



# Vulnerable Persons Food Safety Scheme

Phase II evaluation  
Summary report

October 2010

## **About this document**

This interpretative summary report references findings outlined in the NSW Food Authority's two evaluation studies conducted on the Vulnerable Persons Food Safety Scheme (2009)<sup>1,2</sup> and relevant findings from the NSW Food Authority's initial implementation assistance work<sup>3</sup>.

If you have any questions about this document, please contact the NSW Food Authority Consumer and Industry Helpline on 1 300 552 406 or [contact@foodauthority.nsw.gov.au](mailto:contact@foodauthority.nsw.gov.au).

## **Acknowledgements**

The NSW Food Authority's Program Evaluation team would like to thank the Authority's food safety auditors for their help collecting on-site data and food samples; Bruce Nelan, Bonnie Ng, Dr David Miles and Dr David Jordan for their assistance and advice with analysing the data and Verika Josevska for her assistance entering data. Laboratory analysis was conducted by the Division of Analytical Laboratories, Lidcombe, a part of the Sydney West Area Health Service.

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## Executive summary

This formal evaluation of the Vulnerable Persons Food Safety Scheme finds that the Scheme was effectively implemented in NSW and that the five year implementation process preceding the making of the Scheme was successful. As the number of businesses covered by the Scheme is substantial and due to their high-risk nature, effective implementation was essential.

Since March 2009, businesses covered by the Scheme (hospitals, aged care facilities and delivered meal organisations) have received mandatory food safety program audits.

The evaluation study established food safety benchmarks for 2009 against which the impact of the Scheme can be measured in the future. These included measuring food safety performance, analysing audit outcomes and assessing the hygiene and safety of food served at the first scheduled audit. Specifically, at first audit, the evaluation (2009) established that:

- facility type (hospital, aged care or delivered meal organisation) had no marked influence on performance scores and audit outcomes
- medium/large sized vulnerable persons businesses performed better than very-small and small businesses
- Sydney/metropolitan businesses performed better than rural/regional businesses and that
- 99% of food samples tested were rated microbiologically acceptable<sup>i</sup>, with a small number of RTE meats, commercially prepared cooked desserts and pureed vegetables samples classified as either unsatisfactory or potentially hazardous.

The evaluation also established annual foodborne illness benchmarks for outbreaks and complaints linked to vulnerable persons businesses since 2008.

The evaluation study (2009) showed that the NSW Food Authority and the businesses covered by the Scheme are effective joint food safety managers – but with more improvements expected.

Implementation of the Scheme was successful because the evaluation established that vulnerable persons businesses:

- achieved higher first audit pass rates compared with other new Food Safety Schemes (Plants and Plant Products) at first audit
- earned food safety performance scores that compared favourably with scores from well-established Schemes
- demonstrated below-average ongoing failure rates compared with failure rates seen in well-established Schemes and
- demonstrated improved regulatory compliance and food hygiene over the five year implementation period

Evaluation assessment tools were validated by correlating onsite performance scores with audit ratings for the same business. Further development of tools may include weightings for critical food safety questions.

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<sup>i</sup> Samples are considered microbiologically acceptable when they are classified either 'good' or 'acceptable' when assessed against the Authority's *Microbiological quality guide for ready-to-eat (RTE) foods*<sup>6</sup>

The evaluation highlighted areas for improvement by industry and therefore focal points for the Authority's industry assistance program and regulatory (audit) services.

The Authority's formal evaluation framework includes a mechanism to manage improvement processes. This will include continued monitoring of audit outcomes for rural/regional and small businesses.

The Authority's food safety auditors will also focus on verifying industry food safety practices especially in relation to:

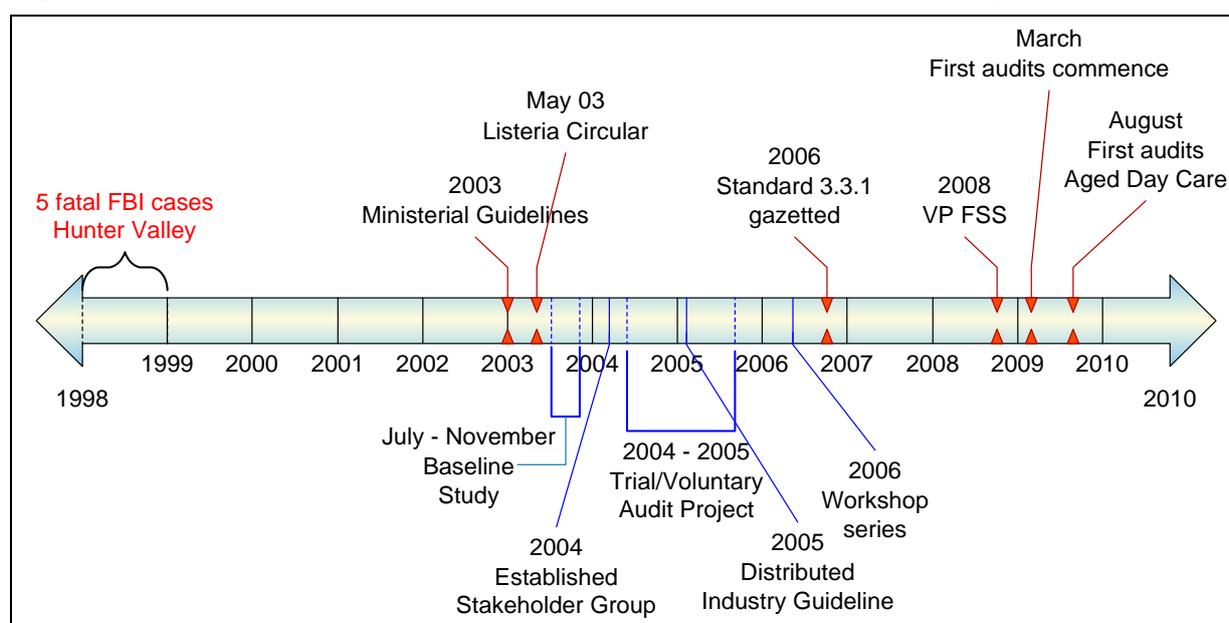
- processing pureed food (ensuring that it is correctly chilled and reheated in cleaned and sanitised equipment),
- sliced RTE meats (checking that meat is sliced using clean and sanitised equipment and that businesses safely manage sliced meat storage temperatures and times) and
- supplier approval programs (ensuring that programs are adequate when businesses purchase commercially prepared foods).

## 1. Implementation

### 1.1 Implementation timeline spans five years

In 2004, the NSW Food Authority (the Authority) (via its predecessor organisation NSW Health, Food Branch) started work implementing the Vulnerable Persons Food Safety Scheme (the Scheme). Figure 1 is a timeline of key project milestones.

**Figure 1. Implementation timeline for the Vulnerable Persons Food Safety Scheme**



Key elements of the project were:

- **Industry consultation** to ensure the Scheme was cost effective and practical (without comprising food safety outcomes). This included the establishment of both an Industry Reference Group (IRG) and Technical Working Group (TWG). The IRG comprised thirteen industry representatives (including relevant peak bodies) and met seven times between September 2003 and February 2008. The TWG was a sub-group of the IRG established to collaborate with the Authority on development of technical requirements and advice that was established in mid 2004.
- **Benchmark Survey** in 2003 of 91 hospital and aged care facilities. The survey, conducted by NSW Health's food inspectors and using a standard assessment tool, assessed food safety performance and preparedness to implement food safety programs. Microbiological testing of 341 food samples was also conducted.
- **Trial Audit Project** in 2004. Compliance of 54 volunteer hospitals and aged care facilities with Standard 3.2.1 of the Food Standards Code was assessed by the Authority's food safety auditors.
- **Advisory Audit Program** in 2005 of 204 hospitals and 297 aged care facilities. A program of advisory audits from the conclusion of the Trial Audit Project to the commencement of the Scheme in August 2008.
- Publication of **Industry Assistance Materials** in 2005 in the form of the *Vulnerable Persons Food Safety Scheme Industry Guide to Developing a Food Safety Program (Hospitals and Aged Care)* (2005). This was later revised and is now available as the *Vulnerable Persons Food Safety Scheme Manual* (2008) on the Authority's website.

- Publication of an **Example Food Safety Program** (for cook-fresh operations).
- Hosted an **Industry Workshop** series in 2006. Twenty sessions were held across NSW with 1200 persons attending.

Nationally, additional implementation assistance in the form of food safety program templates and training materials were developed specifically for Delivered Meals Organisations.

## **1.2 Effective implementation needed due to large, high-risk industry**

Improving food safety controls in food service to vulnerable persons was considered high priority as vulnerable people (children under five years old, older people, pregnant women and people who are immuno-compromised) are more susceptible to foodborne illness than the general population.

Due to the high-risk nature of these businesses, the Authority needed to effectively implement the Scheme so that hospitals, aged care facilities and delivered meals organisations (DMOs) were well prepared to comply with the new Scheme when it commenced.

An additional consideration was the large number of vulnerable persons businesses in NSW (at the time of the evaluation there were just over 1200 licence holders) and the Authority's limited auditor resources. Given the investment in a variety of implementation strategies and level of industry engagement, the Authority was optimistic that most businesses would have the tools, information and opportunity to use the material effectively and to maximise their chances to rate well at audit.

## **2. Measuring the impact of the Food Safety Scheme**

Ultimately, the intended outcome of the Vulnerable Persons Food Safety Scheme is to minimise the risk of foodborne illness. At this time, measuring achievements against an outcome like a reduction of the number of people who get ill or injured through eating food served by vulnerable persons businesses is not possible as an immediate reduction in foodborne illness rates attributable to these businesses is not expected. And further, because these businesses are subject to other influences besides those imposed by the Scheme, measuring changes in foodborne illness rates might prove to be difficult in the future.

Therefore, for this initial evaluation study, the Authority also focussed on measuring achievements made against medium-term intended outcomes such as:

- the Authority effectively implements and enforces the Scheme
- enhanced numbers of vulnerable persons businesses comply with the Scheme and
- food produced by vulnerable persons businesses is safe and clean.

### **2.1 Benchmarking and measuring implementation effectiveness**

The two main objectives of the Vulnerable Persons evaluation study (2009) were to:

- measure food safety performance, audit outcomes and the hygiene and safety of food served at the first mandatory audit in order to establish a benchmark against which the impact of the Scheme can be assessed over time, and
- to assess the effectiveness of the Authority's implementation of the Scheme

### **2.2 Four types of data used to establish food safety benchmark**

The evaluation used multiple types of onsite data to establish food safety performance and compliance benchmark scores at first audit. This included:

- food safety performance scores (as determined from standardised assessment tools)
- audit ratings (A, B, C, D and E)
- Corrective Action Request (CAR) issues assigned per audit and
- microbiological hygiene and safety food served by vulnerable persons businesses

After a five-year implementation process, mandatory audits for vulnerable persons businesses licensed under the Scheme began in March 2009. At first audit (during May to November 2009), the Authority's food safety auditors collected onsite performance data (using a standardised assessment tool) from over 100 licensed vulnerable persons businesses, representing 8% of the total number of licensed vulnerable person businesses at the time of the evaluation.

During the seven month sampling period, first audit outcomes (audit ratings<sup>ii</sup>) from almost five hundred vulnerable persons businesses were also analysed (n=478). This represents

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<sup>ii</sup> For each business, its audit rating is based on the number of defect points earned during an audit (A through E). D (48-63 points) and E (64 and above points) audit outcomes are considered unacceptable. The number of points allocated will depend on whether the defects are rated 'critical', 'major' or 'minor' by the Authority's food safety auditors. Defects are then documented as issues and their compliance is managed as part of a Corrective Action Request.

almost 40% of the total number of vulnerable persons businesses licensed with the Authority at that time.

In addition, food samples (n=347) were collected from 60 of the businesses included in the evaluation. Samples were analysed for indicators of microbiological hygiene and safety.

Collectively, this data provides a comprehensive benchmark against which changes can be measured over time.

### **2.3 Benchmarking food safety performance and audit outcomes in 2009**

As advised by industry consultation processes and informed by the Authority's past experience introducing Food Safety Schemes, the implementation process was tailored to take into account differences relating to facility type (hospital, aged care and delivered meal organisation), business size and location.

There were concerns that smaller-sized businesses operating with minimal kitchen staff (e.g. many aged care facilities) may require more assistance and time implementing the Scheme. In response, the Authority took a number of steps to assist small businesses, including the early publication of an Example Food Safety Program for cook-fresh operations.

Nationally, it was recognised that due to the high proportion of volunteers working in Delivered Meal Organisations (DMOs) that this sector needed specific implementation assistance tools. These were published in 2003, well before the Scheme took effect in NSW.

*Facility type has no marked influence on audit results and performance scores.* In 2009, the evaluation results showed limited variation between the performance scores (as calculated from the assessment tool) for each of the facility types (see Figure 2 below). However, direct comparisons are somewhat constrained due to the small DMO sample size (n=7<sup>iii</sup>) which represents only 8% of the total number of DMO businesses licensed at the time of the evaluation.

Conversely, higher audit pass rates were observed for DMOs (86%)<sup>iv</sup> compared with hospitals (80%)<sup>v</sup> and aged care facilities (76%)<sup>vi</sup> (see Table 1). In this case, the DMO sample size is larger and represents half of the total number of DMOs licensed by the Authority at that time. It also is worth noting that as audit outcomes and CAR issues are inter-related, the slightly lower CAR issues rates experienced by DMOs are therefore not unexpected.

Even though aged care facilities demonstrated lower audit pass rates than the other facility types, results were of a sufficient standard that no additional specific implementation assistance or compliance measures are considered necessary at this time.

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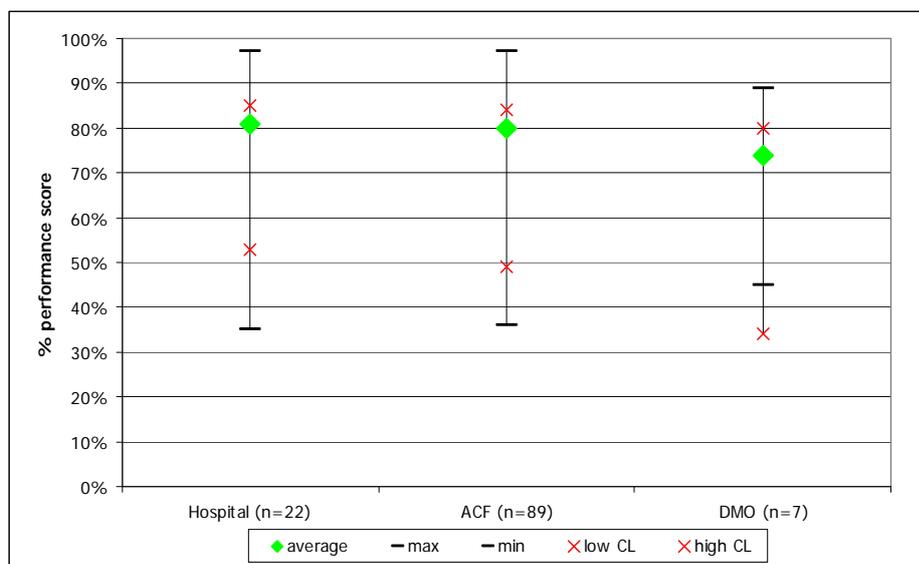
<sup>iii</sup> This category includes two Central Production Units (CPUs)

<sup>iv</sup> Representing 54% of the total number of DMOs licensed at the time of the evaluation.

<sup>v</sup> Representing 23% of the total number of hospitals licensed at the time of the evaluation.

<sup>vi</sup> Representing 42% of the total number of aged care facilities licensed at the time of the evaluation.

**Figure 2. Food safety performance scores of vulnerable persons facilities**



**Table 1. Audit outcomes of vulnerable Persons facilities**

	% of businesses passing first audit (n=478)	CAR issues rate (n=478)
Hospital	80%	7.2
Aged care facility	76%	7.4
DMO	86%	6.7

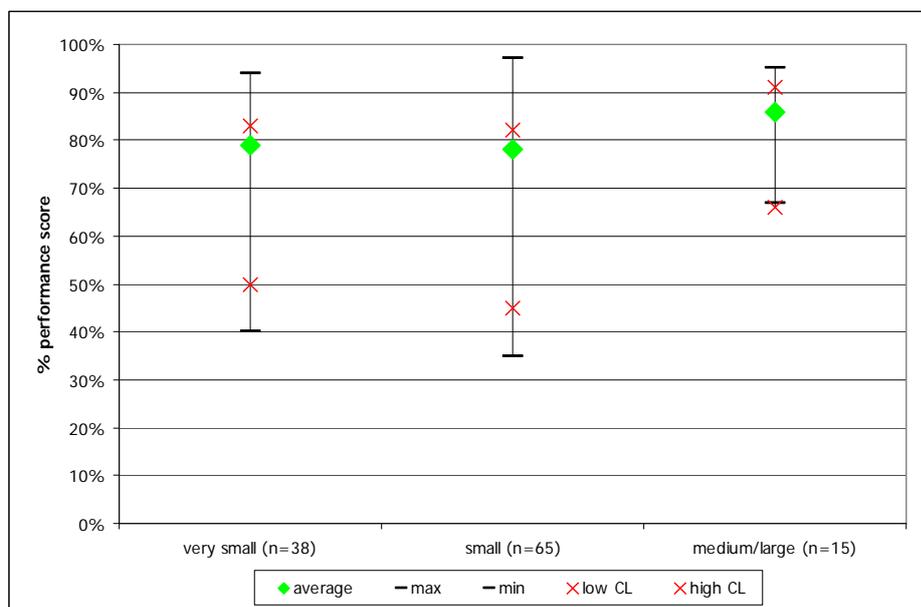
*Medium/large-sized businesses performed well at first audit.* As depicted in Figure 3, medium/large-sized<sup>vii</sup> vulnerable persons businesses achieved higher average food safety performance scores with minimal variability compared to scores for smaller-sized businesses. Likewise, as presented in Table 2, a higher proportion of medium/large-sized facilities passed their first audit compared with the smaller-sized facilities.

The lower CAR issues rates seen here for very small facilities simply reflects the simplicity of these operations in comparison with processing arrangements at larger facilities. Because most CAR issues raised were received for food safety program non-compliance, these results were not unexpected.

At this time, after taking into consideration the tailored assistance materials already available, the Authority considers that small and very-small facility types do not currently require any further category- specific implementation assistance.

<sup>vii</sup> Representing 13% of the total number of medium/large businesses licensed at the time of the evaluation.

**Figure 3. Food safety performance of vulnerable persons businesses by size**



**Table 2. Audit outcomes of vulnerable persons businesses by size**

	% of businesses passing first audit (n=459)	CAR issues rate (n=459)
Very small (0–3 FTE <sup>a</sup> )	75%	6.6
Small (4–10 FTE)	77%	8.1
Medium/large (more than 11 FTE)	87%	8.2

<sup>a</sup> Full time equivalent employees

*Sydney/metropolitan performed better at first audit compared with rural/regional businesses.* As listed below in Table 3, Sydney/metropolitan vulnerable person businesses performed better than rural/regional businesses at first audit (84% compared with 74%) and demonstrated higher audit pass rates (81% compared with 75%).

The Authority’s implementation program was tailored to specifically address vulnerable person businesses in rural/regional areas. Implementation workshops were conducted across NSW and industry consultation working groups included rural/regional representatives.

The Authority plans to monitor audit failures over the next year to see if vulnerable persons businesses from rural/regional areas continue to be over-represented in this group. It is worthwhile to note that upon further investigation of the audit and compliance data, almost half the rural/regional businesses surveyed were classed as ‘very small’ in size compared with only one-third of the Sydney/metropolitan businesses.

**Table 3. Food safety performance and audit outcomes of vulnerable persons businesses by location**

Location	Food safety performance	% of businesses passed first audit
Sydney/metropolitan	86% (n=48, 95% CL 60-90%)	81% (n=196)
Rural/regional	75% (n=70, 95% CL 45-79%)	75% (n=282)

## 2.4 Benchmarking food hygiene and safety in 2009

As part of the evaluation study (2009), food samples (n=347) were collected from 60 vulnerable persons businesses at first audit. Overall, 99% of the samples tested were within acceptable microbiological limits.

Figure 4 summarises analytical results for each of the food categories tested. Only three of the ten categories (sliced ready-to-eat (RTE) meat, cooked desserts and pureed vegetables) had samples that were rated as unacceptable (unsatisfactory or potentially hazardous as per the Authority's Guideline levels for determining the microbiological quality of ready-to-eat foods<sup>4</sup>). Details follow for each of the categories:

- A small number of sliced RTE meat samples (n=3) were identified as unsatisfactory due to elevated levels of Total Plate Count (TPC) bacteria ( $10^7$ - $10^8$  CFU/g). Even though the number of samples taken for this food category was small (n=14), the three unsatisfactory samples represent three different businesses and therefore indicate possible systemic problems. Audit findings for these businesses revealed that their food safety programs lacked appropriate procedures for RTE meat slicing, temperature control and shelf-life storage.
- A commercially produced cooked dessert sample was classified as potentially hazardous due to the identification of *Listeria monocytogenes*. Further investigation resulted in a supplier issued recall.
- One sample of pureed food (vegetable) was rated unacceptable due to elevated levels of *Bacillus cereus* indicating potential issues with cleaning and/or temperature abuse. Further highlighting the importance of carefully managing puree processes in vulnerable persons businesses, Figure 4 also shows that a higher proportion of the non-pureed samples (97% of vegetables and 98% of meat) were rated as 'good' compared with the pureed component<sup>viii</sup> of the same food (95% vegetables and 92% meat).
- No cook-chill samples (n=60) tested positive (Not Detected <100cfu/g) for *Clostridium perfringens*. This finding has been highlighted because recently this organism has been isolated from residents in a number of NSW aged care facilities and is typically attributed to inadequately cooled or reheated cook-chill foods. In addition, national outbreak data also showed that half the outbreaks associated with *Clostridium perfringens* occurred in aged care facilities<sup>5</sup>. While it is recognised that the significance of this result is limited due to the relatively small sample size, it is worthwhile noting that on average, industry performance for chilling and hot holding was 93% (n=122).

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<sup>viii</sup> Pureed food is appropriately assessed against a different, more relaxed hygiene standard.

**Figure 4. Microbiological hygiene and safety of foods served vulnerable persons businesses in 2009**



## 2.5 Comprehensive foodborne illness data available since 2008

Since 2008, the Authority has been comprehensively documenting foodborne illness outbreaks and complaints associated with vulnerable persons businesses (see Table 5 below).

Monitoring this information is one way for the Authority to ascertain whether the Scheme has had an impact on reducing the number of people becoming ill or injured through consuming food served by the vulnerable persons businesses.

Since January 2008, 51 people have been affected by confirmed or suspected foodborne illness outbreak. A total of 270 people have been affected by foodborne illness complaints<sup>ix</sup> that were linked to vulnerable persons businesses during the same period. This data now serves as a benchmark against which changes can be measured in the future.

**Table 5. Foodborne illness outbreaks and complaints linked to vulnerable persons businesses in NSW**

Year	Confirmed <sup>a</sup>	Suspected <sup>b</sup>	No. of people affected (confirmed/suspected outbreaks)	Complaints <sup>c</sup>	No. people affected (complaints outbreaks)
2008	--	3	12	6	132
2009	1	--	39	10	119
2010 <sup>d</sup>	--	--	--	3	19
Total	1	3	51	19	270

<sup>a</sup> Pathogen is isolated from both food and clinical sample. <sup>b</sup> A link has been established between the cases of illness and the food. <sup>c</sup> Includes suspected/confirmed outbreaks and outbreaks where people were reported as ill but there is insufficient evidence to determine a cause. <sup>d</sup> As of May 26 2010

<sup>ix</sup> Suspected, confirmed, insufficient evidence, referred to local council (one case)

### 3. Measuring the effectiveness of the implementation process

In 2003, the Authority first took steps to implement the NSW Vulnerable Persons Food Safety Scheme. One of the aims of the evaluation was to obtain evidence so that the Authority can objectively assess the effectiveness of the implementation process.

Implementation of the Scheme was successful because vulnerable persons businesses:

- achieved higher first audit pass rates compared to other Schemes at first audit
- earned food safety performance scores that compare favourably with scores from well-established Schemes
- demonstrated below-average ongoing failure rates compared to failure rates seen in well-established Schemes and
- have improved their regulatory compliance and food hygiene over the five year implementation period

#### 3.1 Higher pass rates were achieved at first audit compared to other new Schemes

In 2005, when the Plant Products Food Safety Scheme was first introduced, almost half the Plant Products businesses required a follow-up visit (n=48) after the first audit. In comparison, only one in every five audits of vulnerable persons businesses required a follow-up visit (see Table 6 below).

It is likely that this difference in performance lies in the fact that the Authority's implementation of the Plant Products Scheme was different. This was due to the smaller number and the more disparate nature of plant products businesses. Implementation did not include the release of industry specific Example Food Safety Program and no preparatory audits were conducted before the Scheme commenced.

Unfortunately, it is difficult to compare these results meaningfully with other Schemes because prior to this, audit rating practices were not standardised across all Schemes.

**Table 6. Food Safety Scheme first audit failure rates**

	<b>Plant Products 2005 (n=48)</b>	<b>Vulnerable Persons 2009 (n=478)</b>
First audit failure rate	48%	23%

### 3.2 Vulnerable persons food safety performance compares favourably with well-established Schemes

*Vulnerable persons businesses food safety performance scores are similar to scores achieved by well-established Food Safety Schemes.* The average food safety performance score for the vulnerable persons businesses at first audit (2009) was 80% (n=118, 95% CL 50-84%)<sup>1</sup>. In comparison, as part of the evaluation of Food Regulation 2004<sup>6</sup>, the overall food safety performance score for well-established schemes such as Dairy, Meat, Plant Products and Seafood was 83% (n=329, 95% CL 56-87%).

*Ongoing failure rates for vulnerable persons businesses are lower than well-established Schemes.* As expected, the proportion of vulnerable persons businesses that failed their first audit was higher than audit failure rates for well-established Schemes. However, vulnerable persons businesses failure rates for follow-up audits were actually lower than failure rates experienced by most well-established Schemes. Table 7 below presents the ongoing audit failure rates for each of the Schemes and vulnerable persons follow-up audits conducted during the evaluation sample period from 1 May 2009 to 30 November 2009.

**Table 7. Audit failures for new and established Food Safety Schemes**

Food Safety Scheme	Proportion of failed audits (May 1 to Nov 30, 2009)
Meat (Scheme established 1996)	15% (n=1923)
Dairy (Scheme established 1999)	8% (n=497)
Seafood (Scheme established 2001)	7% (n=472)
Plant Products (Scheme established 2005)	12% (n=59)
Vulnerable Persons first audit (Scheme established 2009)	23% (n=478)
Vulnerable Persons follow up after first audit	7% (n=72)

Furthermore, as set out in Table 8, almost 95% of the businesses that failed their first audit (n=72), passed their follow-up audit, two-thirds achieved an 'A' audit rating. Where businesses received an 'E' failed audit rating, the Authority took appropriate enforcement action as outlined by the Authority's *Regulatory Food Safety Auditor Manual*<sup>7</sup>.

**Table 8. Follow-up audit results for vulnerable persons businesses**

	Pass			Fail	
	A	B	C	D	E
businesses requiring follow-up audit (n=72)	93%			7%	
Follow-up audit rating	63%	25%	6%	0%	7%

### 3.3 Implementation assistance improved compliance rates at first audit

Vulnerable persons businesses that participated in the Baseline Study (2004) and Trial/Voluntary Audit Project (2004/05) achieved higher first audit pass rates (79% passed) compared to businesses that were not involved in the implementation program (66% passed). Table 9 presents the first audit results for each group.

Fortunately, the implementation assistance programs experienced high-levels of participation. Almost half (47%) the businesses included in the evaluation study (n=56) had received a voluntary audit before mandatory audits commenced. In fact, almost half of the vulnerable persons businesses licensed with the Authority (at the time of the evaluation) had received a voluntary audit or inspection before mandatory audits commenced in 2009. In total, the Authority conducted a total of 547 audits and 182 inspections in vulnerable persons businesses before the Scheme took effect in March 2009.

**Table 9. First audit outcomes for vulnerable persons businesses**

	Audit rating (% of businesses)						
	A	B	C	Pass	D	E	% failed
<b>No</b> - audit/inspection pre-regulation (n=62)	29%	27%	10%	<b>66%</b>	2%	32%	<b>34%</b>
<b>Yes</b> - audit/inspection pre-regulation (n=56)	29%	46%	4%	<b>79%</b>	0%	21%	<b>21%</b>

*Three times as many businesses in 2009 achieved A-rating compared with five years ago.* As outlined in Table 10 below, one measure of implementation success is the increased number of vulnerable persons businesses achieving higher audit ratings than were achieved compared with the start of the implementation period (2004). At the end of the implementation period, the number of businesses that achieved an A or B rating had increased compared with the audit results obtained in 2004 (Trial Audit Project).

**Table 10. First audit outcomes for voluntary and mandatory audits**

Audit score		Voluntary audits 2004 (n=54)	First mandatory audit 2009 (n=478)
Pass	A	11%	39%
	B	24%	34%
	C	38%	6%
Fail	D	N/A	0.2%
	E	26%	23%

### 3.4 Food served in 2009 shows improved food hygiene

Overall there has been an improvement in the microbiological hygiene of food served in vulnerable persons businesses since 2004 (Table 11).

In 2009<sup>2</sup>, compared with 2004<sup>3</sup>, a greater proportion of samples (n=347) were classified as microbiologically acceptable<sup>4</sup>.

**Table 11. Overall microbiological hygiene and safety of food served in vulnerable persons businesses**

Year	Acceptable	Unacceptable	
		Unsatisfactory	Potentially hazardous
2004 (n=342)	94%	6%	0%
2009 (n=347)	98.5%	1.2%	0.3%

Table 12 tracks the hygiene status of each food type at the beginning (2004) and the end (2009) of the implementation period by comparing the proportion of samples rated as acceptable. Sandwiches and salads were the two food types that demonstrated the most notable improvements during this time.

In 2004, sandwiches (19%) and salads (14%) were classified as 'unacceptable' due to high levels of Total Plate Count (TPC) bacteria, elevated *E.coli* levels or the identification of *Listeria spp.* Comparatively, in 2009, all (100%) salad and sandwich samples tested were classified as 'acceptable'.

However, three food types: cooked desserts, sliced RTE meats and pureed food are identified as areas needing care during preparation.

In 2004, cooked dessert samples were classified as unacceptable due to elevated levels of coliforms, or *E.coli*. These organisms were not identified in the samples collected in 2009, instead *Bacillus cereus* and *Listeria monocytogenes* were isolated.

Sliced RTE meats, compared to other food categories tested in 2009, had the lowest proportion of microbiologically acceptable samples.

The processing of pureed food continues to be identified as an area for improvement. In 2004, pureed vegetables were classified as microbiologically unacceptable due to high-levels of coliforms and Total Plate Count (TPC). In 2009, *Bacillus cereus* was detected. These results continue to reinforce the importance of correctly cleaning and sanitising puree equipment and ensuring that product temperature abuse does not occur.

**Table 12. Proportion of foods produced by vulnerable persons businesses that are classified microbiologically acceptable<sup>2,3</sup>**

	<b>2004 (n=342)</b>	<b>2009 (n=347)</b>	<b>Improvement</b>
sandwich	81%	100%	↑
salad	86%	100%	↑
pureed vegetable	97%	98%	≡
fruit salad	100%	100%	≡
cooked vegetable	100%	100%	≡
meat	100%	100%	≡
pureed meat	100%	100%	≡
cooked dessert	99%	97%	≡
sliced RTE meat	n/a*	79%	n/a

\*sliced RTE meats were not tested in 2004.

### 3.5 Food safety indicators show improvement

The data presented in Table 13 shows that over time vulnerable persons businesses have improved in a number of key food safety areas. Food safety performance indicators were initially benchmarked by the Baseline Study (2004)<sup>3</sup> and can now be compared with findings from this evaluation (2009)<sup>1</sup>. For example, over five years, the proportion of vulnerable persons businesses operating with externally audited food safety programs increased six-fold, the number of businesses with written training procedures almost doubled and businesses correctly plating and serving food is now almost 100% compared with less than one-third in 2004. There was no decline in food safety performance for any indicator.

**Table 13. A comparison of food safety performance indicators**

	2004	2009	Improvement
1	Audited Food Safety Program in 15% of businesses	Audited Food Safety Program in 100% of businesses	↑
2	Food maintained at appropriate times and temperatures in 27% of businesses	Food maintained at appropriate times and temperatures in 97% of businesses	↑
3	One-third of businesses verify food sanitation practices	Almost two-thirds of businesses verify food sanitation practices	↑
4	Written training procedures in 54% of the businesses	Written training procedures in 94% of businesses	↑

## 4. Improving evaluation methodology by validating the assessment tool

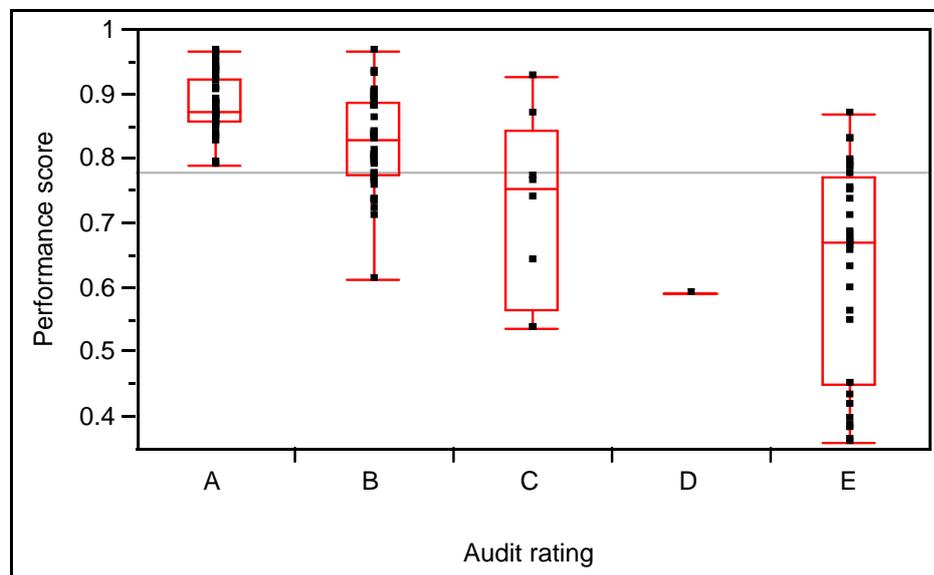
### 4.1 How do audit ratings and performance scores compare?

Evaluation methodology included the development of a standardised assessment tool (a compliance checklist) to measure food safety performance in vulnerable persons facilities. The purpose of the onsite tool was to standardise the information collected from each facility and to generate performance scores for each of the eight audit elements, thus identifying potential areas for improvement.

Figure 5 below depicts the correlation between audit ratings and performance scores for each vulnerable persons business that was included in the evaluation study (n=118). It shows that higher performance scores are a good predictor of the business passing the audit and appear to be highly correlated with audit ratings scores A, B and C's. However, the graph also shows that lower performance scores are less related to audit failure ratings (D and E's). This is because the assessment tool questions are not weighted and cannot therefore account for situations where the Authority's food safety auditor's award severity points for observed defects. Therefore it is possible that a business achieves a high performance score but fails the audit.

In the future, assessment tools could be further developed. They could be modified to include weighted questions and standard rules about halting data collection when the facility fails the audit. Currently, performance scores and audit outcome ratings used in conjunction serve to provide a comprehensive picture of what needs to improve at both the business and industry level.

**Figure 5. Audit ratings compared with performance scores**



## **5. Effective implementation achieved but more improvements expected**

The Authority's implementation of the Vulnerable Persons Food Safety Scheme has been effective.

Based on the recent evaluation findings (2009), large numbers of high-risk vulnerable persons businesses now operate with food safety programs. As businesses further develop their food safety and pre-requisite programs, we can expect to see continued improvement in audit outcomes and reduced variability in food safety performance scores.

The Authority plans to closely monitor the progress of vulnerable persons businesses in the future. Now that first audit evaluation data is available, it can be used as a benchmark against which change can be measured in the future.

This evaluation work has also highlighted areas for improvement by industry and therefore focal points for the Authority's industry assistance program and regulatory (audit) services. The Authority's formal evaluation framework includes a mechanism to manage improvement processes. This will include continued monitoring of audit outcomes for rural/regional and small businesses. The Authority's food safety auditors will also focus on verifying that businesses:

- adequately clean and sanitise puree and slicing equipment
- manage product processing and storage times and temperatures for pureed food and sliced RTE meats, and that
- businesses manage hazards associated with purchasing foods from commercial suppliers.

## References

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<sup>1</sup> NSW Food Authority. (2010). *Vulnerable Persons Food Safety Scheme Phase II evaluation- Onsite study of practices observed at first audit*. Retrieved October 22, 2010, from NSW Food Authority website:

[http://www.foodauthority.nsw.gov.au/ Documents/corporate\\_pdf/onsite\\_study.pdf](http://www.foodauthority.nsw.gov.au/ Documents/corporate_pdf/onsite_study.pdf)

<sup>2</sup> NSW Food Authority. (2010). *Vulnerable Persons Food Safety Scheme Phase II evaluation- Benchmarking the microbiological quality of food served by vulnerable persons businesses*. Retrieved October 22 2010, from NSW Food Authority website:

[http://www.foodauthority.nsw.gov.au/ Documents/corporate\\_pdf/benchmarking\\_micro.pdf](http://www.foodauthority.nsw.gov.au/ Documents/corporate_pdf/benchmarking_micro.pdf)

<sup>3</sup> NSW Food Authority. (2004). *Food Safety Baseline Survey of NSW hospitals and aged care businesses*, NSW Food Authority, Retrieved October 22, 2010, from NSW Food Authority website:

[http://www.foodauthority.nsw.gov.au/ Documents/corporate\\_pdf/baseline\\_study\\_2004.pdf](http://www.foodauthority.nsw.gov.au/ Documents/corporate_pdf/baseline_study_2004.pdf)

<sup>4</sup> NSW Food Authority. (2009). *Microbiological quality guide for ready-to-eat foods, a guide to interpreting microbiological results*. Retrieved May 3, 2010 from the NSW Food Authority Website: [http://www.foodauthority.nsw.gov.au/ Documents/science/microbiological\\_quality\\_guide\\_for RTE food.pdf](http://www.foodauthority.nsw.gov.au/ Documents/science/microbiological_quality_guide_for_RTE_food.pdf)

<sup>5</sup> OzFoodNet Annual Reports and OzFoodNet Quarterly Reports (2002 to 2010). Retrieved October 7, 2010 from OzfoodNet Website: <http://www.ozfoodnet.gov.au/>.

<sup>6</sup> NSW Food Authority. (2009). *Evaluating NSW Food Regulation 2004 Onsite study of practices observed by NSW Food Authority auditors*. Retrieved: July 16, 2010 from NSW Food Authority website:

[http://www.foodauthority.nsw.gov.au/ Documents/industry\\_pdf/eval\\_onsite\\_auditor.pdf](http://www.foodauthority.nsw.gov.au/ Documents/industry_pdf/eval_onsite_auditor.pdf)

<sup>7</sup> NSW Food Authority. (2009). *Regulatory Food Safety Auditor Manual*. Retrieved October 7, 2010 from the NSW Food Authority Website:

[http://www.foodauthority.nsw.gov.au/ Documents/industry\\_pdf/regulatory\\_food\\_safety\\_auditor\\_manual.pdf](http://www.foodauthority.nsw.gov.au/ Documents/industry_pdf/regulatory_food_safety_auditor_manual.pdf)