis	5	8		
	Aedes cantator	15	41		
	Aedes japonicus	103	230		
	Aedes sollicitans	1	3		
	Aedes taeniorhynchus	1	1		
	Aedes triseriatus	30	64		
	Aedes vexans	2	3		
	Anopheles bradleyi	5	15		
	Anopheles punctipennis	3	4		
	Anopheles quadrimaculatus	13	91		
	Coquillettidia perturbans	15	309		
	Culex erraticus	2	6		
	Culex pipiens	256	3964		
	Culex restuans	340	3093		
	Culex salinarius	52	189		
	Culex spp.	18	49		
	Culex territans	5	47		
	Culiseta melanura	36	96		
	Psorophora ferox	1	1		
Cumberland		**15**	**344**		
	Aedes albopictus	1	1		
	Aedes japonicus	1	3		
	Aedes sollicitans	1	53		
	Aedes taeniorhynchus	1	14		
	Anopheles bradleyi	1	8		
	Anopheles crucians	1	5		
	Coquillettidia perturbans	1	7		
	Culex salinarius	5	243		
	Culex spp.	1	2		
	Culiseta melanura	2	8		
Essex		**16**	**53**		
	Aedes japonicus	2	5		

	Aedes triseriatus	1	1		
	Culex spp.	13	47		
Gloucester		**6**	**66**		
	Culiseta melanura	6	66		
Hudson		**17**	**834**		
	Culex spp.	17	834		
Hunterdon		**32**	**1183**		
	Culex spp.	32	1183		
Mercer		**69**	**2226**		
	Aedes japonicus	1	2		
	Culex pipiens	1	21		
	Culex restuans	57	1960		
	Culex spp.	10	243		
Middlesex		**83**	**3832**		
	Aedes albopictus	7	16		
	Culex spp.	58	3520		
	Culiseta melanura	18	296		
Monmouth		**143**	**1380**	**1**	**0.725**
	Aedes albopictus	63	216		
	Aedes canadensis canadensis	13	294		
	Aedes cantator	6	185		
	Aedes grossbecki	1	1		
	Aedes japonicus	8	17		
	Aedes triseriatus	4	10		
	Aedes vexans	3	18		
	Anopheles barberi	1	1		
	Anopheles punctipennis	6	12		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	2	2		
	Culex erraticus	1	4		
	Culex spp.	28	605	1	1.653
	Culiseta melanura	6	14		
Morris		**64**	**2423**		
	Aedes albopictus	1	2		
	Culex spp.	63	2421		
Ocean		**74**	**1235**		
	Aedes albopictus	13	29		
	Aedes canadensis canadensis	1	70		
	Aedes japonicus	15	56		
	Aedes triseriatus	4	8		
	Anopheles punctipennis	1	1		
	Coquillettidia perturbans	2	12		
	Culex restuans	1	2		
	Culex spp.	27	1032		
	Culiseta melanura	10	25		
Passaic		**80**	**2388**		

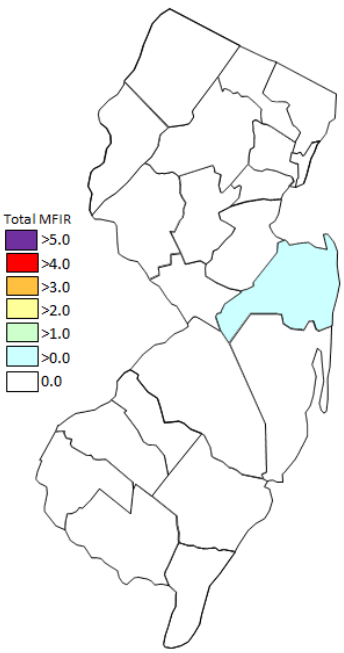
	Aedes albopictus	1	1		
	Aedes japonicus	19	90		
	Aedes triseriatus	1	1		
	Aedes vexans	2	4		
	Culex spp.	57	2292		
Salem		**66**	**571**		
	Aedes albopictus	9	15		
	Aedes japonicus	7	19		
	Aedes triseriatus	8	14		
	Anopheles quadrimaculatus	1	1		
	Coquillettidia perturbans	6	77		
	Culex erraticus	1	1		
	Culex restuans	2	2		
	Culex spp.	26	345		
	Culiseta melanura	6	97		
Somerset		**17**	**480**		
	Culex spp.	17	480		
Sussex		**40**	**1866**		
	Aedes japonicus	2	112		
	Culex spp.	38	1754		
Warren		**40**	**2665**		
	Culex spp.	40	2665		
Grand Total		**1824**	**33665**	**1**	**0.030**



Cumulative WNV activity in 2015.



WNV activity to 9 July 2016.



WNV activity last week, 2016.

Saint Louis Encephalitis (SLE) to 9 July 2016.

New Jersey will be primarily testing for SLE this year only when adjacent states show human activity (Cape May tests mosquitoes in the Cape May lab independently). SLE has had previous activity in New Jersey, most notably in 1964 and 1975 (CDC's SLE website), the latter prompting the surveillance reporting by Rutgers. SLE is a flavivirus and has a similar transmission pattern to West Nile, with *Culex* species as the predominant vectors.

Currently, there are no reported positive pools of SLE for 2016.

County	Species	Pools	Mosquitoes	Positives	MFIR
Burlington		**25**	**1607**		
	Anopheles barberi	1	1		
	Culex spp.	24	1606		
Cape May		**274**	**4013**		
	Culex pipiens	256	3964		
	Culex spp.	18	49		
Grand Total		**299**	**5620**		

La Crosse Encephalitis (LAC) to 9 July 2016.

New Jersey will be primarily testing for LAC this year only when adjacent states show human activity (Cape May tests mosquitoes in the Cape May lab independently). New Jersey has had 3 cases of this encephalitic disease since 1964 (see CDC's LAC website). The mortality is low but like other encephalitides, LAC can have both personal (lasting neurological sequelae) and economic impacts. LAC is a bunyavirus with a transmission cycle involving mosquitoes such as *Aedes triseriatus* and small mammals such as squirrels and chipmunks. LAC can not only infect *Aedes albopictus* but transovarial transmission was also demonstrated.
(Tesh and Gubler 1975 Laboratory studies of transovarial transmission of La Crosse and other arboviruses by *Aedes albopictus* and *Culex fatigans.* American Journal of Tropical Medicine and Hygiene 24(5):876-880).

Currently, there are no reported positive pools of LAC for 2016.

County	Species			Positives	MFIR
Burlington		**12**	**130**		
	Aedes albopictus	3	25		
	Aedes atropalpus	1	9		
	Aedes japonicus	4	86		
	Aedes triseriatus	4	10		
Grand Total		**12**	**130**		

Dengue (DENV) to 9 July 2016.

New Jersey will be selectively testing for DENV (including serotypes) this year. Dengue has not had a history of local transmission here in New Jersey, but each year, travelers can bring virus back from areas in the world with virus activity. This is significant as humans are NOT dead-end hosts and thus there is the potential for local transmission (i.e., New Jersey mosquitoes biting a sick person and then biting and transmitting the disease to someone else) to be established. DENV is a flavivirus but unlike WNV, *Aedes* mosquitoes are predominant vectors. In New Jersey, *Aedes albopictus* is a candidate for local transmission. There are 4 serotypes tested for Dengue. There are currently 40 imported human cases in New Jersey, no local transmission.

Note Same pools of *Ae. albopictus* are tested for the four serotypes of Dengue as well as Chikungunya.

No pools have tested positive in 2016.

County	Species	DENV1		DENV2		DENV3		DENV4		Positives	MFIR
		Pool	Mos.	Pool	Mos.	Pool	Mos.	Pool	Mos.		
Atlantic		**2**	**7**	**2**	**7**	**2**	**7**	**2**	**7**		
	Aedes albopictus	2	7	2	7	2	7	2	7		
Cumberland		**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**		
	Aedes albopictus	1	1	1	1	1	1	1	1		
Middlesex		**8**	**17**	**8**	**17**	**8**	**17**	**8**	**17**		
	Aedes albopictus	7	16	7	16	7	16	7	16		
	Culiseta melanura	1	1	1	1	1	1	1	1		
Monmouth		**54**	**195**	**54**	**195**	**54**	**195**	**54**	**195**		
	Aedes albopictus	54	195	54	195	54	195	54	195		
Morris		**1**	**2**	**1**	**2**	**1**	**2**	**1**	**2**		
	Aedes albopictus	1	2	1	2	1	2	1	2		
Salem		**9**	**15**	**9**	**15**	**9**	**15**	**9**	**15**		
	Aedes albopictus	9	15	9	15	9	15	9	15		
Grand Total		**75**	**237**	**75**	**237**	**75**	**237**	**75**	**237**		

Chikungunya (CHIK) to 9 July 2016.

New Jersey will be selectively testing for CHIK this year. Chikungunya is similar in symptoms to Dengue, a "breakbone" fever and has a low mortality rate. But this virus has had recent worldwide activity, and in the past year has come to the Western Hemisphere. As with Dengue, transmission can occur when a mosquito bites an infected human, then bites an uninfected human who subsequently becomes ill. CHIK is an alphavirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools have tested positive in 2016.

County	Species	Pools	Mosquitoes	Positives	MFIR
Atlantic		**2**	**7**		
	Aedes albopictus	2	7		
Cape May		**33**	**44**		
	Aedes albopictus	33	44		
Cumberland		**1**	**1**		
	Aedes albopictus	1	1		
Middlesex		**8**	**17**		
	Aedes albopictus	7	16		
	Culiseta melanura	1	1		
Monmouth		**54**	**195**		
	Aedes albopictus	54	195		
Morris		**1**	**2**		
	Aedes albopictus	1	2		
Salem		**9**	**15**		
	Aedes albopictus	9	15		
Grand Total		**108**	**281**		

Zika (ZIKV) to 9 July 2016.

New Jersey will be selectively testing for ZIKV this year. Zika is an emerging arboviral threat with significant health consequences for fetuses and recent activity in the Western Hemisphere. Humans are potential hosts

that can transmit through sexual activity. ZIKV is a flavivirus with *Aedes* mosquitoes as potential vectors. In New Jersey, *Aedes albopictus* is the mosquito of interest.

No pools have tested positive in 2016. Currently, New Jersey has 50 imported human cases of Zika.

County	Species	Pools	Mosquitoes	Positives	MFIR
Cape May		**33**	**44**		
	Aedes albopictus	33	44		
Monmouth		**6**	**8**		
	Aedes albopictus	6	8		
Grand Total		**39**	**52**		