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# Manual entry and automatic upload of electronic data on MRSA using NSIHweb

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## NSIHweb history

- Closed and secured web portal of the national program for Healthcare associated infections (NSIH) of the Scientific Institute of Public Health
- In use since 07|1, first module was CDIF (*Clostridium difficile*)
- Since then, modules for MRSA, ABU, EARRS surveillances were added
- Access granted for contact persons of these surveillances
- URL: <https://www.wiv-isp.be/nsihweb> (login needed)



# NSIHweb-MRSA

- Gone live in 07|2, following the publication of MRSA surveillance and its mandatory participation in RD of 2007.
- Supports manual data entry, data upload
- Contains analysis page for immediate feedback



# NSIHweb-MRSA upload module



- Originally a laboratory surveillance
- Laboratory data on *Staphylococcus aureus* samples and its results are available in electronic format
- Allow participant to prepare individual SA sample data in MS Excel
- Upload these files to NSIHweb-MRSA (upload webpage), followed by automatic extraction and aggregation of sample data towards the totals requested by the MRSA surveillance
- If needed, the variable “patient with MRSA in 12 months before admission” can be calculated automatically, based on previously uploaded data
- Default 6-month surveillance period, but data can be uploaded and analyzed for 1-month intervals

# MRSA upload: variable description



Upload format = MS Excel

1 observation = 1 sample taken during surveillance period and cultured for *Staphylococcus aureus*

variable	description	Indicators				
		1a/b	2a-l	3a/b	4a-c	5a/b
hospidn	hospital ID	x	x	x	x	x
patientid	patient ID	x	x	x	x	x
adm_dt	admission date	x	x	x	x	x
sam_dt	sample date	x	x	x	x	x
mo	microorganism ID	x	x	x	x	x
res	meticillin/oxacillin Resistance	x	x	x	x	x
screen_clin	sample type (screening/clinical)	x	x	x	x	x
mrsa12m	patient with MRSA during previous 12 months?		x	x		
origin	patient origin		x			
service	service where sample was taken				x	
specimen	type of clinical sample					x
amb	ambulatory patient					

x = required

# MRSA upload: variable [mrsa12m]



- Indicates whether patient had MRSA during the 12 months prior to hospital admission
- Used to select those admissions of patients for calculation of mandatory indicators 3a, 3b, and optional indicators 2j, 4a, 4b, 4c, 5a, 5b
- Difficult to obtain, not necessarily directly available from hospital admission data
- MRSA upload module has an option that allows automatic construction of this variable
- For particular semester, historical upload data for the previous 2 semester need to be available

# MRSA upload: variable [mrsa12m]



Automatic detection of MRSA 12-month history of patient “AAA000”

Period	hospidn	patientid	adm_dt	sam_dt	mo	res	mrsa12m
2010 2	9999	AAA000	10/11/2010	12/11/2010	staur	0	?
2010 2	9999	AAA000	10/11/2010	15/11/2010	staur	1	?

# MRSA upload: variable [mrssa12m]



Looks back into previous admissions for hospital 9999 and patient “AAA000”

Period	hospidn	patientid	adm_dt	sam_dt	mo	res	mrssa12m
2010 2	9999	AAA000	10/11/2010	12/11/2010	staur	0	?
2010 2	9999	AAA000	10/11/2010	15/11/2010	staur	1	?

2009 1	9999	AAA000	1/11/2009	5/05/2009	staur	1	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2010 1	9999	AAA000	4/05/2010	5/05/2010	staur	0	
2010 1	9999	AAA000	4/05/2010	6/05/2010	staur	0	
2010 2	9999	AAA000	25/08/2010	6/05/2010	staur	0	

# MRSA upload: variable [mrса12m]



Select only those with sample dates within previous 12 months

Period	hospidn	patientid	adm_dt	sam_dt	mo	res	mrса12m
2010 2	9999	AAA000	10/11/2010	12/11/2010	staur	0	?
2010 2	9999	AAA000	10/11/2010	15/11/2010	staur	1	?

2009 1	9999	AAA000	1/11/2009	5/05/2009	staur	1	
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2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2010 1	9999	AAA000	4/05/2010	5/05/2010	staur	0	
2010 1	9999	AAA000	4/05/2010	6/05/2010	staur	0	
2010 2	9999	AAA000	25/08/2010	6/05/2010	staur	0	

# MRSA upload: variable [mrsa12m]



For these samples: check for presence of MRSA

Period	hospidn	patientid	adm_dt	sam_dt	mo	res	mrsa12m
2010 2	9999	AAA000	10/11/2010	12/11/2010	staur	0	?
2010 2	9999	AAA000	10/11/2010	15/11/2010	staur	1	?

2009 1	9999	AAA000	1/11/2009	5/05/2009	staur	1	
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2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2010 1	9999	AAA000	4/05/2010	5/05/2010	staur	0	
2010 1	9999	AAA000	4/05/2010	6/05/2010	staur	0	
2010 2	9999	AAA000	25/08/2010	6/05/2010	staur	0	

# MRSA upload: variable [mrса12m]



Based on these results, fills [mrса12m] for admission at 10/11/2010

Period	hospidn	patientid	adm_dt	sam_dt	mo	res	mrса12m
2010 2	9999	AAA000	10/11/2010	12/11/2010	staur	0	0
2010 2	9999	AAA000	10/11/2010	15/11/2010	staur	1	0
2009 1	9999	AAA000	1/11/2009	5/05/2009	staur	1	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2009 1	9999	AAA000	10/11/2009	15/11/2009	staur	0	
2010 1	9999	AAA000	4/05/2010	5/05/2010	staur	0	
2010 1	9999	AAA000	4/05/2010	6/05/2010	staur	0	
2010 2	9999	AAA000	25/08/2010	6/05/2010	staur	0	

# MRSA upload: variable [mrsa12m]



Previous procedure available as option in MRSA uploadpage:

MRSA data import voor semester 2010/1  
[Terug naar MRSA datainvoer](#)

Periode: semester 1  
Bestand:  Browse...  
Importereren

Info geïmporteerd bestand:

ID	file	Importdatum	Kolommen	Rijen	Import status
4597	autom upload bewerkt aalst.xls	9/12/2010 11:21:46	11	1213	geaggregeer

Download  
Transfereren  Kolom [MRSA12m] automatisch invullen  
Aggregeren

# MRSA upload: automatic aggregation of sample data

- From uploaded sample data, indicators as requested by the MRSA surveillance protocol are automatically constructed
- This involves 28 aggregations (apart from denominators) !



### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



Uploaded data for patient “1232315”: 18 samples of resistant SA

patientid	adm_dt	sam_dt	screen_clin	mo	res	mrsa12m	origin	service	specimen	amb	ind_per
1232315	2010-04-07 ...	2010-05-06 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-05-09 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-05-10 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-05-24 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-05-25 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-05-31 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-06-01 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-06-01 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-06-03 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-06-06 ...	3	STAAUR	1	0	9	1	1	0	1
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	2	0	1
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	1	0	1
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1
1232315	2010-04-07 ...	2010-06-10 ...	3	STAAUR	1	0	9	1	2	0	1

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



**STEP 1:** add column “los\_bi” indicating the number of days before sample

patientid	adm_dt	sam_dt	screen_clin	mo	res	mrsa12m	origin	service	specimen	amb	ind_per	los_bi
1232315	2010-04-07 ...	2010-05-06 ...	3	STAAUR	1	0	9	1	2	0	1	30
1232315	2010-04-07 ...	2010-05-09 ...	1	STAAUR	1	0	9	1	-1	0	1	33
1232315	2010-04-07 ...	2010-05-10 ...	3	STAAUR	1	0	9	1	2	0	1	34
1232315	2010-04-07 ...	2010-05-24 ...	3	STAAUR	1	0	9	1	2	0	1	48
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49
1232315	2010-04-07 ...	2010-05-25 ...	3	STAAUR	1	0	9	1	2	0	1	49
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49
1232315	2010-04-07 ...	2010-05-31 ...	3	STAAUR	1	0	9	1	2	0	1	55
1232315	2010-04-07 ...	2010-06-01 ...	1	STAAUR	1	0	9	1	-1	0	1	56
1232315	2010-04-07 ...	2010-06-01 ...	3	STAAUR	1	0	9	1	2	0	1	56
1232315	2010-04-07 ...	2010-06-03 ...	3	STAAUR	1	0	9	1	2	0	1	58
1232315	2010-04-07 ...	2010-06-06 ...	3	STAAUR	1	0	9	1	1	0	1	61
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	2	0	1	62
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	1	0	1	62
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1	63
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1	63
1232315	2010-04-07 ...	2010-06-10 ...	3	STAAUR	1	0	9	1	2	0	1	65

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



**STEP 2:** minimize “los\_bi” over the patient admission into “min\_los\_bi”:

Allows to check for each admission whether non-nosocomial MRSA occurred,

Select those admissions with ONLY nosocomial MRSA: “min\_los\_bi>2”

patientid	adm_dt	sam_dt	screen_clin	mo	res	mrsa12m	origin	service	specimen	amb	ind_per	los_bi	min_los_bi
1232315	2010-04-07 ...	2010-05-06 ...	3	STAAUR	1	0	9	1	2	0	1	30	30
1232315	2010-04-07 ...	2010-05-09 ...	1	STAAUR	1	0	9	1	-1	0	1	33	30
1232315	2010-04-07 ...	2010-05-10 ...	3	STAAUR	1	0	9	1	2	0	1	34	30
1232315	2010-04-07 ...	2010-05-24 ...	3	STAAUR	1	0	9	1	2	0	1	48	30
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49	30
1232315	2010-04-07 ...	2010-05-25 ...	3	STAAUR	1	0	9	1	2	0	1	49	30
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49	30
1232315	2010-04-07 ...	2010-05-25 ...	1	STAAUR	1	0	9	1	-1	0	1	49	30
1232315	2010-04-07 ...	2010-05-31 ...	3	STAAUR	1	0	9	1	2	0	1	55	30
1232315	2010-04-07 ...	2010-06-01 ...	1	STAAUR	1	0	9	1	-1	0	1	56	30
1232315	2010-04-07 ...	2010-06-01 ...	3	STAAUR	1	0	9	1	2	0	1	56	30
1232315	2010-04-07 ...	2010-06-03 ...	3	STAAUR	1	0	9	1	2	0	1	58	30
1232315	2010-04-07 ...	2010-06-06 ...	3	STAAUR	1	0	9	1	1	0	1	61	30
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	2	0	1	62	30
1232315	2010-04-07 ...	2010-06-07 ...	3	STAAUR	1	0	9	1	1	0	1	62	30
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1	63	30
1232315	2010-04-07 ...	2010-06-08 ...	1	STAAUR	1	0	9	1	-1	0	1	63	30
1232315	2010-04-07 ...	2010-06-10 ...	3	STAAUR	1	0	9	1	2	0	1	65	30

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



**STEP 3:** select the nosocomial samples on the earliest date: "los\_bi = min\_los\_bi"

patientid	adm_dt	sam_dt	screen_clin	mo	res	mrsa12m	origin	service	specimen	amb	ind_pe	los_bi	min_los_bi
1232315	2010-04-07...	2010-05-06...	3	STAAUR	1	0	9	1	2	0	1	30	30

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



**STEP 4:** maximize sample type “screen\_clin” into “max\_screen\_clin”,  
keep if clinical: “max\_screen\_clin=3”

patientid	adm_dt	sam_dt	screen_clin	mo	res	mrsa12m	origin	service	specimen	amb	ind_per	los_bi	min_los_bi	max_screen_clin
1232315	2010-04-07 ...	2010-05-06...	3	STAAUR	1	0	9	1	2	0	1	30	30	3

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



**STEPS 1-4** for all patients:

	patientid	adm_dt
1	1035369	2010-03-22 ...
2	1056517	2010-06-13 ...
3	1072715	2010-03-24 ...
4	1081289	2010-03-18 ...
5	1085615	2010-03-25 ...
6	1000740	2010-05-03 ...
24	1627492	2010-05-18 ...
25	2021964	2010-02-22 ...
26	2034692	2009-11-06 ...
27	2039579	2010-02-23 ...

### 3a: Patients without previous MRSA history and that acquired MRSA nosocomially through clinical samples



Transact-SQL Script:

```
SELECT patientid, adm_dt
FROM
(
  SELECT *, MAX(SCREEN_CLIN) OVER(PARTITION BY patientid, adm_dt) as max_screen_clin
  FROM
  (
    SELECT *|
    FROM
    (
      SELECT *, MIN(los_bi) OVER(PARTITION BY patientid, adm_dt) AS 'min_los_bi'
      FROM
      (
        SELECT *, DATEDIFF(day, adm_dt, sam_dt) + 1 AS los_bi
        FROM dbo.upload_mrsa
        WHERE up_ref = 4597 and mrsa12m=0 and mo='STAAUR' and res=1
      ) as tb11
    ) as tb12
    WHERE min_los_bi>2 and min_los_bi=los_bi
  ) as tb13
) as tb14
WHERE max_screen_clin=3
GROUP BY patientid, adm_dt
```

# MRSA-Upload: automatic aggregation towards 28 totals



MRSA data import voor semester 2010/1  
[Terug naar MRSA datainvoer](#)

Periode:  Bestand:

Info geïmporteerd bestand:

ID	file	Importdatum	Kolommen	Rijen	Import status
4597	autom upload bewerkt aalst.xl	9/12/2010 11:21:46	11	1213	geaggregeer

kolom [MRSA12m] automatisch invullen

MRSA surveillance indicatoren samengesteld uit geïmporteerd bestand:

- Resistentiecijfer
  - 1a
  - 1b
- Incidentie van Patienten, dragers van MRSA bij opname (<48 u. na opname)
  - 2a
  - 2b
- Incidentie van Nosocomiaal verworven MRSA (>48 u. na opname) in uw instelling
  - 3a
  - 3b

# MRSA-Upload: verification of aggregated totals



MRSA data import voor semester 2010/1  
[Terug naar MRSA datainvoer](#)

Periode: semester 1  
 Bestand:  Browse...  
 Importeren

Info geïmporteerd bestand:

ID	file	Importdatum	Kolommen	Rijen	Import status
4597	autom upload bewerkt aalst.xl	9/12/2010 11:21:46	11	1213	geaggregeer

Download  
 Transfereren  Kolom [MRSA12m] automatisch invullen  
 Aggregeren

MRSA surveillance indicatoren samengesteld uit geïmporteerd bestand:

1. Resistentiecijfer

1a  Detail  
 1b  Detail

Incidentie van Patienten, dragers van MRSA bij opname (<48 u. na opname)

2. Incidentie van Nosocomiaal verworven MRSA (>48 u. na opname) in uw instelling

A

3a  Detail  
 3b  Detail

3a		3a	
patientid	adm_dt	patientid	adm_dt
1035369	22/3/2010	1160314	25/3/2010
1056517	13/6/2010	1163478	26/2/2010
1072715	24/3/2010	1179828	19/6/2010
1081289	18/3/2010	1215263	17/6/2010
1085615	25/3/2010	1232315	7/4/2010
1093749	3/5/2010	1238675	15/6/2010
1098283	7/6/2010	1314608	25/2/2010
1098373	7/2/2010	1365276	1/2/2010
1109783	15/2/2010	1627492	18/5/2010
1113170	27/1/2010	2021964	22/2/2010
1113203	7/2/2010	2034692	6/11/2009
1116896	24/5/2010	2039579	23/2/2010
1135568	29/3/2010		
1146771	8/3/2010		
1157740	26/10/2009		



# MRSA data entry using NSIHweb



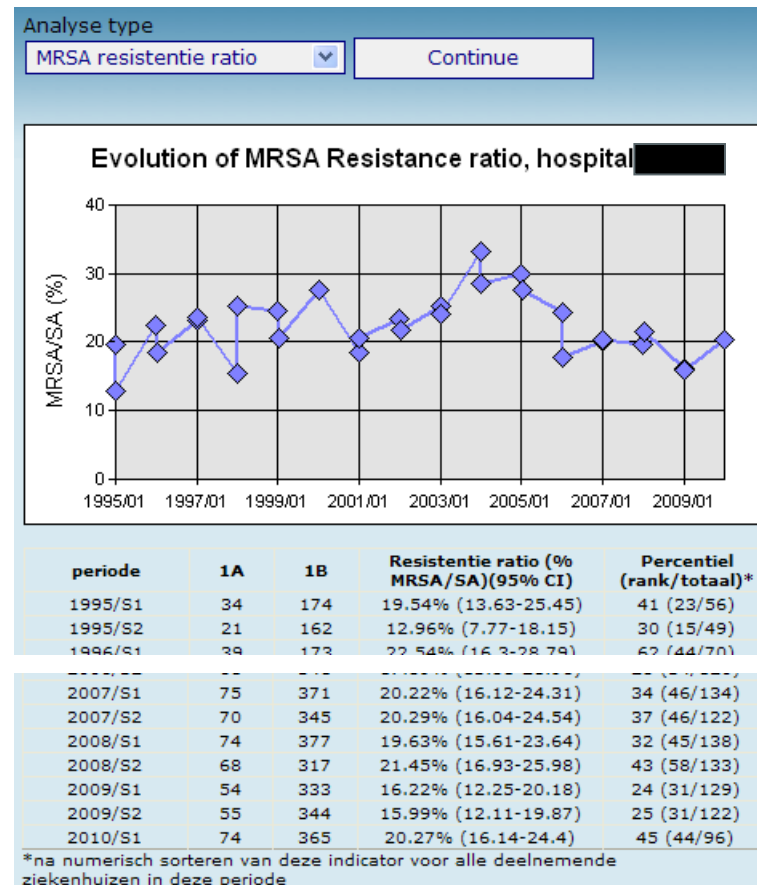
- Indicators obtained from upload data will be displayed in column “Geïmporteerd / Importé”
- These can be copied to column “Handmatig / Manuel”, and eventually altered
- Only data of first column will be used for analysis

	Handmatig	Geïmporteerd
<u>1.</u>	<u>Resistentiecijfer</u>	
1a	<input type="text" value="74"/>	<input type="text" value="74"/>
1b	<input type="text" value="365"/>	<input type="text" value="365"/>
1cat	<input type="text" value="D"/>	<input type="text" value="D"/>
<u>2.</u>	<u>Incidentie van Patienten, dragers van MRSA bij opname (&lt;48 u. na opname)</u>	
2a	<input type="text" value="0"/>	<input type="text" value="0"/>
2b	<input type="text" value="0"/>	<input type="text" value="0"/>
<u>3.</u>	<u>Incidentie van Nosocomiaal verworven MRSA (&gt;48 u. na opname) in uw instelling</u>	
	A	
3a	<input type="text" value="27"/>	<input type="text" value="27"/>
3b	<input type="text" value="12"/>	<input type="text" value="12"/>
	B	
3c	<input type="text" value="5"/>	<input type="text" value="5"/>
3d	<input type="text" value="10"/>	<input type="text" value="10"/>
3e	<input type="text" value="22"/>	<input type="text" value="22"/>
3f	<input type="text" value="2"/>	<input type="text" value="2"/>
<u>4.</u>	<u>Incidentie van Nosocomiaal verworven MRSA per type afdeling</u>	
4a	<input type="text" value="7"/>	<input type="text" value="7"/>

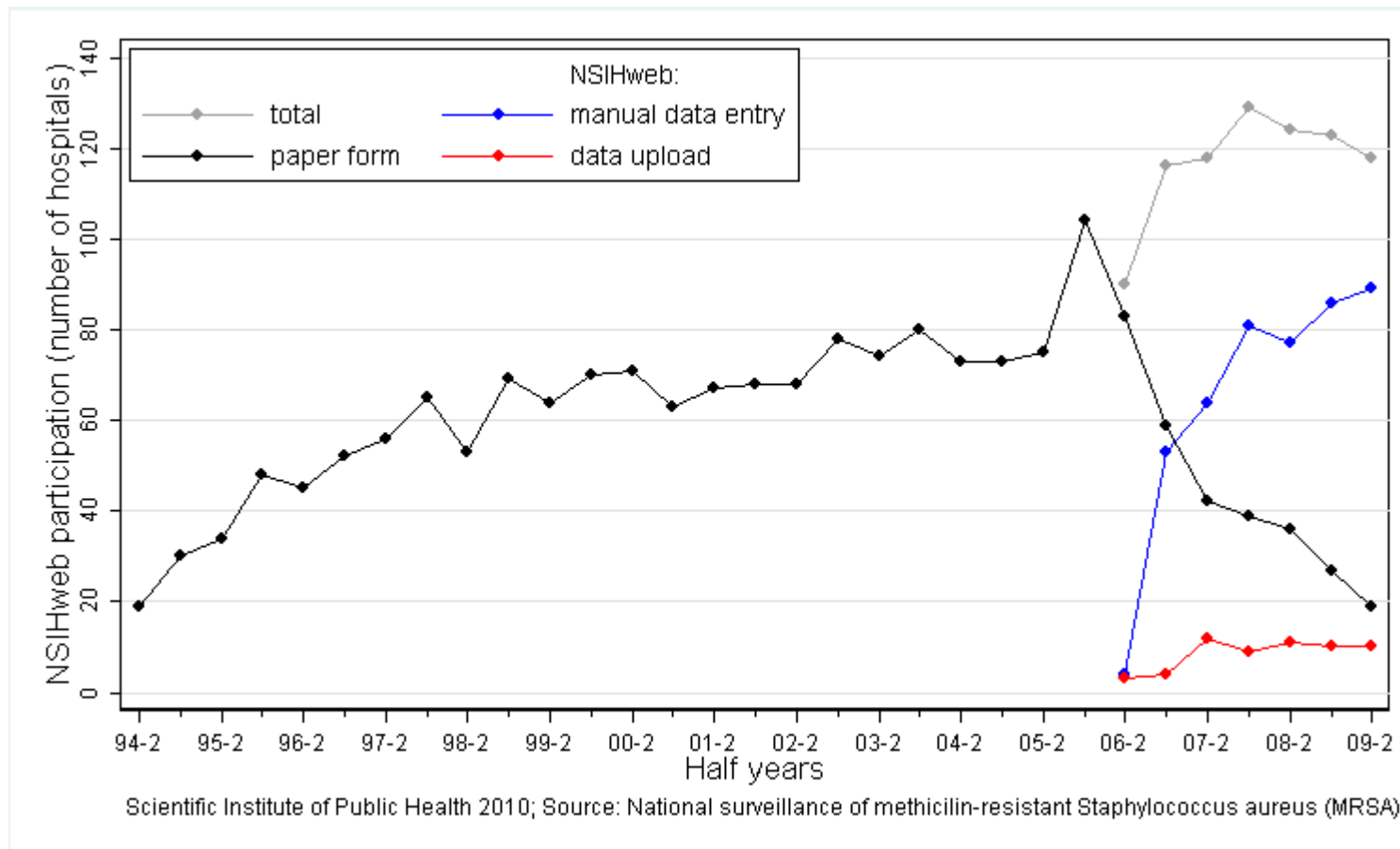
# MRSA data analysis using NSIHweb



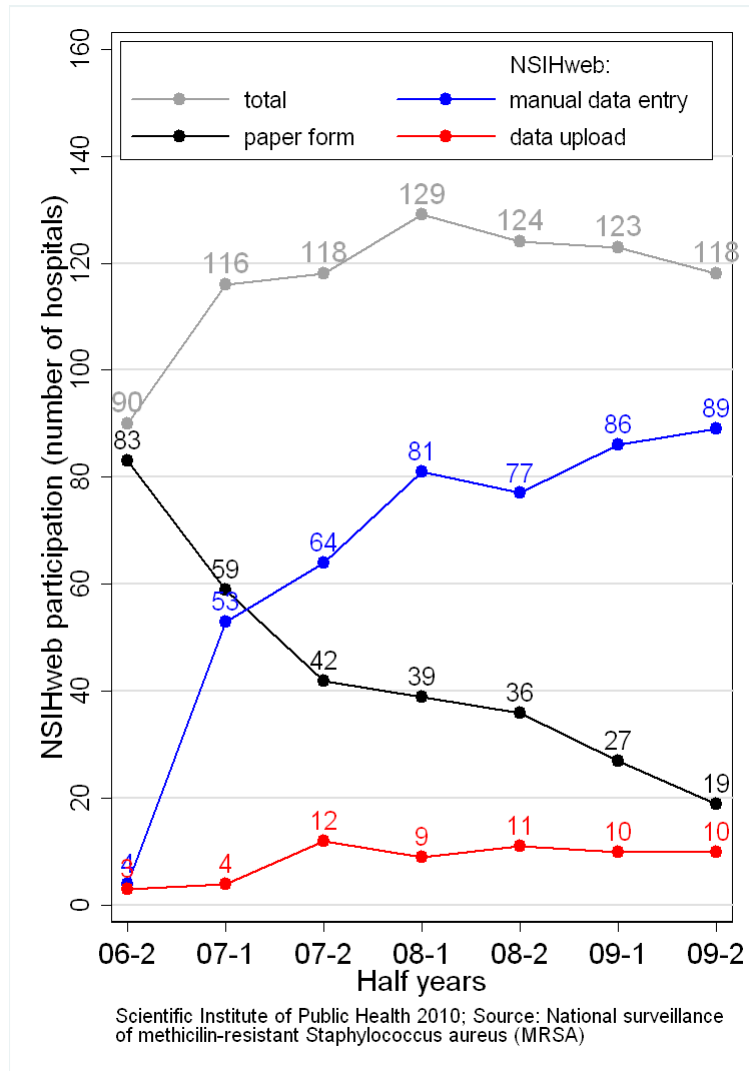
- Possible both when manual data entry as with data upload
- Allows direct calculation of incidence and resistance rate
- Allows preliminary comparison within the national population
- Default: semester rates
- When using data upload: monthly rates



# Use of NSIHweb-MRSA



# Use of NSIHweb-MRSA



Participation since 06|2:

- Despite the introduction of the NSIHweb system and its features, data collection by paper has remained substantial
- Data upload is not having the success that was originally anticipated

## Participation type versus number of beds, since 06|2



Number of beds	Participation type			
	Paper	NSIHweb: manual	NSIHweb: upload	Total
<200	5 (12%)	32 (78%)	4 (10%)	41
200-399	10 (16%)	43 (71%)	8 (13%)	61
>=400	5 (13%)	29 (74%)	5 (13%)	39
Total	20 (14%)	104 (74%)	17 (12%)	141

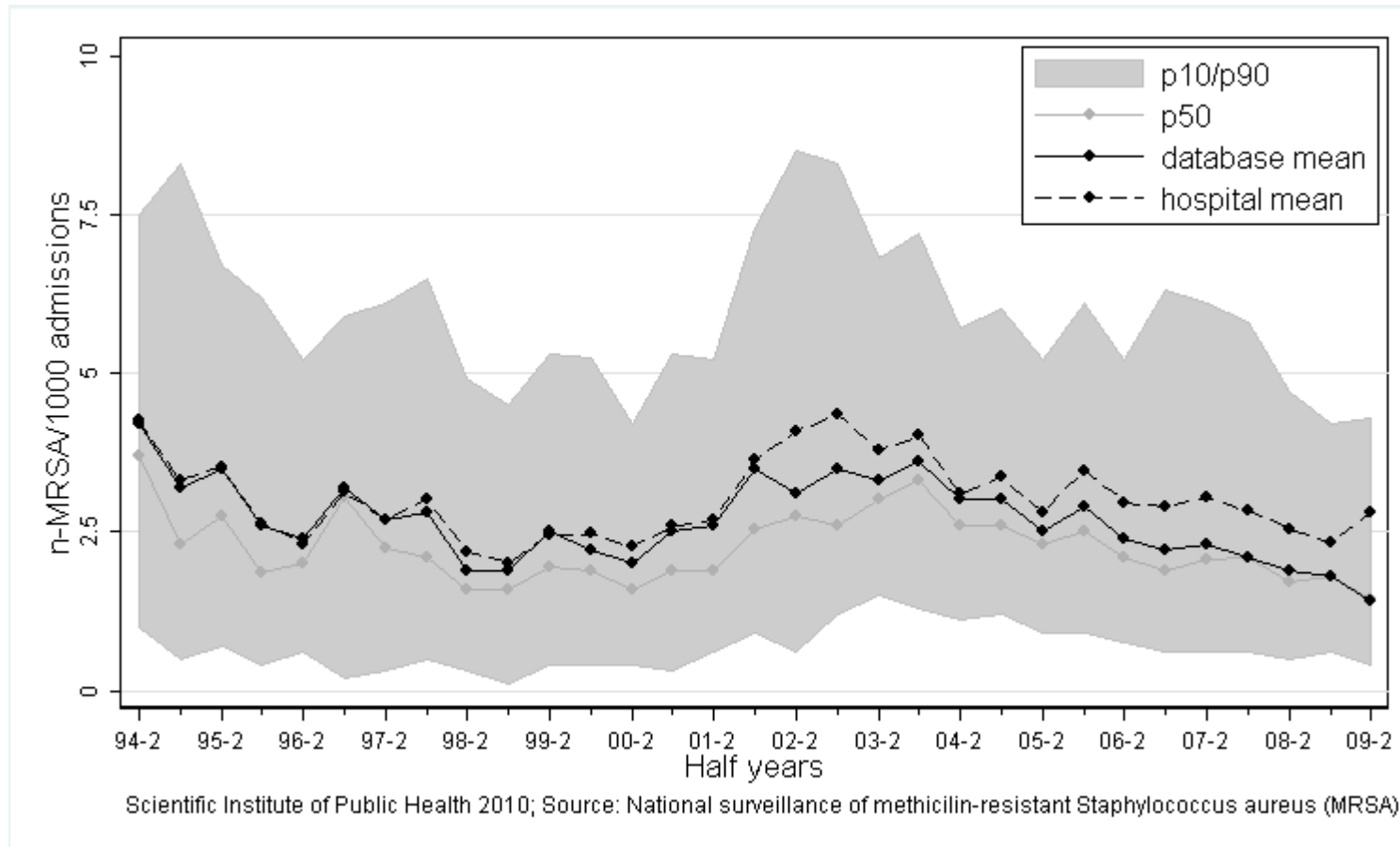
Highest rate of “paper” participation (16%) among “200-399”

Highest rate of “NSIHweb:manual” participation (78%) among “<200”

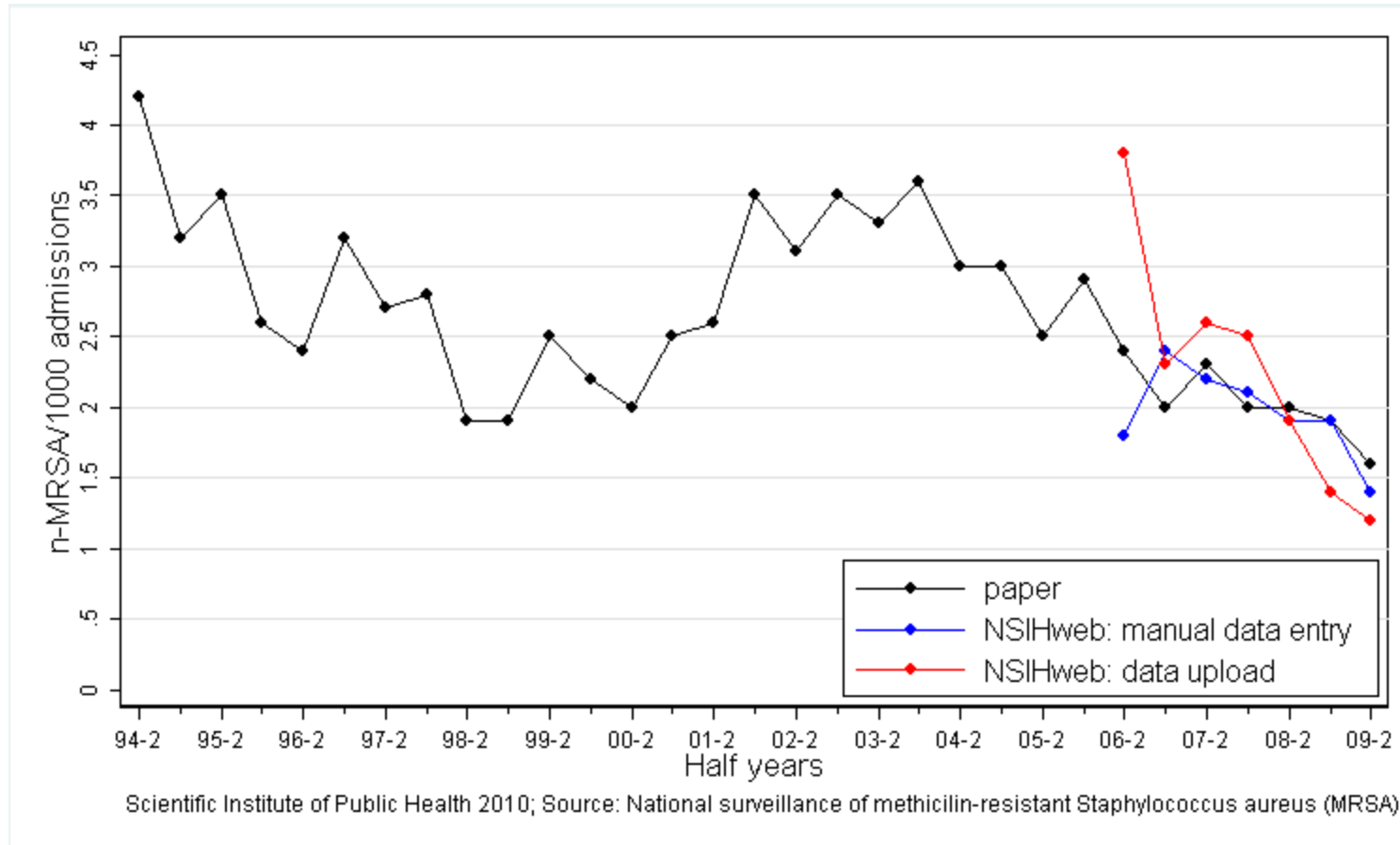
Highest rate of “NSIHweb:upload” participation (13%) among “200-399” and “>=400”

(no differences were statistically significant at  $p=0.05$ )

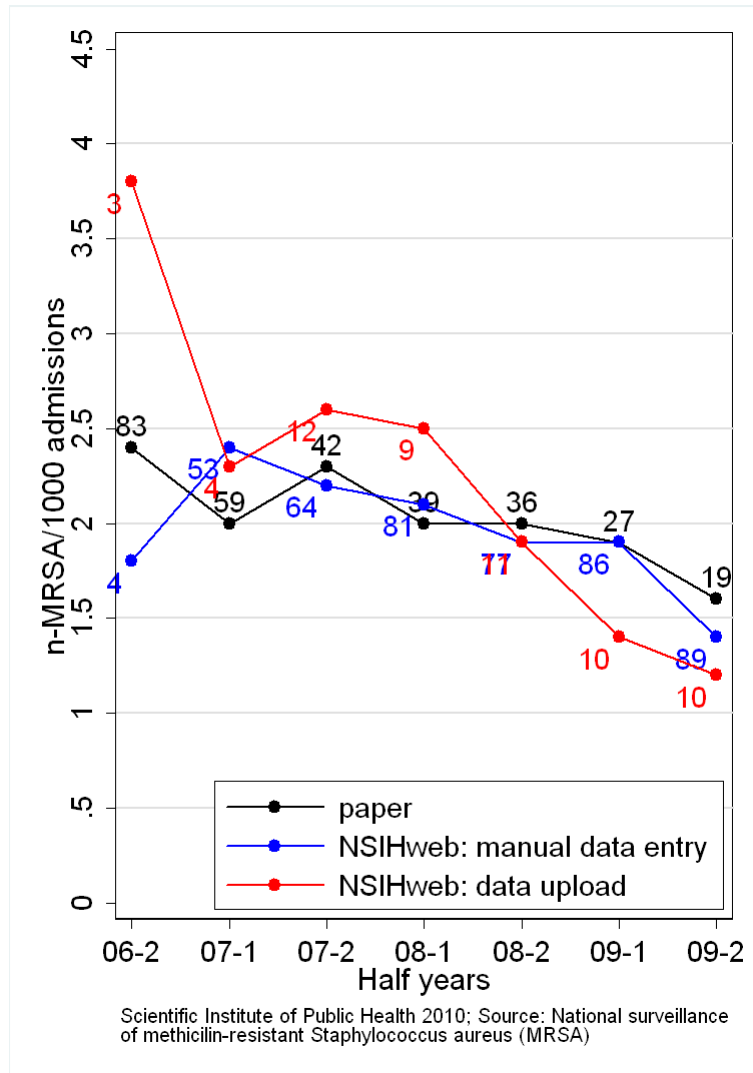
# n-MRSA incidence rate evolution



# n-MRSA incidence rate evolution



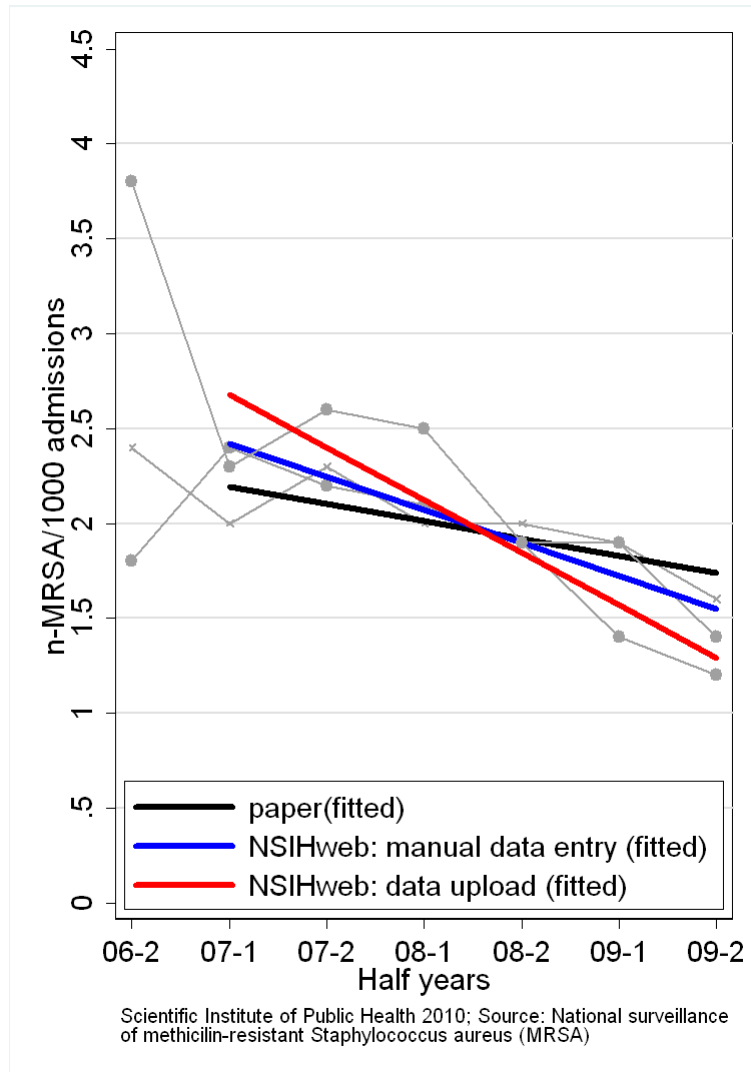
# n-MRSA incidence rate evolution



**Compare the evolution of incidence rates of three groups of hospitals since 07|2:**

- Groups « paper » and « NSIHweb: manual data entry » seem equal
- Group « NSIHweb: data upload » has a stronger decline

# n-MRSA incidence rate evolution



## Statistical analysis:

logistic regression model,  
 outcome « P(n-MRSA) »; patient-based,  
 predictors: « time », « type of participation »,  
 interaction; cluster effect on hospital

## Coefficients (odds ratio) (95% CI) for time variable:

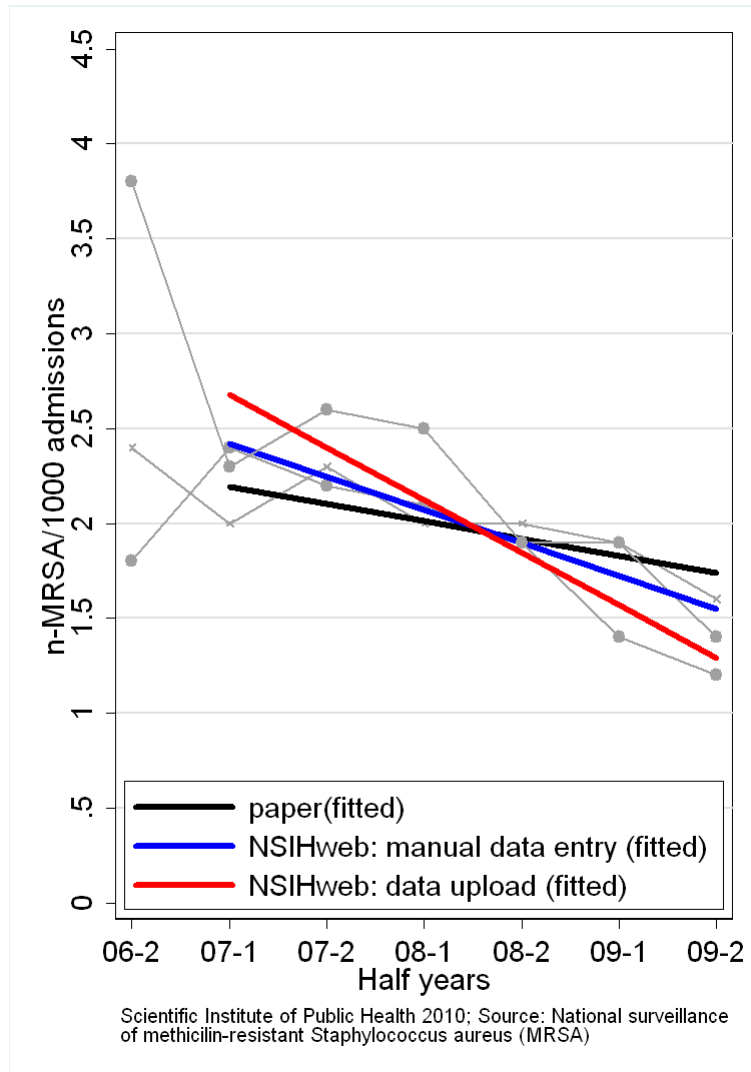
Paper (1):	0.97 (0.92,1.03)
NSIHweb manual (2):	0.91 (0.87,0.96)
NSIHweb upload (3):	0.83 (0.75,0.93)

## Hypothesis Testing

p-value:

(1) = (2) :	0.14
(1) = (3) :	0.02
(2) = (3) :	0.14

# n-MRSA incidence rate evolution



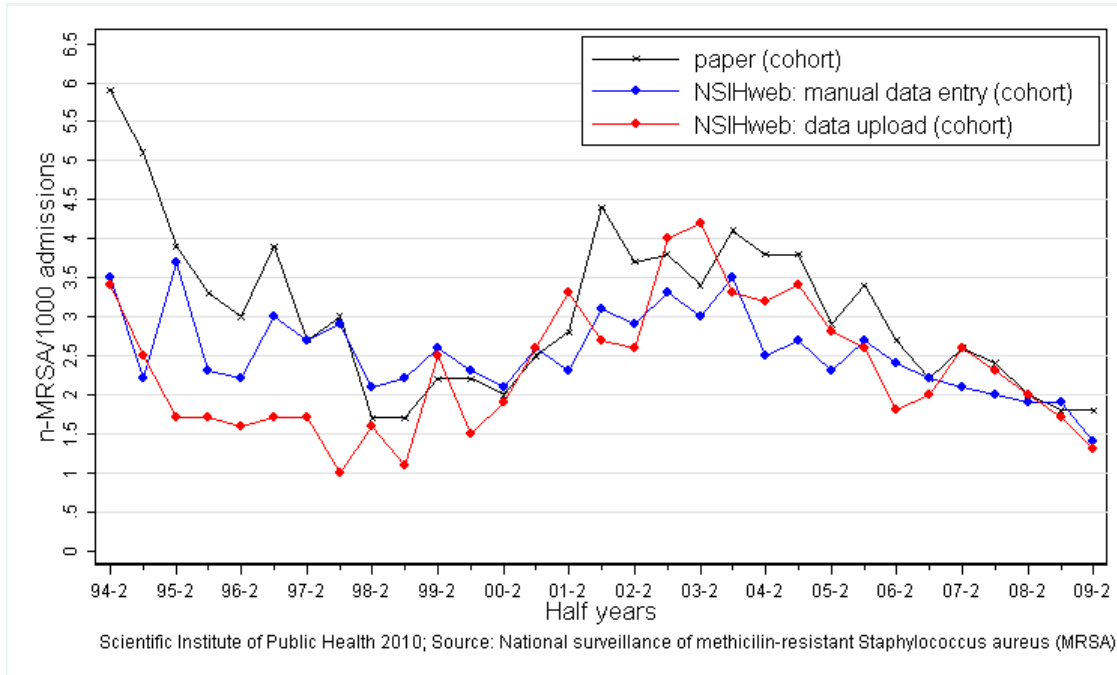
**In the hospitals that did upload since 07|1, patients had 17% less chance of acquiring n-MRSA each semester..**

**.. compared to -3% and -9% in two other groups**

**Rationale:** Choosing for upload might imply..

- Having the technical equipment and capacities to extract electronic lab data, reflects organizational structure of the hospital
- allows to follow-up monthly n-MRSA incidence, and to react timely to trends
- allows time saving: no need to do aggregations, manual updates, time can be put into other efforts

# n-MRSA incidence rate evolution

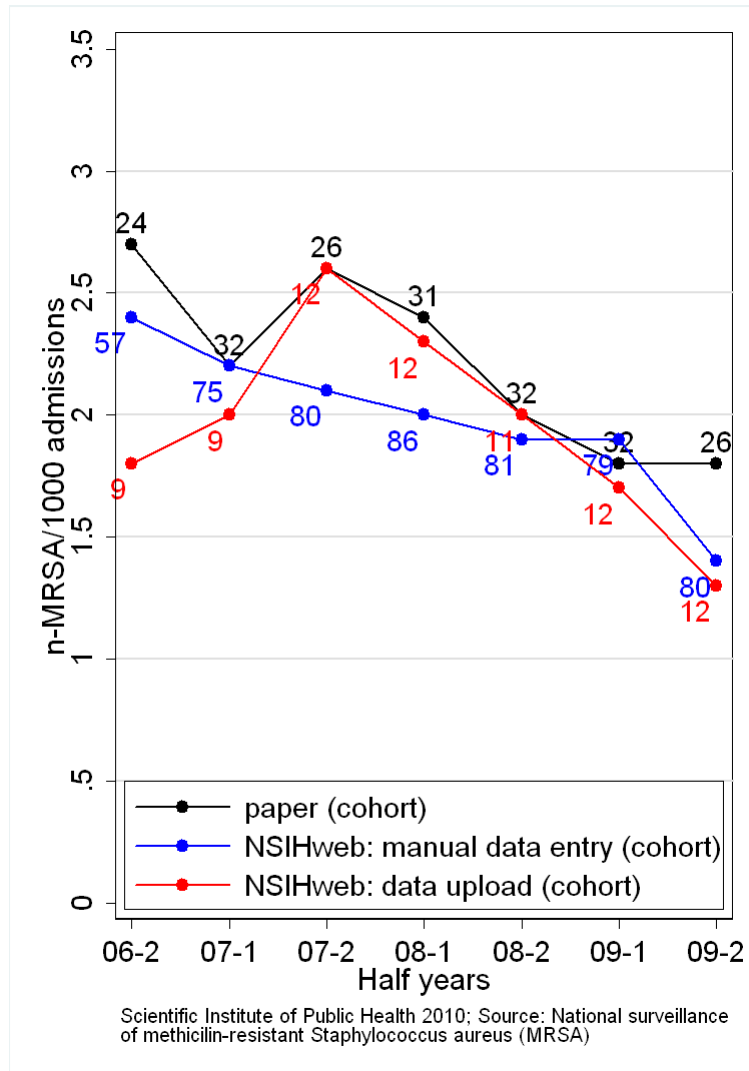


## Construction of cohort:

At 09|2, consider 3 groups of hospitals:

- NSIHweb data upload = at least 3 semesters with upload
- NSIHweb manual data entry = less than 3 semesters with upload and at least 3 semesters with manual data entry.
- Paper = rest

# n-MRSA incidence rate evolution

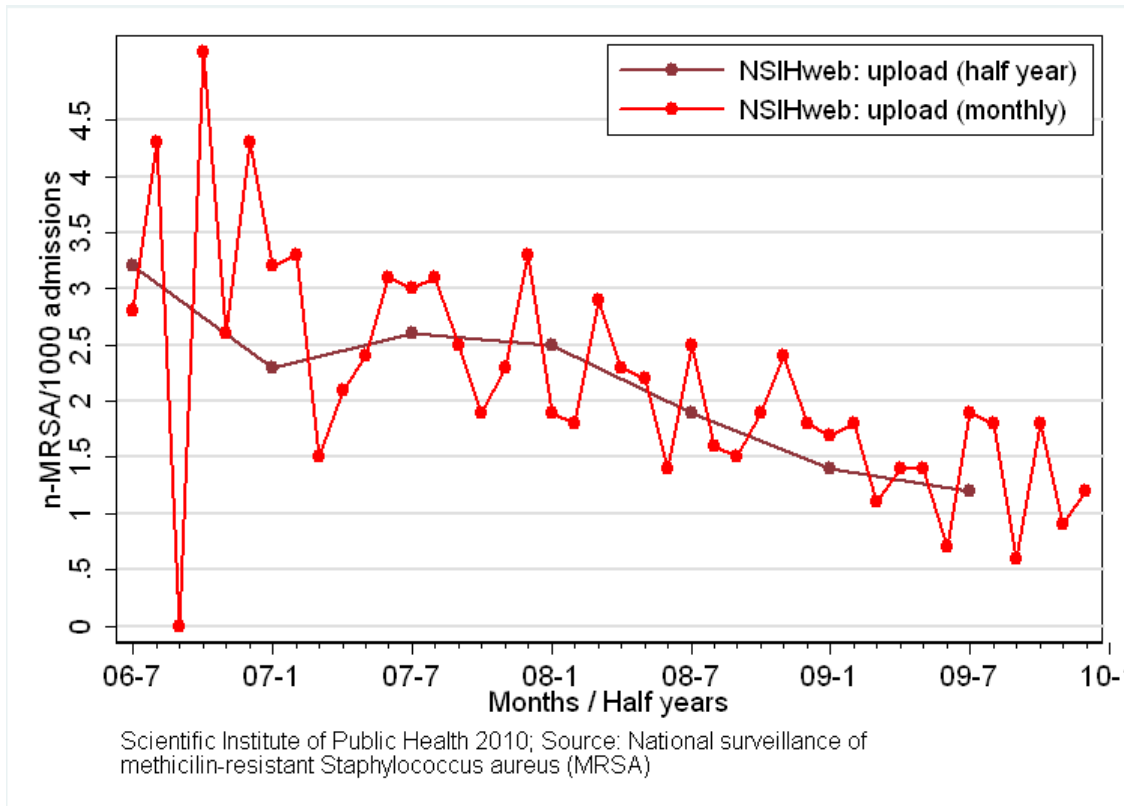


**Construction of cohort:** At 09|2, consider 3 groups of hospitals:

- NSIHweb data upload = at least 3 semesters with upload
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- Paper = rest

**Same decline among uploaders as described before, BUT only for period 07|2 - 09|2**

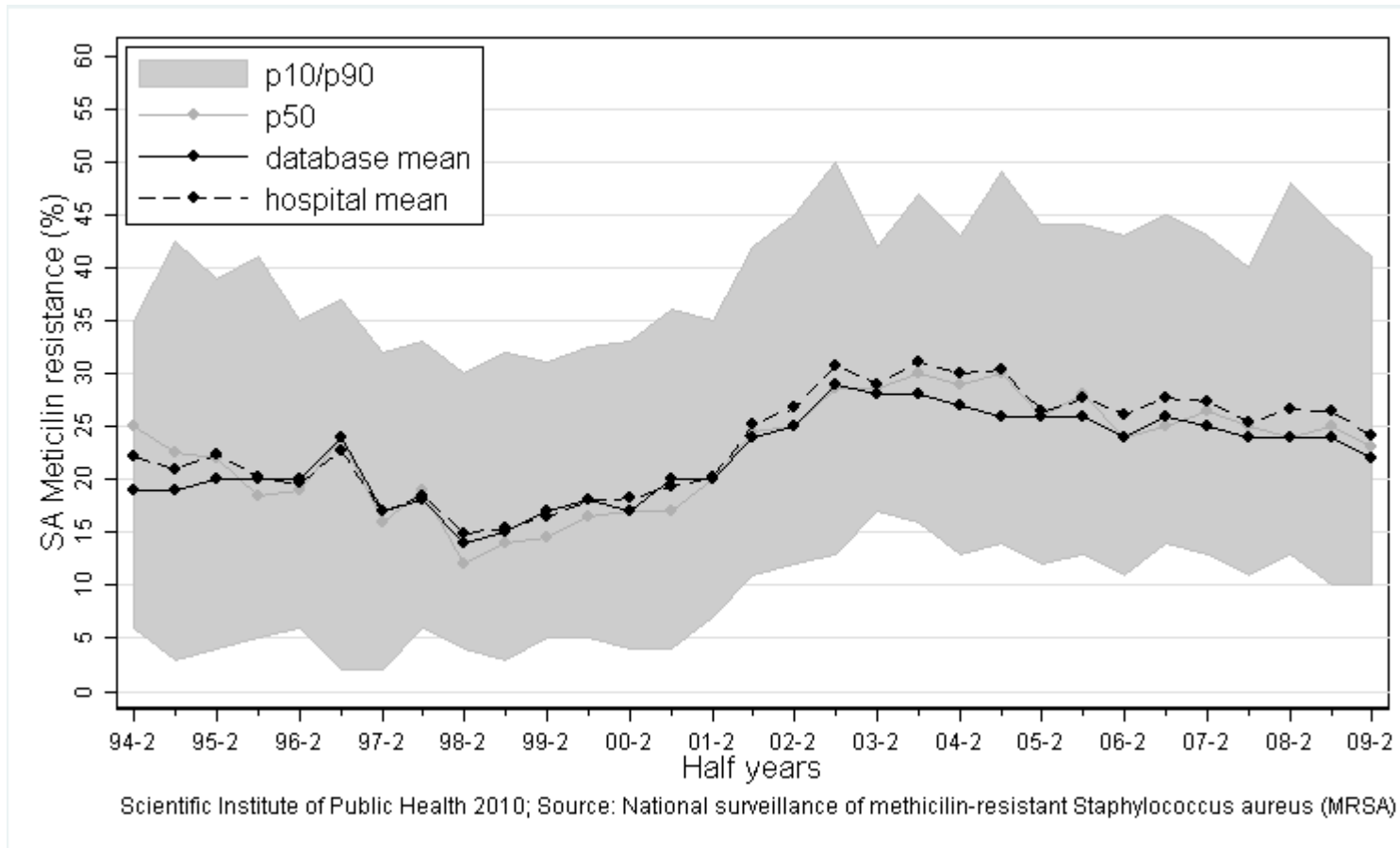
# n-MRSA incidence rate evolution



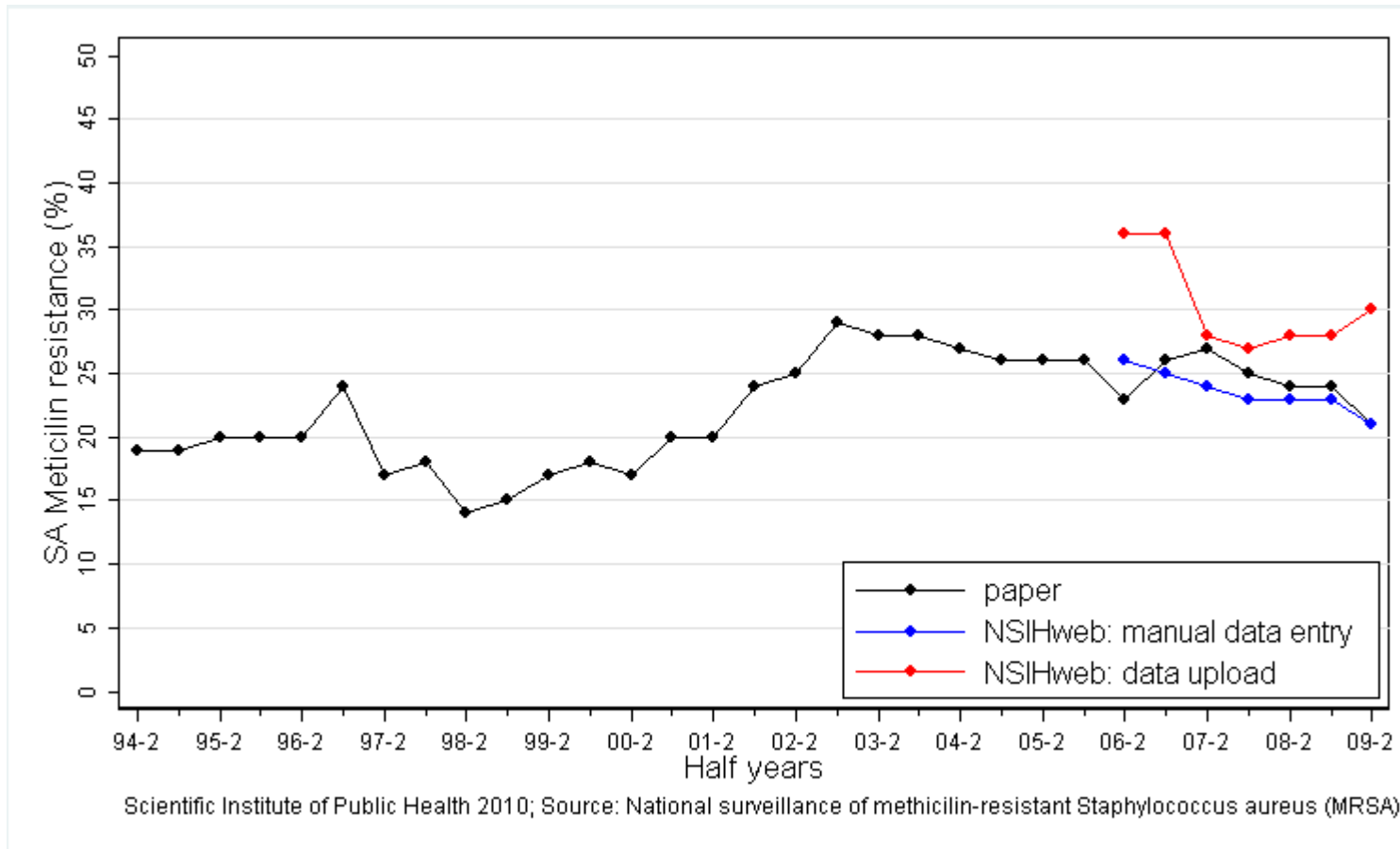
Upload data allows the calculation of monthly rates

Despite month-to-month variability, decline in incidence rate is obvious

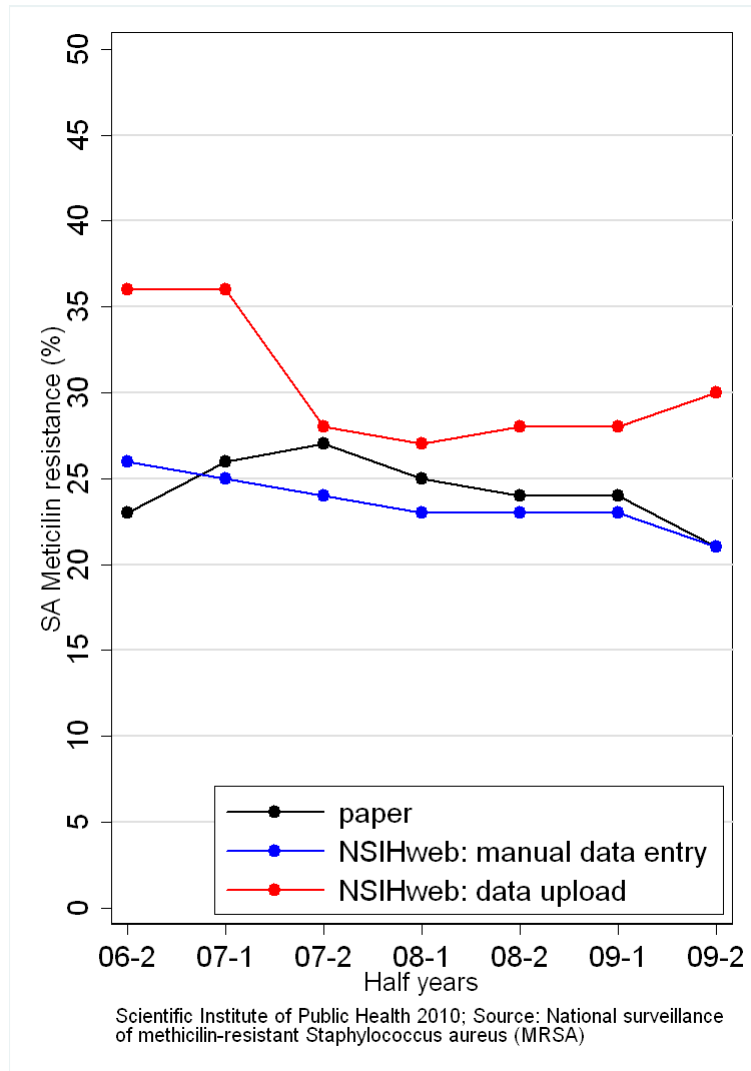
# SA resistance rate evolution



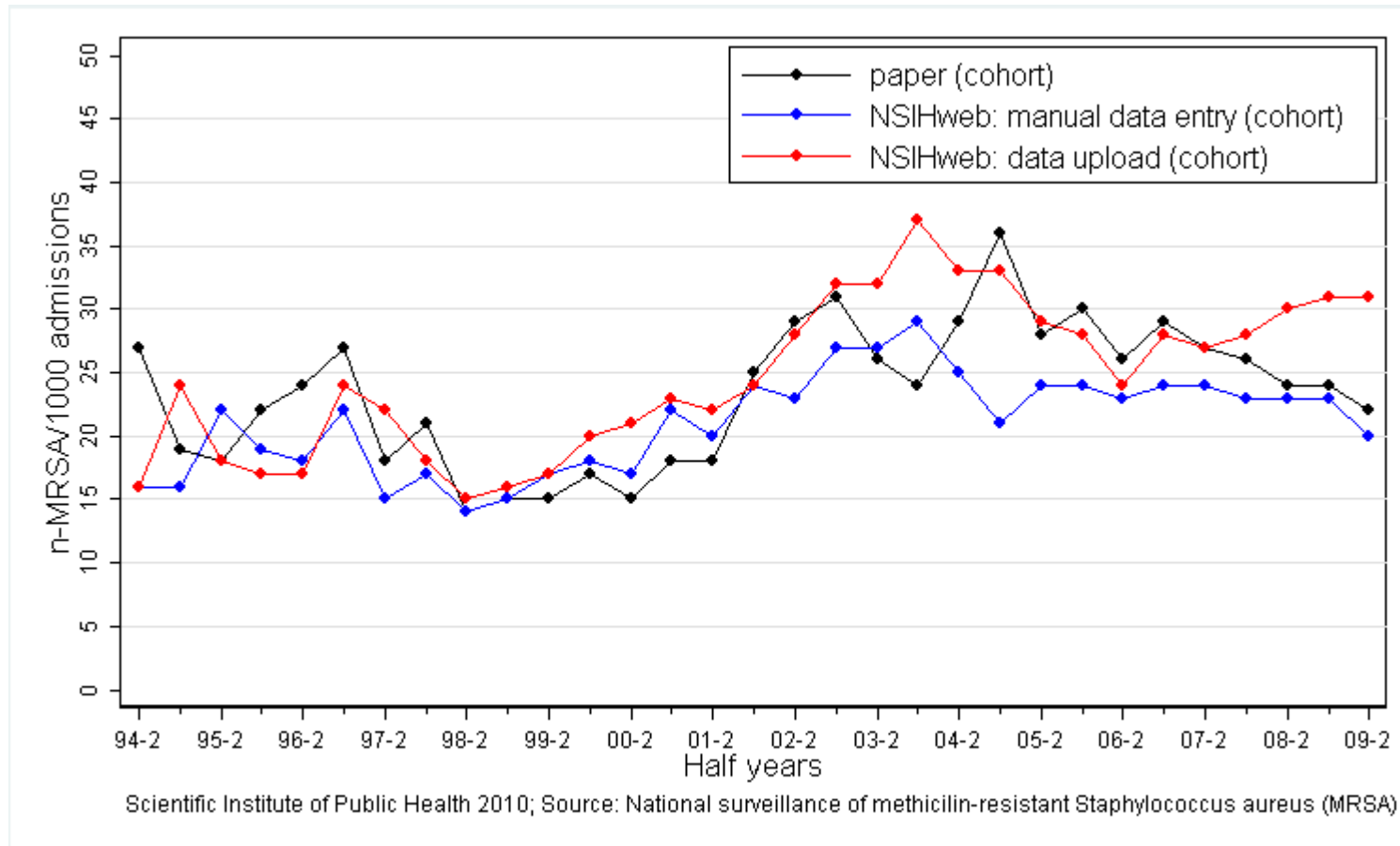
# SA resistance rate evolution



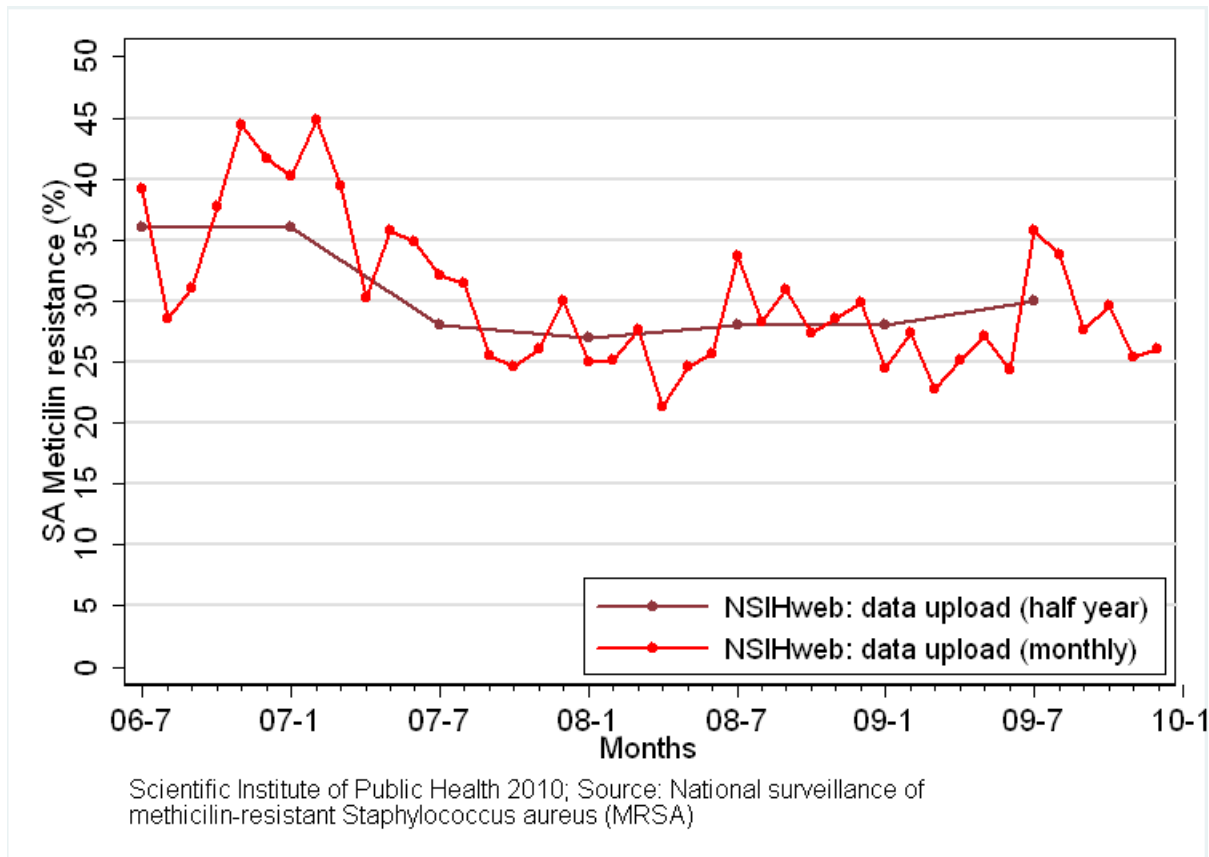
# SA resistance rate evolution



# SA resistance rate evolution



# SA resistance rate evolution



# Conclusions



- NSIHweb has been integral in improving the individual and national follow-up of MRSA in Belgium
- Data collection by paper still exists in 09|2, we hope to reduce this further in the future
- Upload of lab data of SA cultures in electronic format has not been a success in terms of participation rate, need for further investigation for the reasons behind this
- However, the stronger decline of n-MRSA incidence within the group of hospitals that chose for data upload could reflect the advantages of this system.
- The same concepts of data upload have been implemented in the **NSIHwin software**, used for the national surveillances « Surgical site infections », « Nosocomial septicemia Hospital-wide », « Nosocomial infections in the intensive care unit »
- Latest version 4.09 has been released earlier this week at <http://www.nsih.be> , with a greatly enhanced import module.

# Thank you



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