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Evaluation of the Urgent Community Care Pilots

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Acknowledgements

Thank you to those that formed the Steering Group for this project, including representatives from St John, Wellington Free Ambulance, the Ministry of Health, Capital & Coast DHB, MidCentral DHB, and Compass Health.

Thanks must also go to those paramedics, GPs and other health professionals in Horowhenua and Kapiti that took part in interviews, reviewed case files, and commented on emerging hypotheses.

Supporting relatively small-scale pilots is a valuable way of testing new models of care, and evaluations such as this provide a useful opportunity to reflect on the most appropriate interventions for addressing localised health issues within a wider framework of integrated service delivery in the community.

This has proven to be a very interesting evaluation and has produced learnings that we hope will be a useful input into future policy decisions on the urgent community care services and similar ambulance service interventions. What is clear is that, while the services may not be offering the best value-for-money across the entire health system, they are nevertheless having a measurable and positive impact on the delivery of care in their communities.

Evaluation Summary

- Both the St John and Wellington Free Ambulance (WFA) Urgent Community Care (UCC) services are having a **positive impact on the delivery of healthcare** in the Horowhenua and Kapiti respectively. The services are providing high standards of clinical care and are valued by both health professionals and patients.
- The benefits of the pilots include:
 - providing value to patients by allowing them to be successfully treated at home or in the community particularly for poorer elements in the Horowhenua community
 - adding capacity to ambulance services by reducing the time spent transporting patients to Emergency Departments (ED)
 - enabling traditional ambulance services to be reprioritised to respond to more serious priority 1 incidents
 - alleviating primary care workload, particularly in the Horowhenua
 - providing value to certain patients who otherwise would not have received timely access to health services
- Importantly, **the UCC service is having a measurable impact in reducing the volume of patients being transported to ED**. The pilots have been responsible for reducing the number of patients being transported to an ED by an average of 35 and 31 per month in Horowhenua and Kapiti respectively.
- By reducing the number of ED transports the UCC pilots will be having an impact on ED costs and capacity, albeit at a direct level (~1/day) that is unlikely to be noticed by ED staff. The pilots have also likely reduced the number of patients that would subsequently have required admission to hospital; but any such reduction is not statistically significant.
- Despite the positive impact UCC is providing in Horowhenua and Kapiti, **we do not consider the pilots are providing best value for money to the health system** in their pilot format.
- We note the following issues with the pilots:
 - UCC is inducing demand from patients for ambulance services. Due to the presence of UCC, St John is responding to 46 more ambulance incidents each month (29% of UCC activity), with WFA responding to an additional 26 incidents each month (19% of UCC activity). All ambulance and UCC dispatch decisions are triaged through the Communication Centre system. However, there is evidence patients are aware of the free service and are requesting it in instances where there may be difficulties accessing primary care (due to reasons of cost/mobility/availability).
 - At a combined cost of \$1.5m p.a. the pilots are not seeing enough patients (fewer than 10/day across both pilots) to be having a marked impact on cost savings elsewhere in the system (an average patient-contact cost of \$421).
 - While UCC is freeing up some ambulance capacity, there is still considerable resource duplication: ambulances attended 45% of St John UCC responses and 40% of WFA UCC callouts.
 - Many of the patients seen by St John could likely have been dealt with in a primary care setting (raising questions about whether the service should be fully integrated), while the deployment by WFA is not optimal for trying to reduce transports to ED (being primarily used as a first responder).
- Nevertheless, the pilots do show some merit and there are opportunities for refocusing them.

Evaluation Summary cont.

- We consider there are **a number of improvements** that could be made to support the operation of UCC:
 - Changes can be made to ensure that triage and deployment plans focus UCC resourcing on the types of incidents where they can be the most effective (particularly for WFA).
 - There is a need for a clearer definition of the boundary between UCC and primary care, particularly given that many of the clinical issues being dealt with by UCC are of the type one might expect to be treated in primary care. There is likely to be an opportunity for the St John service to be delivered from a primary care setting.
 - The issues associated with induced demand for services need to be addressed. This can be done through delivery from primary care setting (i.e. dispatched by a medical team), the introduction of a user-charge for St John, or by investing in improving points of entry and triaging (potentially having Healthline involved in redirecting patients).
 - Any home visiting service (nurse or paramedic) is an expensive model with limited throughput. That aside, both UCC pilots are simply not seeing enough patients to deliver value-for-money and there is a need to improve productivity and patient throughput. There are likely to be opportunities to reduce reporting requirements for paramedics, reduce time spend on scene, and improve access to patient records.
 - Should the UCC model be retained/expanded, then changes to the ACC funding model are likely to be necessary to complement efforts for treating in the home.
- With respect to the **St John UCC pilot**:
 - UCC is providing a valuable service and there would be strong negative effects for both primary care and ambulance care in Horowhenua if it was withdrawn.
 - However, its principal value is that it is filling gaps with access to primary care in a deprived region; a valuable role but not necessarily what it was initially designed to address.
 - The service needs to be refocused: either becoming an integrated part of a primary care response to acute medical events in Horowhenua, or a rationing system is needed so it is primarily supporting episodic emergencies.
- With respect to the **WFA UCC pilot**:
 - The WFA UCC service is acting as a substitute for traditional ambulance response with highly trained paramedics. The cases seen by WFA were not typically 'primary care' incidents, but acute emergencies.
 - However, the cost-effectiveness of the WFA UCC needs to be enhanced :
 - It is not being appropriately targeted at low priority incidents, so only a small proportion of patients seen are actually amenable to treatment at home
 - It is not seeing enough patients
 - Despite these two limitations, the WFA UCC is still having a relatively significant impact on reducing ED presentations. With some operational refinements it could have an even larger impact.

Summary of the pilots: key metrics

	Horowhenua (St John): pilot began December 2010	Kapiti (Wellington Free Ambulance): pilot began May 2009
Average annual UCC incidents	1,883 (5.2/day)	1,632 (4.5/day) (since moving to 24hr service)
Total UCC incidents/jobs during pilot period (to August 2012)	3,296 (5,635 responses)	5,114
Total ambulance incidents in the year prior to UCC	6,966	4,880
Total ambulance incidents in the final year of the pilot	10,583	8,295
Average annual growth in incidents during UCC period	18% (14% in the last 12 months)	21% (3% growth in the last 12 months)
Increase in incidents attributable to induced demand	957 (to August 2012) (46/month; representing 7.9% of activity prior to the pilot)	1,099 (June 2009 to Nov 2012) (26/month; representing 6.4% of activity prior to the pilot)
Avoided transfers to ED	735 (to August 2012) (35/month; representing 8.4% of transports prior to pilot)	1,130 (to April 2012) (31/month; representing 11.2% of transports prior to pilot)
Avoided hospital admissions	<i>Not statistically significant</i> Best estimate: 117 (to August 2012) (6/month)	<i>Not statistically significant</i> Best estimate: 437 (to April 2012) (12/month)

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THE UCC PILOTS

A brief description of the UCC pilots

The UCC service has a single Extended Care Paramedic (ECP) attending an incident in a car, compared to the standard crew of two paramedics in a fully-equipped ambulance (the Emergency Ambulance Service – EAS). The ECP has advanced training, an advanced skill set (i.e. can undertake suturing) and is able to administer certain medicines (pain relief and antibiotics).

The pilots have been partially funded by the Ministry of Health on the basis they are likely to be an effective means of treating patients in the community, with a reduction in unnecessary transfers to ED (and costs). Both pilots are offered free to patients – which is also the case for WFA services, although St John charges patients with medical emergencies who are responded to by EAS.

TWO KEY DIFFERENCES	St John pilot	WFA pilot
Points of entry for patients	Through Central Comms (requires a 111 call or phone transfer)	Multiple entry points: 111 + direct calls from GPs, nurses, rest homes
Triaging	UCC activated for Priority 2 & 3 incidents From Dec 2010 to Dec 2011, UCC vehicles were also tasked to attend Priority 1 incidents alongside EAS	UCC activated for nearly all calls in Kapiti (WFA is now making investments in triaging to allow selective activations) Initially, dual-response, but now UCC being used as primary responder, requesting EAS where needed

The St John Horowhenua Pilot

- The pilot was initiated in early December 2010.
- The service is based in Levin and operates between Himintangi in the North, Peka Peka to the South, and Shannon to the East
- It operates as a 24/7 service
- The nearest ED is in Palmerston North, approximately 45 minutes from Levin
- Annual operating costs of \$761,000 and 5.25 FTE.

The Wellington Free Ambulance Kapiti Pilot

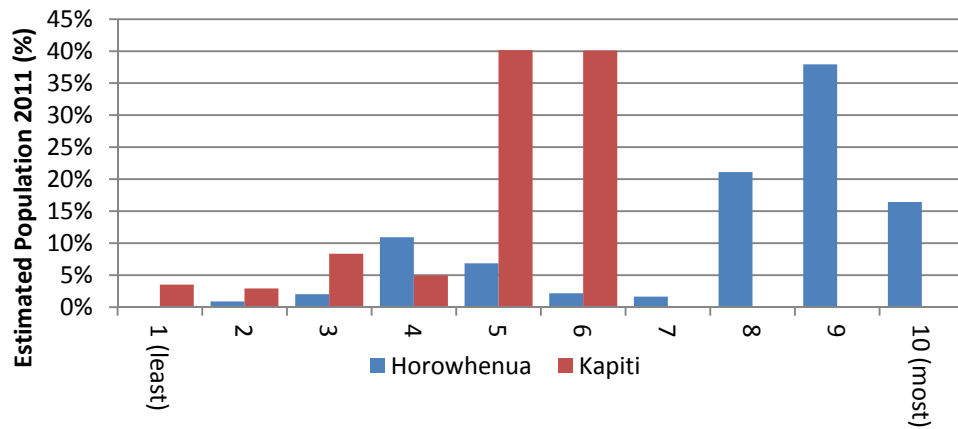
- The pilot was initiated mid-May 2009.
- The service is based in Paraparaumu and operates between Peka Peka in the North, to Pukerua Bay to the South, and Puatahanui to the East
- It currently operates as a 24/7 service, although only operated for 12 hours/day from May 2009 to January 2010
- UCC undertakes basic patient transfers if needed
- The nearest ED is in Wellington, approximately 45 minutes from Paraparaumu
- Annual operating costs of \$718,000 and 5.25 FTE.

Context: growth in demand for ambulance services and increasing ED presentations

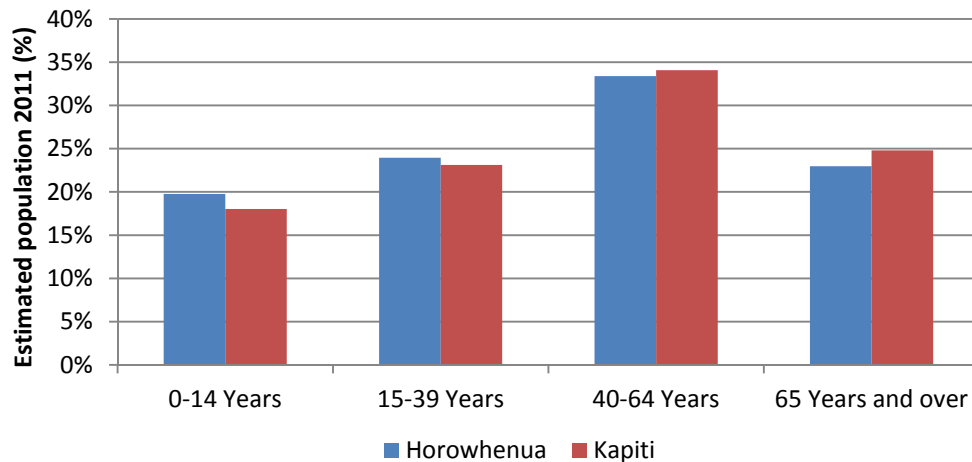
- The stakeholder interviews identified the following aspects as being **drivers for the UCC pilots**:
 - A significant projected increase in demand for emergency ambulance services, with growing numbers of transportations and ED presentations
 - A need to achieve efficiency gains in ambulance services through demand management, while maintaining high quality clinical care
 - A need to move towards an integrated urgent response system
- The pilots were designed in light of those pressures, although all **recognised that the pilots had evolved**. Initial objectives identified included:
 - Reducing unnecessary ED presentations
 - Rebalancing ambulance resources: freeing up resources for priority events and improving response times
 - Improving patient experiences and aligning with Better Sooner More Convenient (BSMC): delivery of integrated care in the community
- There was common view that the evaluation should not be too narrow and should explore all the benefits/costs associated with the pilots
- The interviews identified some common **points that the evaluation needed to address**:
 - Recognising that the pilots have evolved through learning (more effective/efficient recently than when initially deployed)
 - Attributing any identified changes to the UCC pilots, as opposed to what would have occurred anyway
 - Validating that the data is accurate (particularly regarding ED)
 - Ensuring that any projected savings reflect marginal costs and are realisable
 - Articulating differences between the Horowhenua and Kapiti pilots

The two pilots are serving two different populations

Population deprivation by decile in Horowhenua and Kapiti



Age groups in Horowhenua and Kapiti



- The Horowhenua operating area (St John) has one of the highest rates of deprivation in New Zealand:
 - 16% of the population are in the highest decile for deprivation (compared with 0% in Kapiti); while median family incomes are 30% lower than the national average.
 - The 4 practices in the region are all in the top 20 Compass supported practices (totalling 102) for the proportion of deprived patients to total enrolled population.
- By contrast, the Kapiti region (WFA):
 - is typified by an older population. With 25% of the district's population over 65 (twice the national average), the district has a higher proportion of the population over the retirement age than any other district or city in New Zealand.
 - is relatively well-off compared with the national population, with a relatively high proportion of affluent citizens.

The two pilots are also operating in very different environments

Horowhenua (St John pilot)

- There is a shortage of GPs in the Horowhenua, with GPs having high patient numbers and high workloads (the population per GP in Horowhenua is 1,500-2,343). There are also limited after-hours services available: an after-hours centre is open in Palmerston North until 10pm (45 minute drive), patients can wait until working hours, or they can contact St John.
- Based on our interviews with health professionals in the Horowhenua we consider these factors have a number of implications for the St John UCC pilot:
 - For reasons of cost, many patients are likely to avoid accessing primary care services until they absolutely need to
 - There may often be difficulties for patients in getting timely access to healthcare, with GP workloads being very high
 - The relatively low consultation rate in the Horowhenua means there may be health issues that are going undiagnosed and untreated
- The net effect of these is that the availability of a free-to-the-home UCC service is likely to be highly valued by patients and health professionals and will likely be adding considerable value in improving access to healthcare

Kapiti (WFA pilot)

- The region is also well-served by GPs and those we interviewed did not think that there would be systematic issues in the district regarding access to primary care. There is also a well-resourced after-hours centre in Paraparaumu that is open until 10pm.
- We consider there are a number of features that will impact the operation of the WFA UCC service:
 - In contrast to Horowhenua there is less likelihood that the service will be utilised by those unable to access primary care. As such, the WFA is more likely to respond to emergency incidents.
 - As the WFA EAS is already free to the patient, there is less likely that the introduction of a new free service (UCC) would result in a significant shifting of demand from primary care to ambulance services.

A sample of St John UCC cases

The following are a sample of three case studies provided for illustrative purposes: a dual response where UCC has been attributed with avoiding an ED transfer, a single UCC response during after-hours that has been attributed with avoiding an ED transfer, and a dual-response where the patient was transported to ED.

Case study 1 : 11 month old, female

Father became concerned about his daughter's temperature. UCC and EAS co-response encouraged the family to console child with a bottle-feed, and this enabled a thorough assessment. It appeared the child was teething and running a low fever, but was not too unwell, and could have more paracetamol than her parents had been prepared to administer.

The UCC plan enabled the family to reassure and settle the child, and to be reassured themselves. The EAS crew were happy to admit that without UCC attendance they would have "played it safe" and opted for transport to Palmerston North ED. The plan included the ability for the parents to call ambulance back if they had further concerns, and for the child to be seen by her GP if she didn't improve the next day.

Case study 2: 89 year old female, Otaki

UCC called to attend elderly Maori woman living on her own with no social or whanau support nearby. Undertook medical history and physical assessment. Patient reporting feeling unwell and burning sensation when passing urine. Undertook medical history and physical assessment. A dipstick test confirmed heightened nitrates and white blood cell levels, and in conjunction with other clinical signs, a UTI infection was indicated.

UCC prescribed a short course of Trimethoprim and gave advice on hydration and future care and health indications. Incident occurred late evening at the start of the weekend, with no primary care support available; patient record given to GP on Monday morning. Paramedics considered Patient would have been transported to hospital without input from UCC.

Case study 3: 84 yrs, female, Levin.

EAS and UCC responded to call from an elderly carer – elderly female reporting sickness, dizziness and chest pain.

The patient had a history of stroke, low blood pressure/heart rate/diabetes and a recent heart attack and limited mobility. She has a recent hospital stay, being discharged only 2 days ago. She has complex medications (4 separate blister packs per day) which may contribute to her symptoms.

UCC took medical history from patient and carer, undertook physical and neurological assessment (patient unsteady on feet and arms shaking) Urine OK, pulse OK and ECG unable to detect heart problems. No clear set of symptoms identified and muscular chest pain indicated level of risk therefore patient taken to hospital by EAS.

A sample of WFA UCC cases

The following are a selection of WFA UCC responses provided for illustrative purposes. They include two cases where the ECP considered UCC was responsible for avoiding an ED presentation (and one possible admission), and a case where the patient was transported to ED.

Note, these WFA case studies are based upon standard notes provided by ECP. As these tend to be very brief (often with 1-2 words on diagnosis) some important detail may be missing.

Case study 1: 71 year old, male

UCC responded to a 111 call from an elderly patient with a sore throat.

Basic observations were taken, a diagnosis of likely tonsillitis was made, and codeine prescribed. No referrals were made.

In the ECP's view, the UCC attendance prevented an ED attendance and likely admission of the patient. The ECP spent 90 minutes on the scene.

Case study 2: 91 year old, female

UCC responded to a medical alarm being triggered at 10pm Midland Gardens Retirement Village.

Elderly patient had diarrhoea and vomiting. Basic observations were taken and an initial diagnosis was of a gastrointestinal infection. The final outcome was a GP being called to make a home visit.

In the ECP's view, the UCC attendance prevented an ED attendance. The ECP spent one hour and 40 minutes on the scene.

Case study 3, 26 year old male

UCC and EAS both responded to a 111 call from a man with severe back pain.

Basic observations were taken, with an initial diagnosis of renal colic being made. The ECP and ambulance officers performed an IV cannulation with Fentanyl IV, Ibuprofen, and Paracetamol being administered.

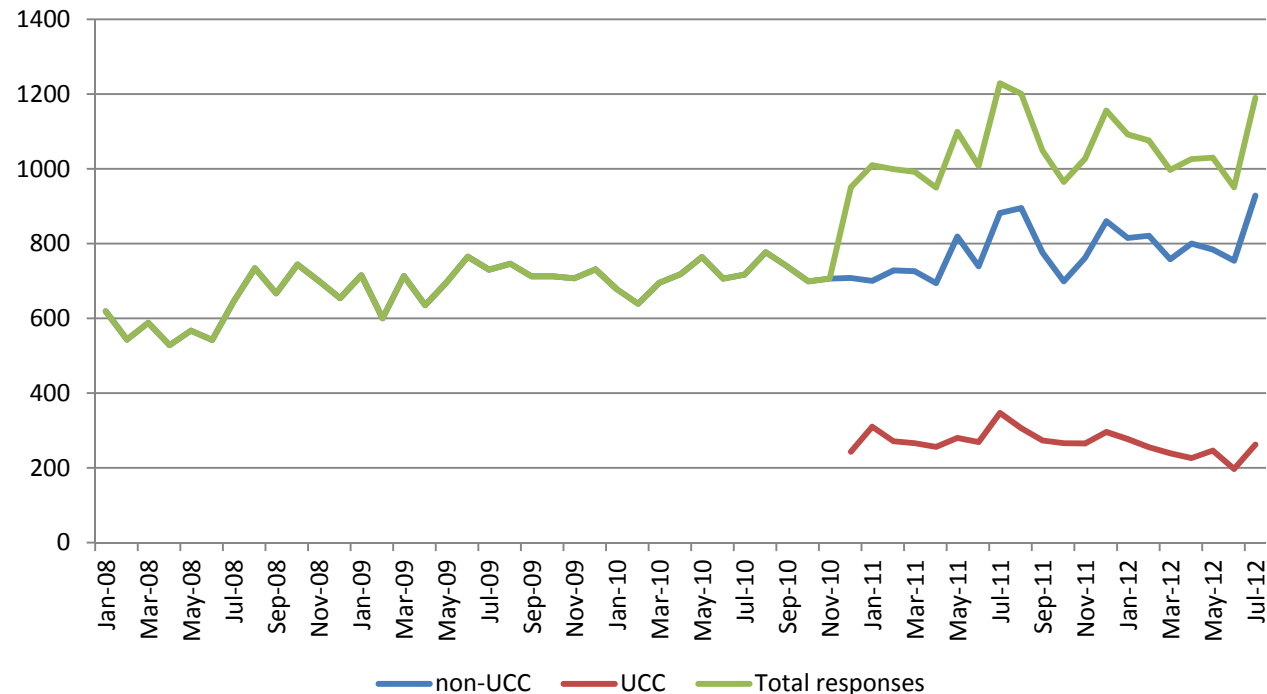
The patient was subsequently transported to ED. The ECP spent 30 minutes on the scene.

KEY UCC METRICS:
ST JOHN

Total St John activity in Horowhenua has increased significantly post-UCC

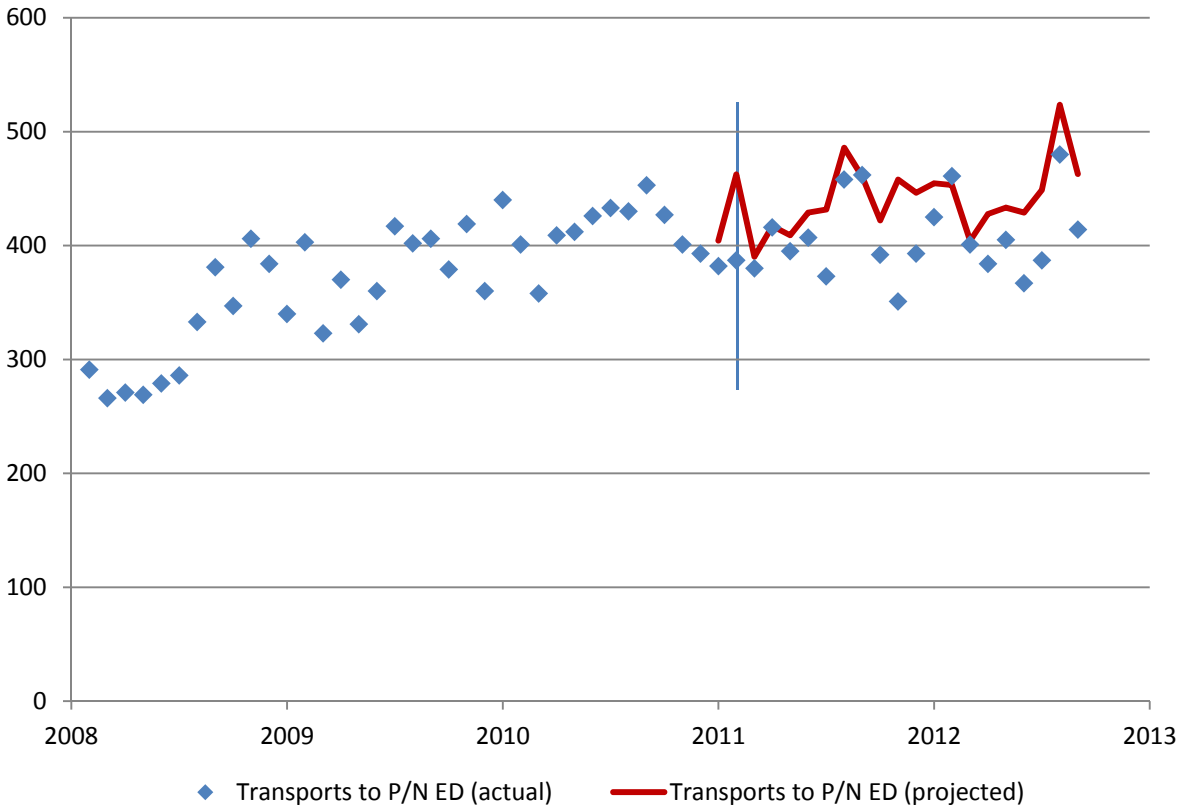
- Total St John responses have increased markedly since UCC pilot was introduced (increase of approximately 70%)
- The increase in total activity is to be expected given application of additional resource through UCC
- UCC call-outs have been fairly stable since the pilot began – an average of 267/month (UCC designated ‘incidents’ average 157/month)
- This graph does not necessarily demonstrate induced demand. It may simply reflect continued use of available EAS capacity, i.e. the ambulance crews are not idle

Total St John activity in the Horowhenua



UCC has reduced transports from Horowhenua to Palmerston North ED

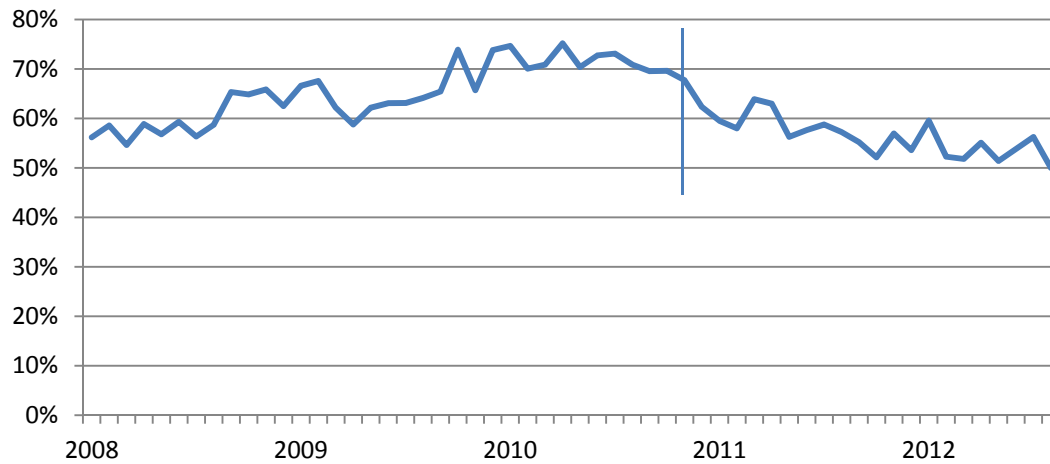
Ambulance transports from Horowhenua to ED



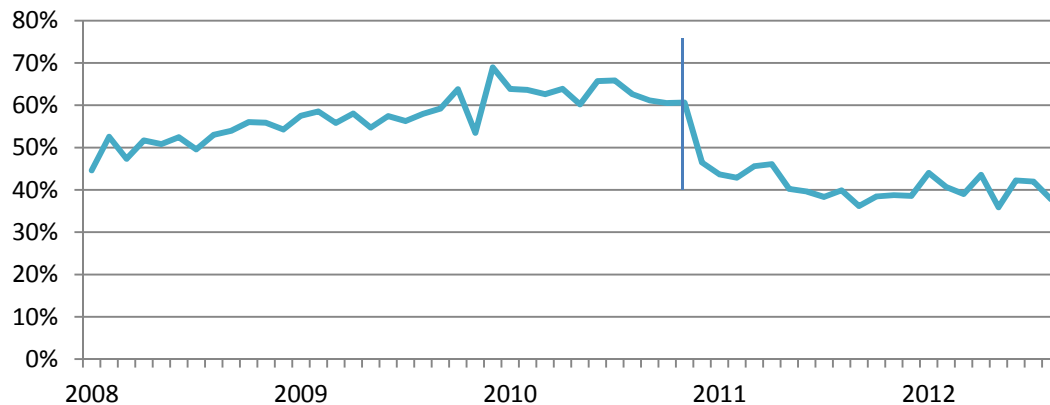
- UCC has had a material effect on the total number of ambulance transfers to ED in the Horowhenua
- In first year of UCC operation, annualised ED transports in the Horowhenua decreased by 129 on the previous year (a 7% decrease). In the same period in Palmerston North (our control region), annualised ED transports increased by 399 (9% increase)
- We conclude that **the introduction of the UCC pilot in Horowhenua has resulted in 735 fewer patient transportations to ED** during the pilot period (35 avoided transports per month):
 - Factual (Dec 2010 to Aug 2012): there were 8,520 transports by ambulance to ED
 - Counter-factual (Dec 2010 to Aug 2012): there would have been 9,255 transports by ambulance to ED
- This analysis has been based on Poisson regression for Horowhenua transports, with an offset for Palmerston North transports to adjust for period effects and growth. Our conclusion on avoided transportations is made at a 95% confidence level (more detail on the modelling used is in Appendix 2).
- Stakeholders have been unable to account for any other interventions that may have reduced ambulance transports in Horowhenua at a different rate to the wider Manawatu.

The St John transportation rate has fallen

St John transportation ratio in Horowhenua



St John transportation ratio in Horowhenua, for 111 calls

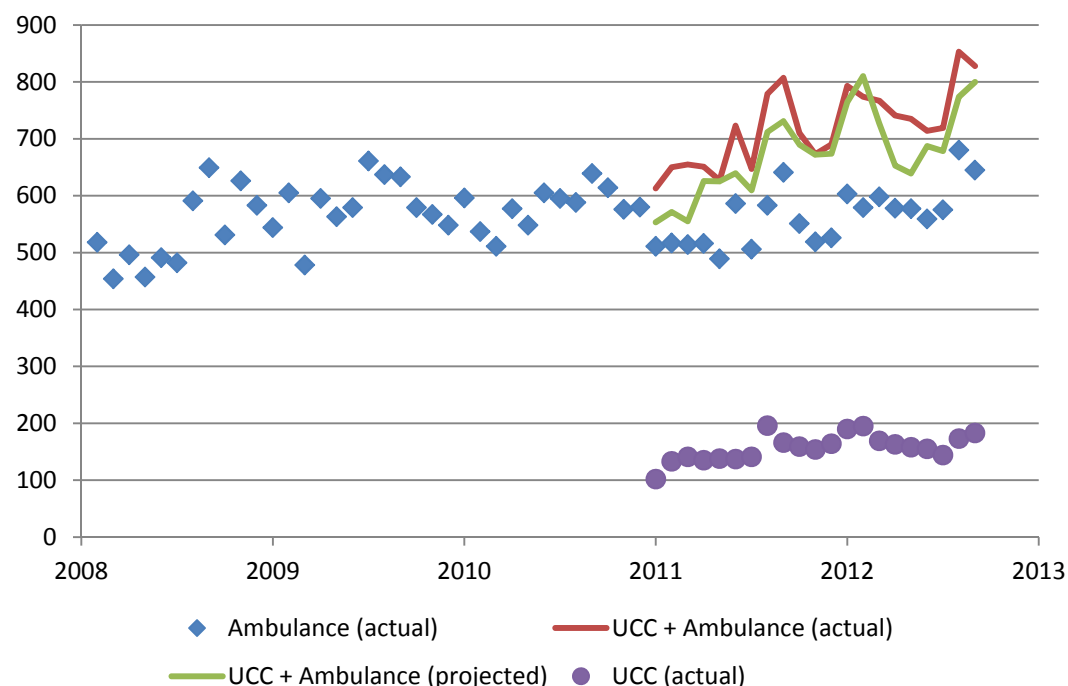


- The total transportation rate for St John has fallen from an average of 72% in the year preceding the UCC pilot to an average of 54% in the final year of the pilot.
- The decline in the proportion of transports for 111 incidents is particularly marked: falling from a rate of 60% to 40% since the introduction of the pilot. This is a trend one would expect if UCC is successful in meeting its objective of treating patients at home rather than in ED.
- However, it is necessary to then consider whether the ratio has declined because the introduction of UCC has resulted in an increased volume of ambulance incidents.

However, UCC has induced demand for ambulance services in Horowhenua

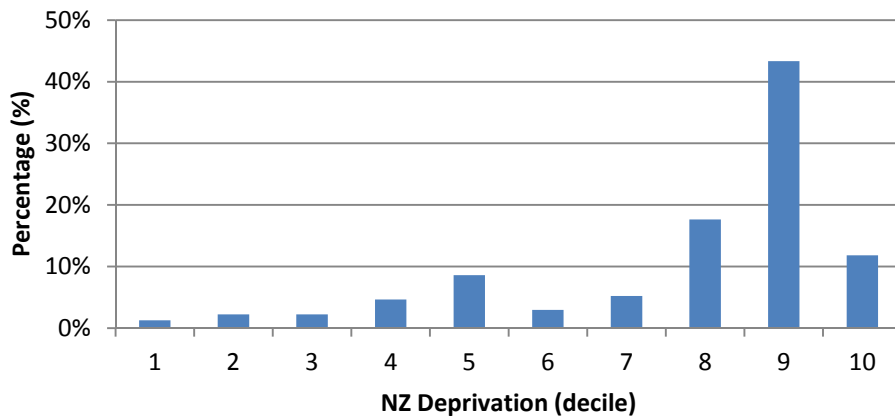
- There is clearly induced demand for ambulance services associated with the introduction of the UCC pilot in the Horowhenua.
- Total ambulance incidents have increased at an average annualised rate of 18% since the pilot was introduced, compared with 2% growth in the years preceding the pilot (and 8% in Manawatu)
- We conclude that **the introduction of the UCC pilot in Horowhenua has resulted in an additional 957 ambulance incidents** during the pilot period (an additional 48 events per month):
 - Factual (Dec 2010 to Aug 2012): there were 15,149 incidents
 - Counter-factual (Dec 2010 to Aug 2012): there would have been 14,192 ambulance-only incidents in the absence of the UCC pilot
- This analysis has been based on Poisson regression for Horowhenua incidents, with an offset for Palmerston North incidents to adjust for period effects and growth. Our conclusion on induced demand is made at a 95% confidence level.
- Stakeholders have been unable to account for any other interventions that may have increased St John incidents in Horowhenua at a different rate to the wider Manawatu.

Actual v projected SJ incidents in the Horowhenua

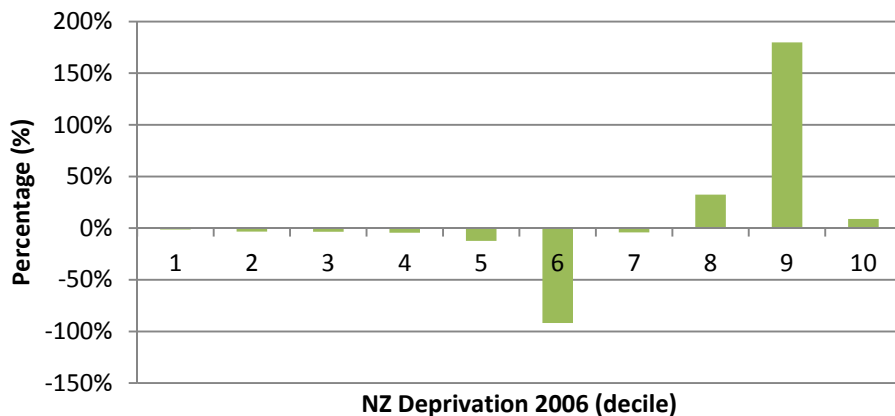


Induced demand is disproportionately from lower socio-economic groups

St John Horowhenua incidents during pilot, shown by decile



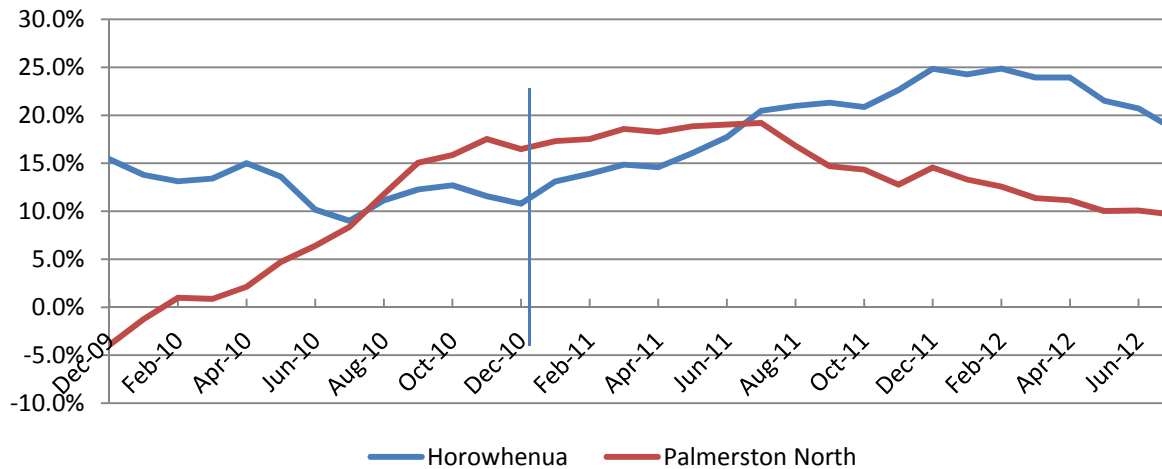
The make-up of the induced demand in Horowhenua, by decile



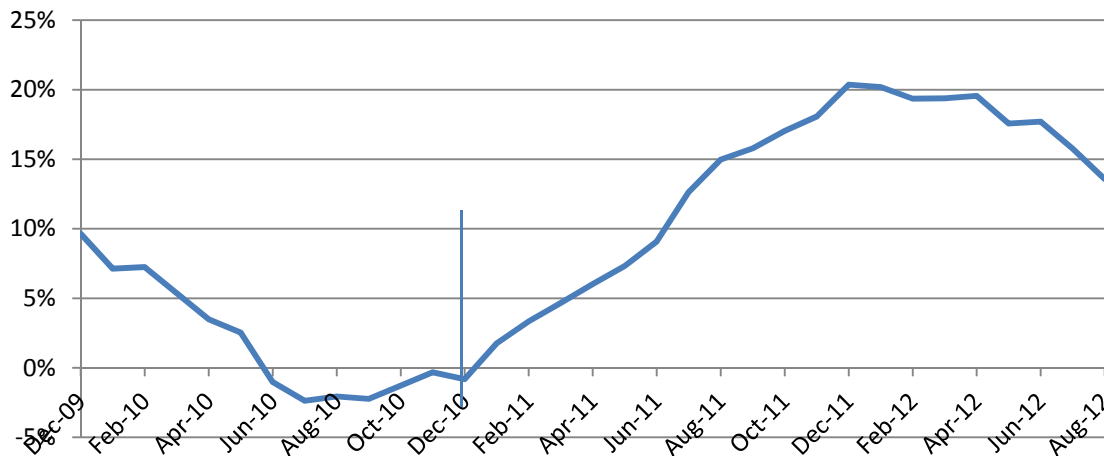
- The top graph shows that the vast majority of St John incidents during the pilot period are to low decile areas: with 73% of incidents to the most deprived areas (deciles 8, 9 and 10); albeit this is a make-up that closely reflects the proportion of the population in those deciles.
- The bottom graph shows the extent to which each decile has contributed to the induced demand that has been witnessed: with decile 9 population accounting for 180% of the growth in incidents attributable to UCC, which to some extent is offset by a 92% reduction in incidents that would have been expected from decile 6 areas.
- As will be shown later in the paper, many of the incidents being seen by UCC are events that elsewhere one might expect to be seen in a primary care setting. When combined with the fact that the growth in ambulance incidents is disproportionately in the lowest deprivation areas, it would appear that the UCC service is assisting in servicing unmet health needs amongst the poorer elements in the community, who otherwise may well not have engaged with a primary care team (for reasons of cost, mobility, inability to get an appointment etc). While providing a valuable service, one can query whether the UCC service is the most appropriate means of providing this care and in patching over issues with access to primary care in the Horowhenua.

The induced demand for St John is present in an increase in 111 calls

Annualised growth in 111 calls



Annualised growth in Horowhenua incidents

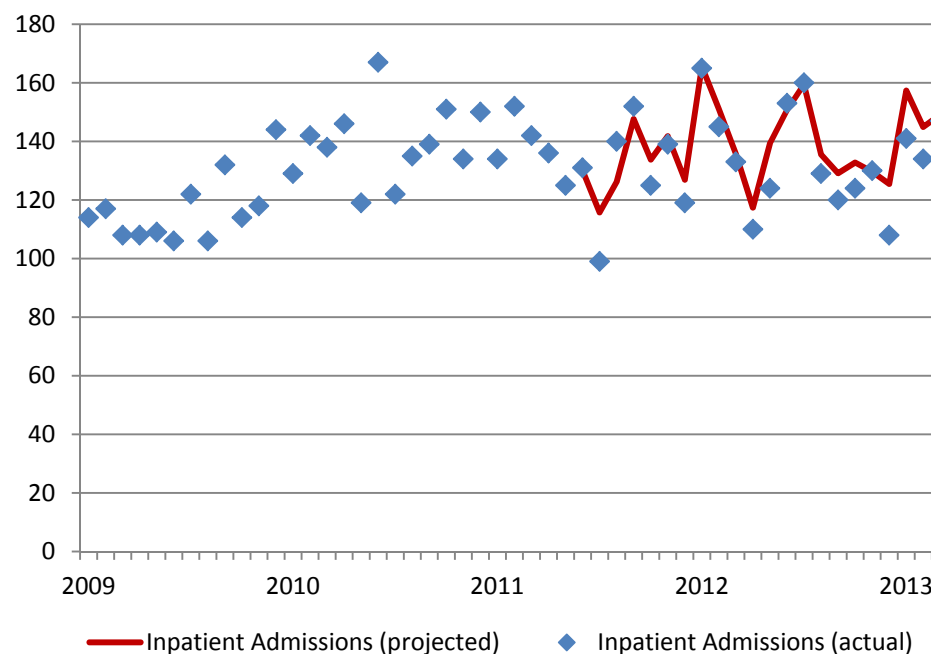


- We note that the induced demand associated with the introduction of the UCC pilot in the Horowhenua is visible in 111 volumes.
- Annual increases in 111 incidents for the first year of the UCC pilot were (to November 2011):
 - Horowhenua (UCC): 23% (compared with 12% growth for comparable period pre-UCC)
 - Manawatu (control): 13%
 - St John national increase in ambulance activity of 4.5%
- The Horowhenua trend for higher growth in 111 calls has since continued, with 19% growth in the year to June 2012 (10% in Manawatu)

St John UCC has not had a statistically significant impact on inpatient admissions

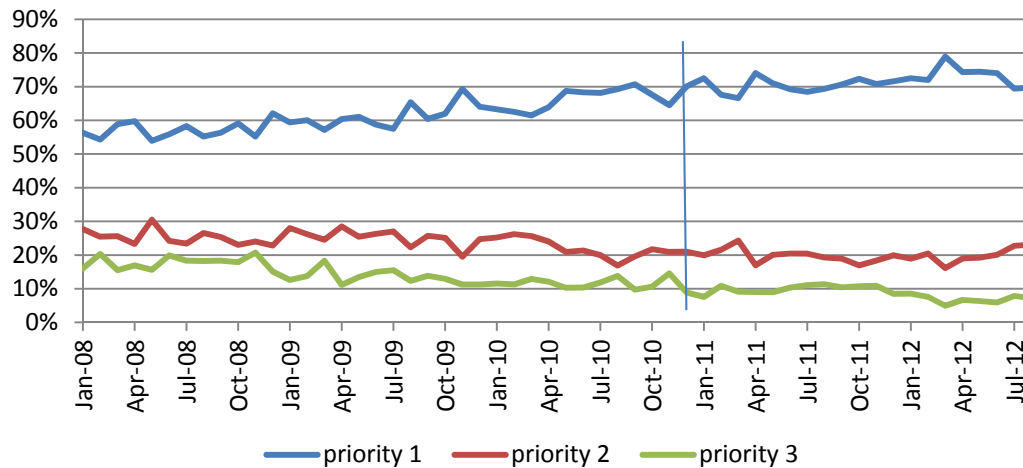
- We have previously concluded that the St John UCC resulted in 735 fewer transportations to ED. We consider that in the absence of the UCC service, some of this patient group would have been admitted to hospital as inpatients. Although this patient group would be of relatively low acuity (as they are amenable to treatment at home), some of this group would have been relatively unstable, elderly, and would be some distance from their homes when at ED (i.e. In the absence of UCC there would have been some 'social admissions').
- Our modelling suggests that **UCC may have resulted in 117 fewer inpatient admissions** (6 fewer per month):
 - Factual (Dec 2010 to Aug 2012): there were 3,045 admissions from ambulance presentations from the Horowhenua
 - Counter-factual (Dec 2010 to Aug 2012): there would have been 2,928 admissions from ambulance presentations
- However, unlike other conclusions, **this figure is not a statistically significant reduction** and is instead a best-estimate based on available information. While we have used a figure for avoided inpatient admissions of 6/month, we cannot discount the possibility that there has been no reduction.
- This analysis has been based on a Poisson regression for admissions from ambulance presentations from the Horowhenua, with an offset for admissions from ambulance presentations from the wider Manawatu.

Projected and actual inpatient admissions for ambulance presentations from the Horowhenua

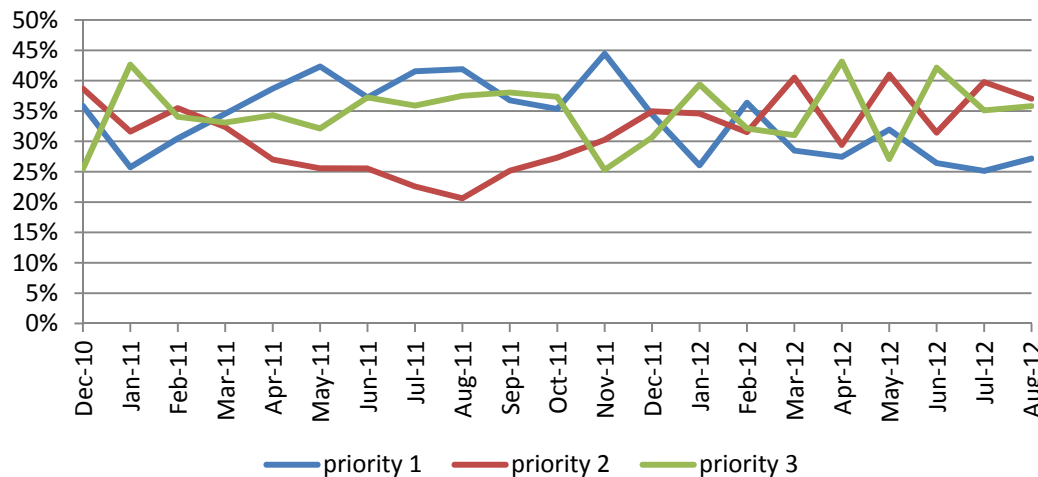


Traditional ambulance services have been freed up to respond to priority 1 incidents

St John EAS incidents in Horowhenua, by priority



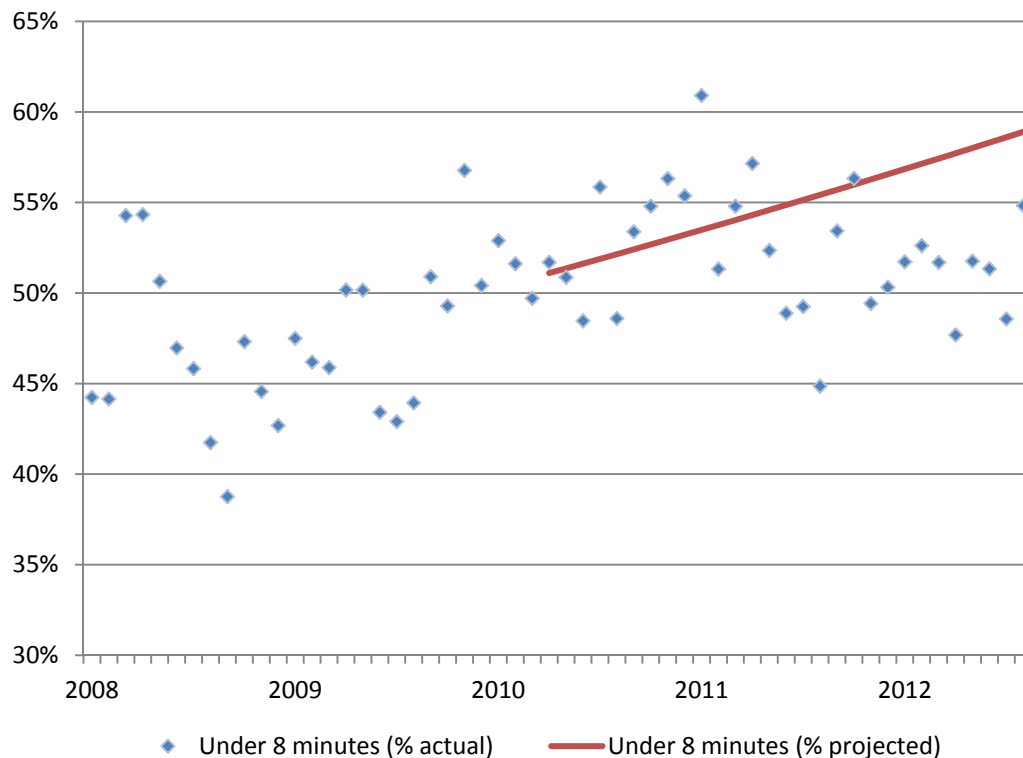
St John UCC incidents in Horowhenua, by priority



- If UCC was successfully dealing with low priority events, one might expect traditional EAS to be reprioritised to deal with more higher priority events that typically require subsequent transportation.
- **Since the introduction of the UCC service, EAS vehicles have been responding to a higher proportion of priority 1 incidents:** in the year prior to UCC priority 1 incidents accounted for 66% of EAS incidents – a figure that increased to 73% in the last year of the pilot.
- Over the course of the pilot there have been some fluctuations in the priority of the incidents that UCC is responding to, but this appears to have stabilised over the last nine months.
- When compared with EAS, **the UCC service is responding to a much higher proportion of priority 2 and 3 incidents.**
- The introduction of the UCC service has not significantly impacted on the overall EAS performance for the district

It is inconclusive whether UCC is responsible for improved response times

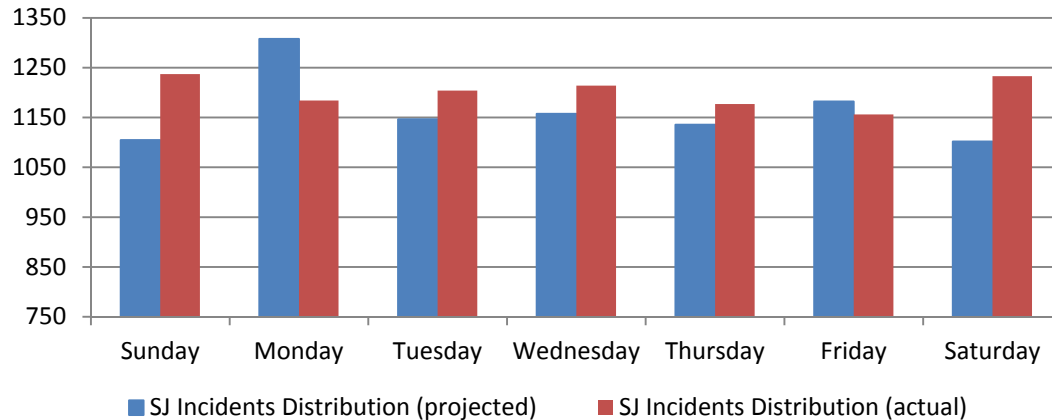
Proportion of St John Priority 1 responses in Horowhenua made within 8 minutes



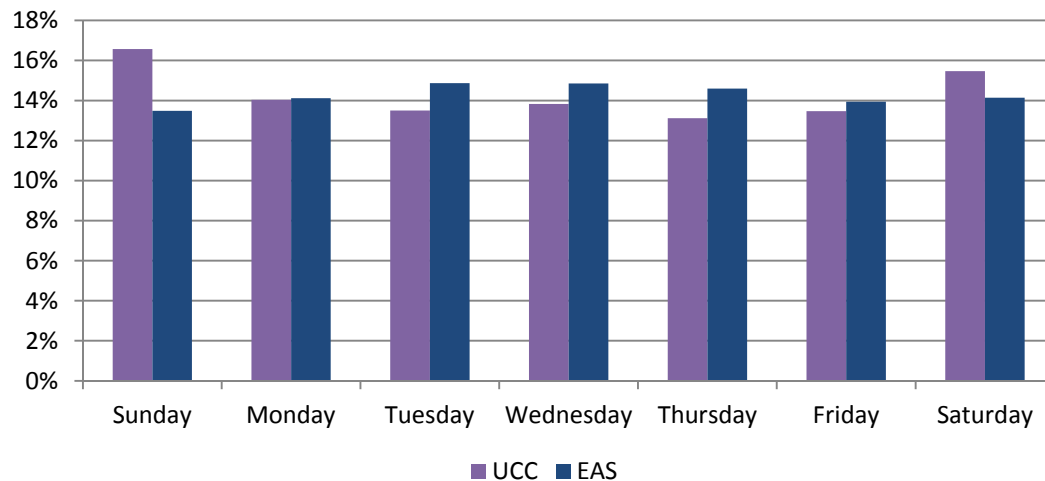
- St John has a target of responding to 50% of priority one incidents in urban areas within 8 minutes. The graph to the left shows the proportion of responses within 8 minutes for *all* priority 1 incidents in the Horowhenua (i.e. Including rural/remote).
- We would expect that the introduction of UCC would free up EAS capacity and result in improved response times to individual life threatening incidents.
- The graphs shows that the response time has improved since the implementation of UCC. However, the graph also shows that St John has been making considerable improvement in response times in the past several years. While a trend analysis is less relevant in this case (i.e. there are constraints on the ability to make constant improvements in response times), it is not clear whether the introduction of UCC has actually been responsible for the improvement in St John response times for priority 1 incidents.
- Our view is that, although there has been an improvement in response times, it is inconclusive whether UCC alone has been responsible for this change.

Growth in incidents is disproportionately high during the weekend, as is UCC activity

St John incidents by day of the week, actual v projected (i.e. If no UCC)



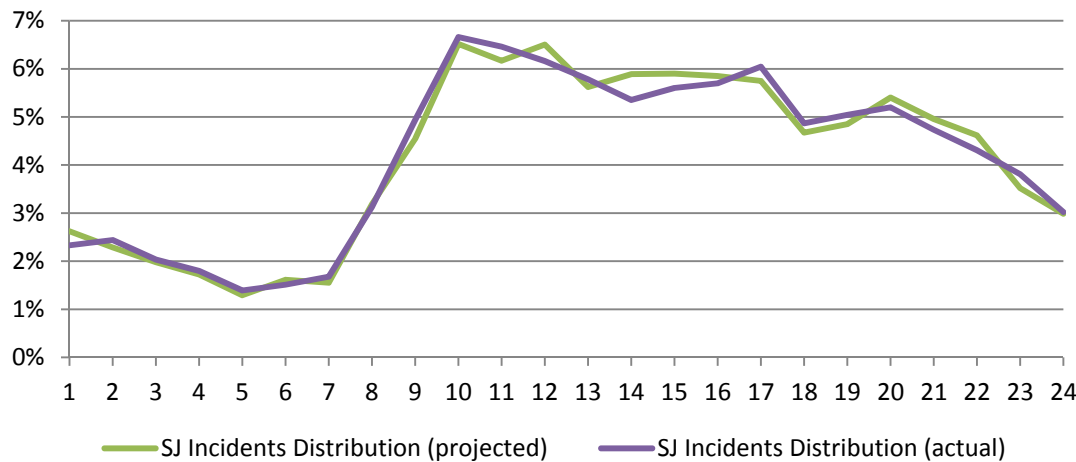
Proportion of incidents by day of week for UCC and EAS



- The UCC pilot has had an impact on how St John incidents break-down by day of the week. This supports the view that UCC (and ambulance services) is being used by patients when access to primary care is impractical.
- **Most of the increase in incidents that St John is responding to since the inception of the pilot has occurred on the weekend** (with incident growth of 4x the average). Saturday and Sunday are now the busiest days for St John in the Horowhenua, whereas in the absence of UCC we would expect them to be the slowest.
- There has also been a relatively marked decrease in incidents occurring on Mondays, suggesting that patient are now utilising UCC rather than previously waiting until Monday to have problems attended.
- An examination of the days of the week in which UCC is responding to incidents demonstrates that **UCC is busiest on Saturdays and Sundays** (comprising 32% of all UCC activity), and is indeed considerably busier than EAS on those days

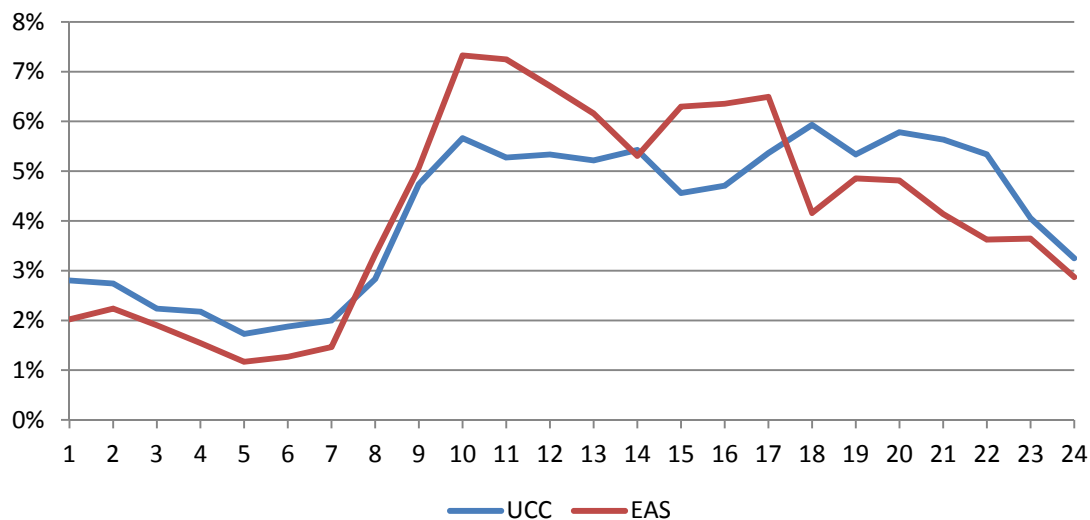
UCC is filling a greater after-hours function than traditional ambulance services

Proportion of incidents, by time of day, actual vs projected



- The increase in incidents has been relatively uniform throughout the day, compared with what we project would be the case if there was no UCC pilot. The exceptions to this are:
 - Incidents between 9-11am: where incident volume increased at nearly 3x the average rate of incident growth that we would have expected to see in the absence of UCC
 - Incidents between 2-4pm: where incident volume fell by 4%

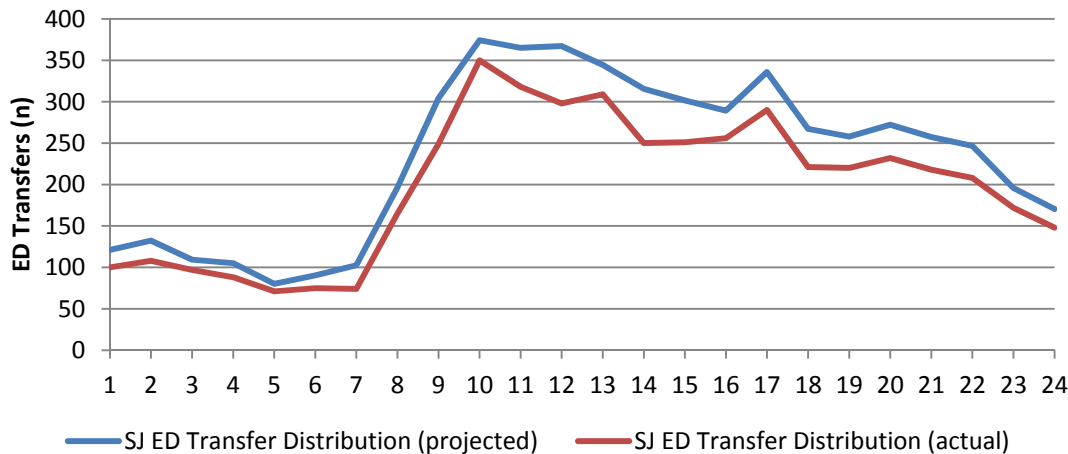
Proportion of incidents by time of day, UCC vs EAS



- **The growth in incidents between 9-11am indicates there may be difficulties accessing primary care services for acute care in Horowhenua.** Patients who are unable to make an appointment in the morning with their GP may instead be contacting St John.
- The second graph compares how UCC and EAS incidents vary by time of the day. The graph shows that **UCC is playing a significant role in after-hours care in Horowhenua**: compared with EAS spend a higher proportion of their time responding to incidents between 6pm-8am, with UCC being busiest between 6-10pm.

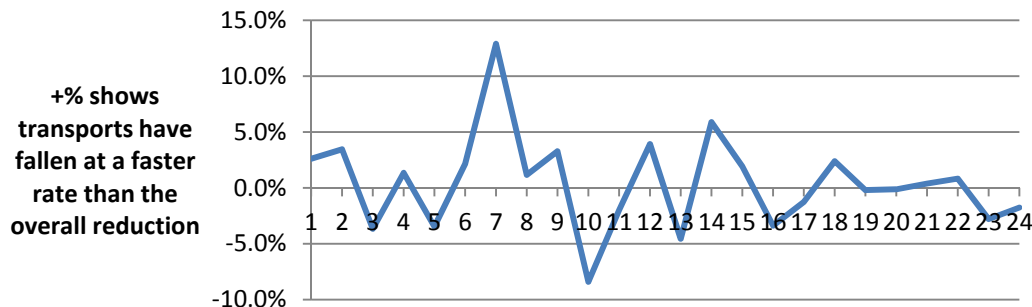
The reduction in ED transports has been fairly uniform throughout the day

Time of day for Horowhenua ED transports: comparing actual vs. projected transports



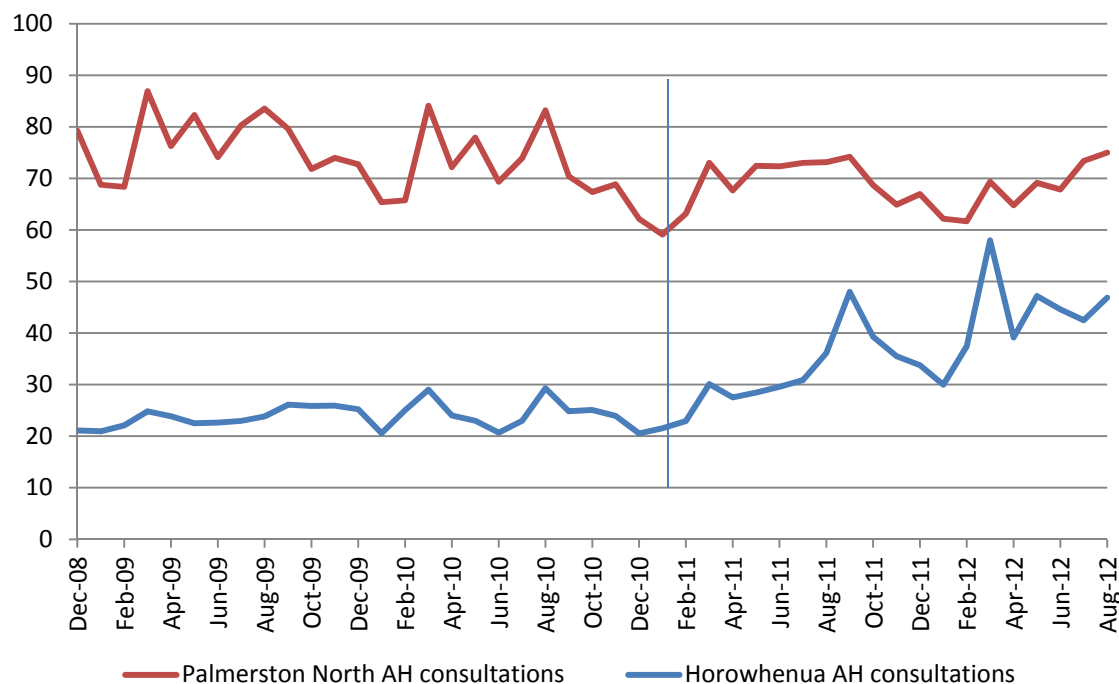
- The reduction in the volume of ED transports has been relatively uniform throughout the day.
- The total reduction in ED transports is largely coming during 9am-5pm, with 51% of avoided ED transports coming from within this 8 hour period . However, this is not a disproportionate number and instead reflects the higher volume of transports that typically happen during these hours. As the second graph shows, reduction in transports during these hours is close to the overall reduction in transports
- Despite UCC’s relatively high level of activity during after-hours, there has not been disproportionate reduction in ED transports during this period: the reduction in transports from 6pm-12pm mirrors the average rate of reduction.

Extent to which the fall in ED transports departs from the average reduction



Despite UCC activity, after-hours GP consults are still increasing in the Horowhenua

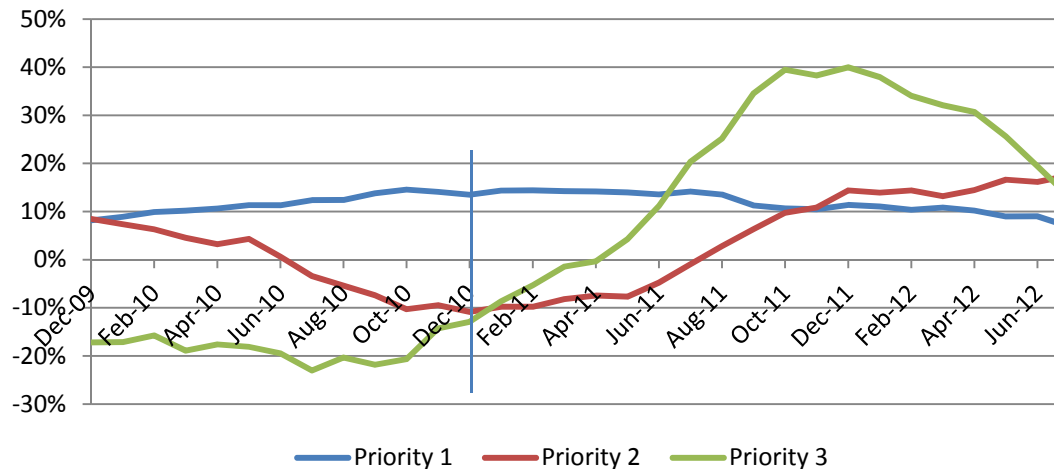
After hours consultation rates, per 1,000 enrolled patients



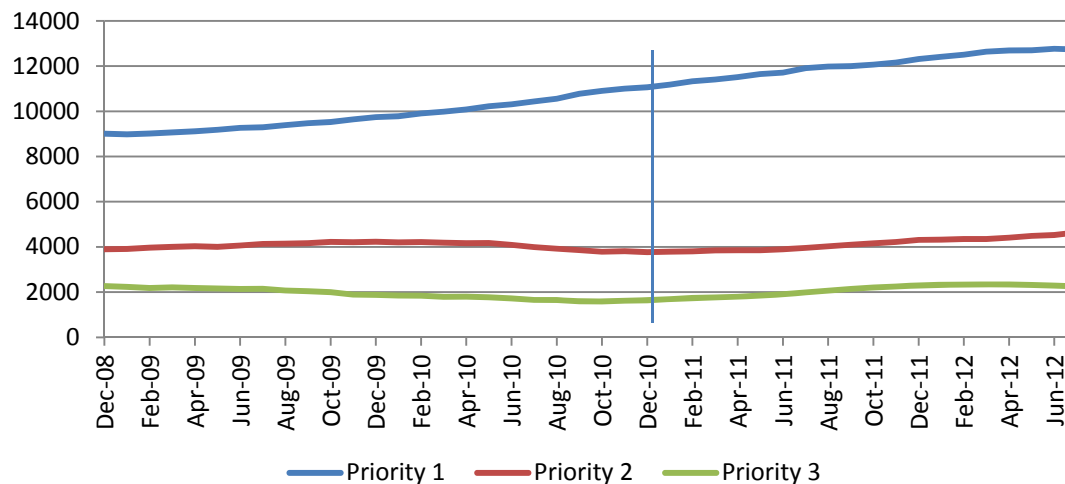
- Consideration was given to whether UCC pilot in the Horowhenua may be substituting for inadequate after-hours care in the District
- There is no evidence that the UCC pilot has resulted in a decrease in after-hours primary care consults (5pm-9am weekdays, and weekends).
- There has in fact been a marked increase in after hours consults from April 2011; however, we do not have any indication that UCC is the cause of this growth in after-hours consultations. We are advised that the afterhours roster in the Horowhenua was changed in December 2010, with much improved patient access.
- Growth of Healthline utilisation in MidCentral during this period also provides a variable factor:
 - An additional 1,023 callers to Healthline from Mid-Central in April-June 2011 were classified as an emergency or referred to urgent or near-immediate care, than in the same period in 2010.
 - We note Mid-Central has nearly twice the average national Healthline utilisation. However, there is no indication why Horowhenua might be more amenable to an increase in afterhours consults – unless there have been other factors at play

UCC may have affected the seriousness of incidents St John is responding to

Annualised rate of growth in St John incidents, by priority



Annualised St John incidents, by priority



- One might expect that, with evidence of induced demand, that there would be an influx of relatively priority cases being responded to by St John
- Indeed, **the sharpest growth in incidents following the introduction of UCC was for the least-serious priority 3 category:** with a 40% increase in such incidents in the first year of the pilot.
- However, as indicated by the second chart, the volumes of priority 3 incidents are relatively small and have since returned to their long-run average.

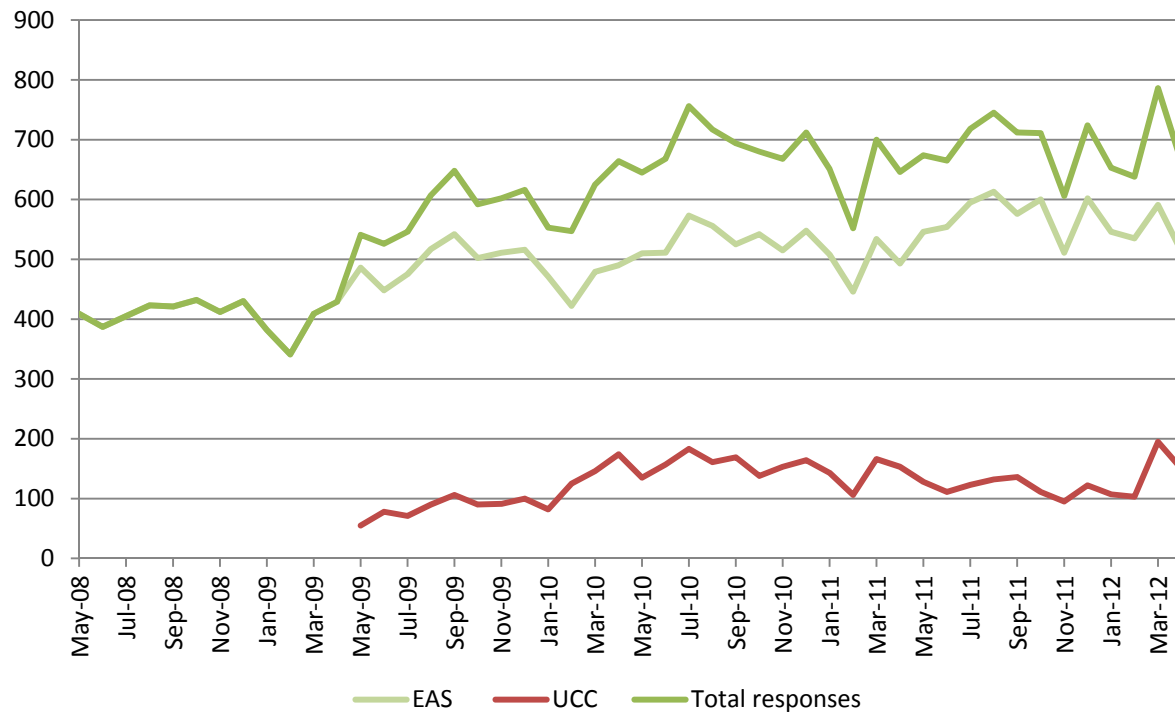
KEY UCC METRICS:

WELLINGTON FREE AMBULANCE

Total WFA activity in Kapiti has increased significantly post-UCC

- Total WFA responses appear to have increased markedly since UCC pilot introduced.
- As with St John, there was a material increase in activity one year after pilot was introduced (55%). This is somewhat to be expected given new UCC capacity
- However, there has been no discernable increase since May 2010, which supports comments from interviews that WFA have made significant operational learnings. In particular, WFA no longer operate a dual-response system.
- Significant changes in activity indicates the need to evaluate mid-2010 activity separately
- Note, WFA moved from a 12hr to 24hr service in January 2010

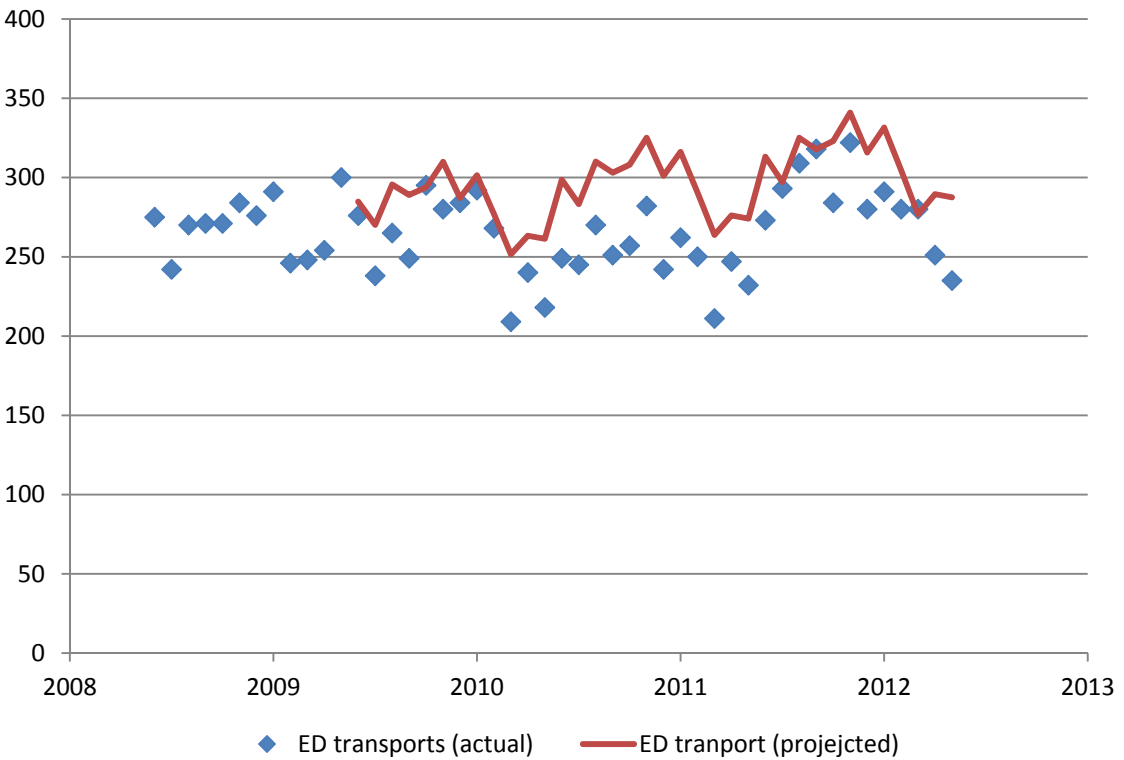
WFA total responses in Kapiti



UCC has reduced transports from Kapiti to ED

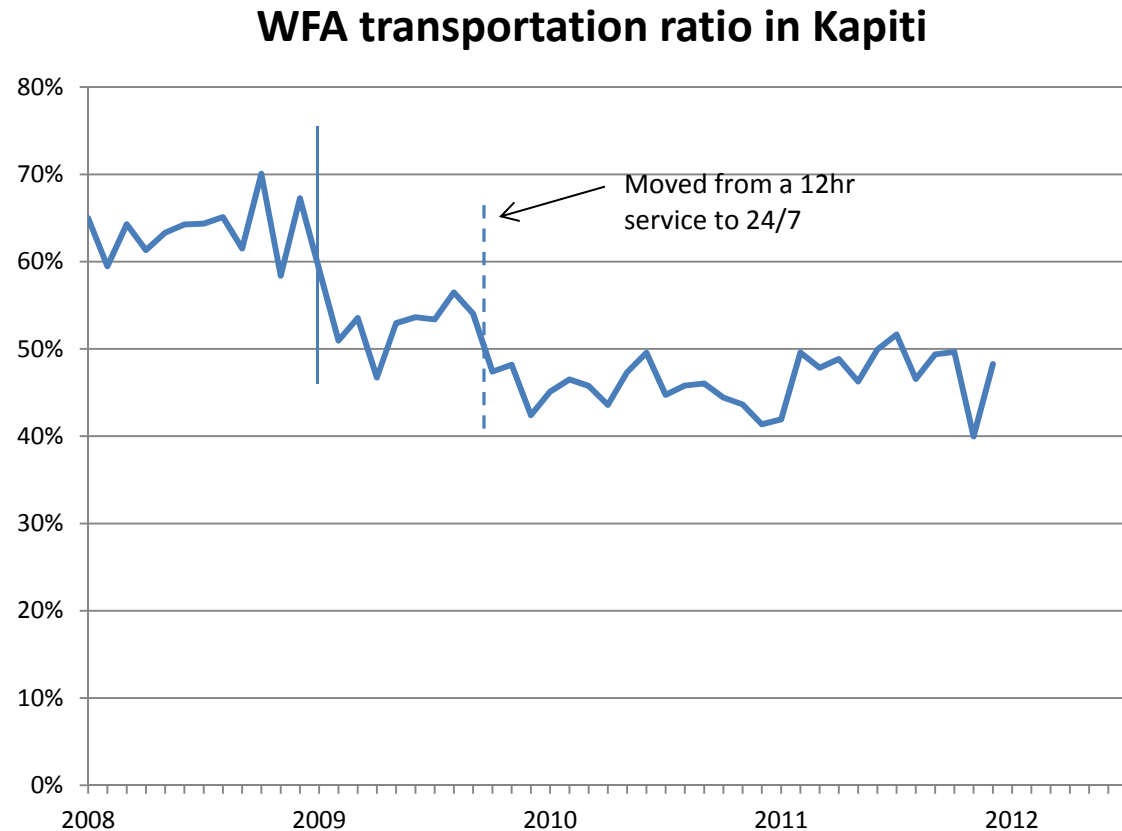
- UCC has resulted in a reduction in total number of ambulance transports to ED from Kapiti.
- In first year of UCC operation, ED transports from Kapiti decreased by 114 on the previous year (a 4% reduction).
- We conclude that **the introduction of the UCC pilot in Kapiti has resulted in 1,130 fewer patient transportations to ED** during the pilot period (31 avoided transports per month):
 - Factual (May 2009 to April 2012): there were 9,528 transports by ambulance to ED
 - Counter-factual (May 2009 to April 2012): there would have been 10,658 transports by ambulance to ED
- This analysis has been based on Poisson regression for Kapiti transports, with an offset for wider Wellington transports to adjust for period effects and growth. Our conclusion on avoided transportations is made at a 95% confidence level (more detail on the modelling used is in Appendix 2).
- Stakeholders have been unable to account for any other interventions that may have reduced ambulance transports in Kapiti at a different rate to wider Wellington.

WFA transports from Kapiti



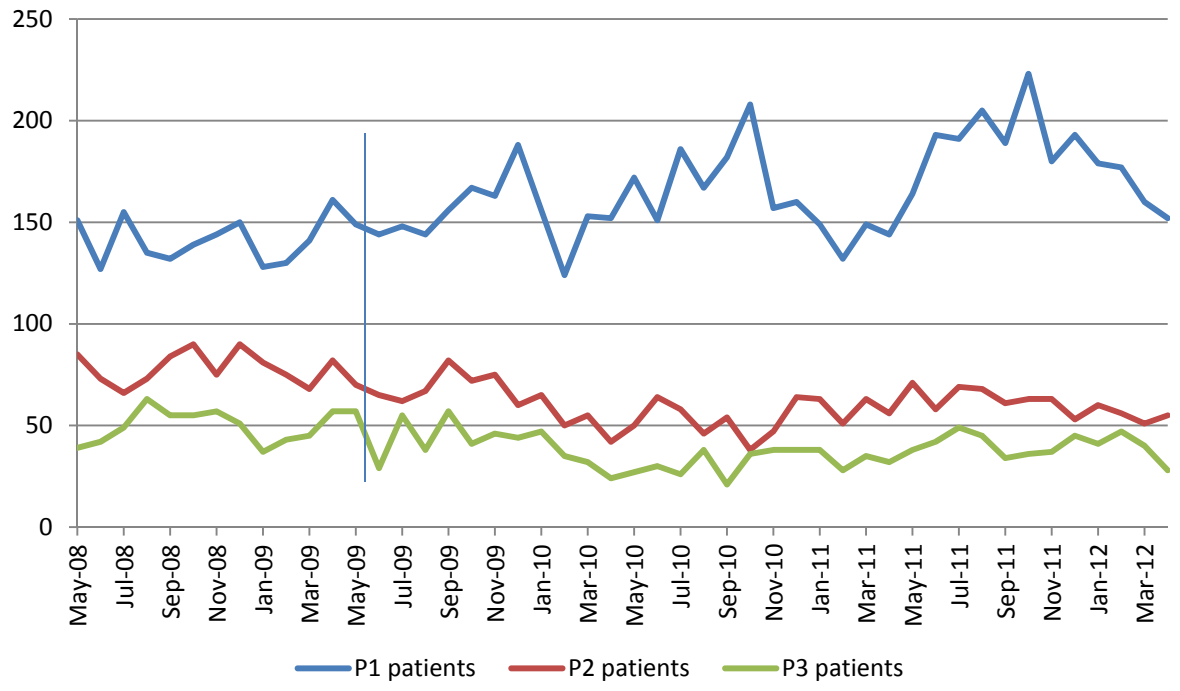
When responding to an incident WFA are now less likely to transport

- The UCC pilot has resulted in a marked decline in the proportion of WFA call-outs that result in transport: falling from an average 64% transfer rate for the year prior to the pilot to 47% in the final year of the pilot.
- The move from a 12hr to a 24hr UCC service appears to have had some impact in reducing the propensity to transport patients.
- However, as with St John we need to consider the extent to which this reduction in transport ratio might reflect a growth in incidents.



The avoided ED transports are likely to be from lower priority events

Transport volumes in Kapiti, by priority

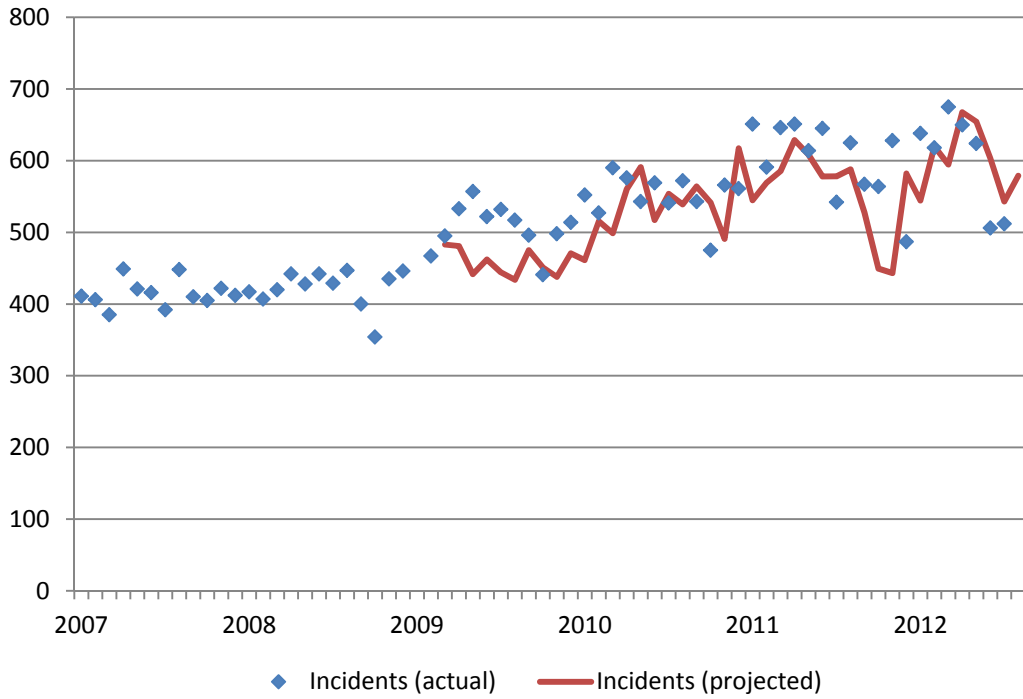


- Although the likelihood of transportation has fallen for priority 1 events (from 60% to 40%), the introduction of UCC has not reduced the absolute volumes for priority 1 events.
- Volumes of transports have fallen for priority 2 and 3 events – as one would expect if the service was effectively dealing with more minor cases in the community
- Note, the WFA UCC service offers a transportation service for low priority events where the patient is mobile. This accounted for 143 transports during the pilot period (3% of UCC patients)

UCC in Kapiti is likely to have resulted in increased demand for ambulance services

- The UCC pilot in Kapiti has also resulted in increased demand for ambulance services.
- We conclude that **the introduction of the UCC pilot in Kapiti has resulted in an additional 1,099 ambulance incidents** during the pilot period (an additional 26 events per month):
 - Factual (June 2009 to Nov 2012): there were 23,621 incidents
 - Counter-factual (June 2009 to Nov 2012): there would have been 22,521 ambulance-only incidents in the absence of the UCC pilot
- This analysis has been based on Poisson regression for Kapiti incidents, with an offset for wider Wellington incidents to adjust for period effects and growth. Our conclusion on induced demand is made at a 95% confidence level.
- Stakeholders have been unable to account for any other interventions that may have increased WFA incidents in Kapiti at a different rate to wider Wellington.

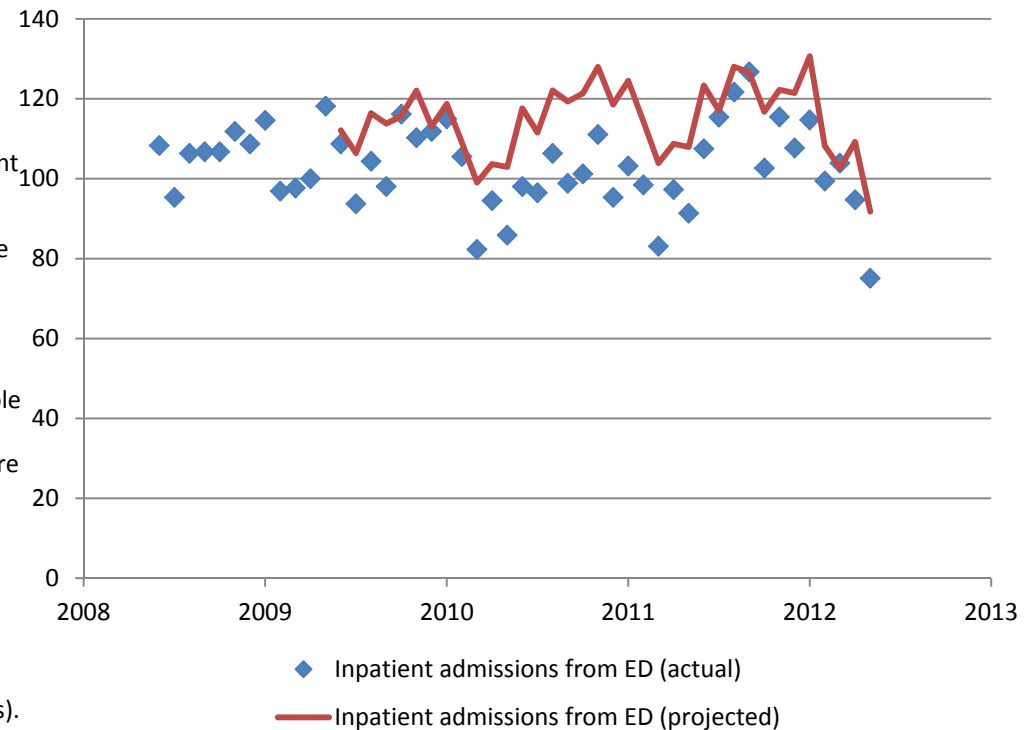
Actual v projected WFA incidents in Kapiti



WFA UCC has not had a statistically significant impact on inpatient admissions

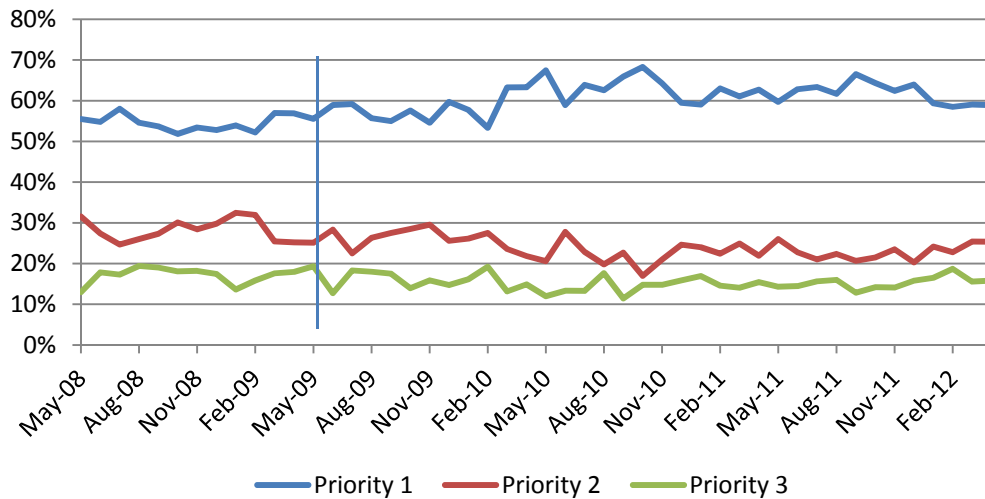
- We have previously concluded that WFA UCC resulted in 1,130 fewer ED presentations. We consider that in the absence of the UCC service, some of this patient group would have been admitted to hospital as inpatients. Although this patient group would be of relatively low acuity (as they are amenable to treatment at home), some of this group would have been relatively unstable, elderly, and would be some distance from their homes when at ED (i.e. In the absence of UCC there would have been some ‘social admissions’).
- Our modelling suggests that **UCC may have resulted in 437 fewer inpatient admissions** from May 2009 to April 2012 (12 fewer per month):
 - Factual (May 2009 to April 2012): there were 3,691 inpatient admissions from ambulance presentations from Kapiti
 - Counter-factual (May 2009 to April 2012): there would have been 4,129 inpatient admissions from ambulance presentations
- However, unlike other conclusions, **this figure is not a statistically significant reduction** and is instead a best-estimate based on available information. While we have used a figure for avoided inpatient admissions of 12/month, we cannot discount the possibility that there has been no reduction.
- This analysis has been based on a Poisson regression for admissions from ambulance presentations from Kapiti, with an offset for admissions from ambulance presentations from wider Wellington. Unlike the St John analysis, there were data limitations with determining avoided inpatient admissions – with the inpatient data not having unique patient identifiers attached (NHI, name or address). Analysis was done at the aggregate level and could be further refined; however, based on work done we would not expect further analysis to identify a statistically significant impact on inpatient admissions.

Projected and actual inpatient admissions for ambulance presentations from Kapiti

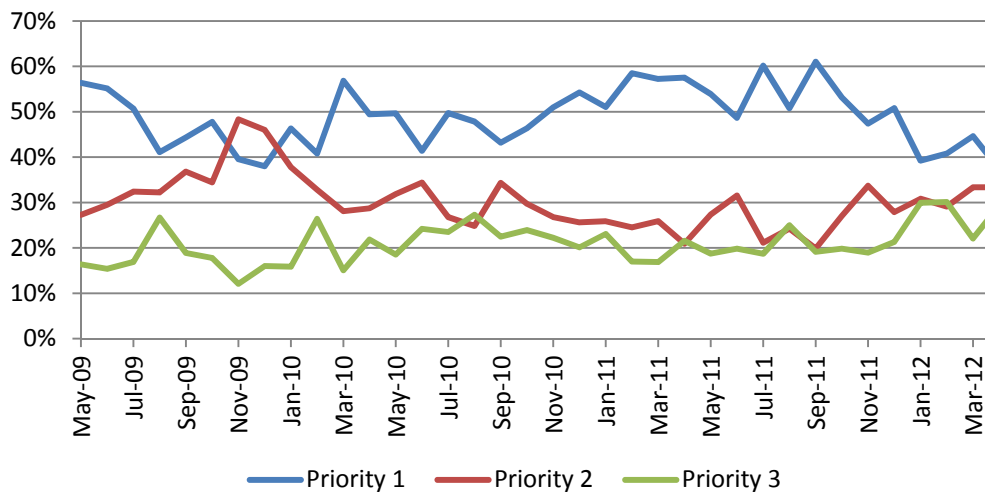


Traditional ambulance services have been freed up to respond to priority 1 incidents

WFA EAS jobs in Kapiti, by priority



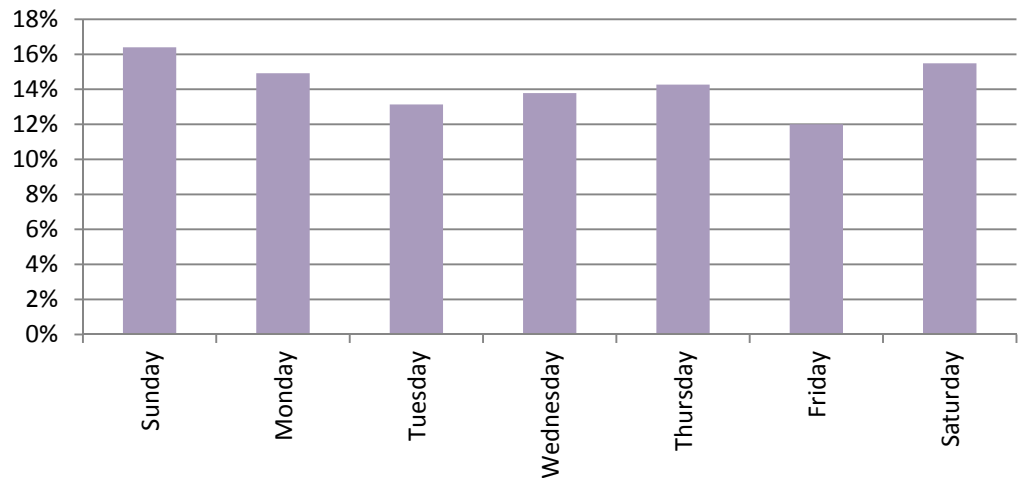
WFA UCC jobs in Kapiti, by priority



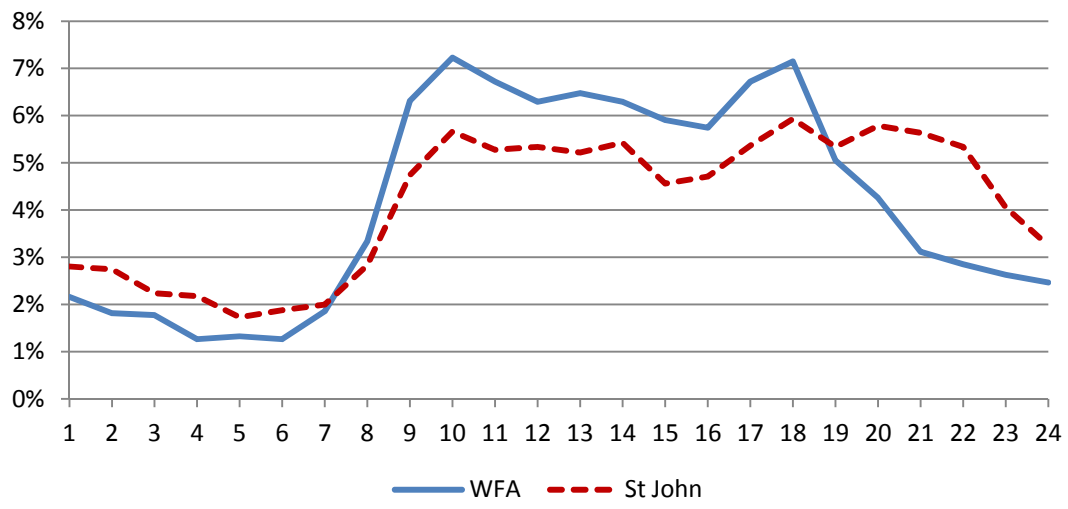
- **The introduction of the UCC has meant that traditional EAS vehicles in Kapiti have been able to focus on responding to more priority 1 events.** Priority 1 incidents have comprised an average of 62% of EAS activity in the last 2 years, compared with 55% in the year preceding the pilot.
- There have been some significant fluctuations in the jobs that UCC responded to, but we can draw some conclusions on the basis that growth in incidents has levelled out recently and WFA advises they have made improvements to their triaging and targeting of the service.
- At present the WFA pilot is almost equally likely to attend a priority 1, 2 or 3 event, and compared with EAS is likely to spend a higher share of its activity responding to more minor priority 2 and 3 events. **Over the duration of the pilot most of the WFA UCC activity has been in response to priority 1 incidents (as opposed to the St John service, which has focused on the lower priority events).**

WFA UCC is particularly active at weekends, but less so outside 9am-6pm

Breakdown of WFA UCC activity, by day of the week



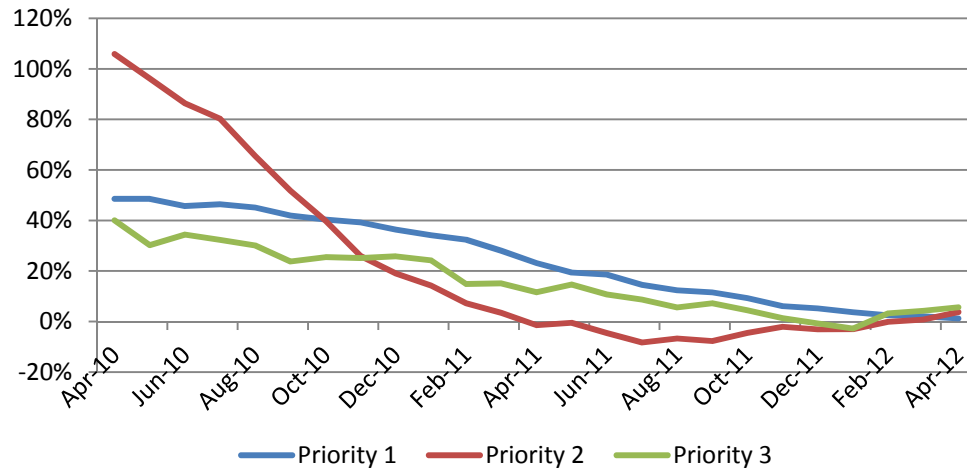
Proportion of UCC activity, by time of day



- **As with St John, the WFA UCC service is most active during the weekend.** We do not have time-based data to compare this with EAS activity or to assess the extent to which incidents have varied by day of the week following the introduction of the pilot. It is reasonable to assume though that WFA has had the same experience as St John, with the majority of incident growth occurring during the weekend.
- The second graph shows that, over the life of the pilot, **the WFA UCC service has been considerably more active during the working day, with activity falling away dramatically after 6pm – a trend that tends to mirror EAS activity.**
- The comparison line with St John highlights that the St John service is particularly active as an after-hours service in the Horowhenua. Given that Kapiti is well-served with an after-hours medical centre it is not surprising to see that activity is not as high during after-hours as it is in Horowhenua.
- Both these charts show the period February 2010 to August 2012, when WFA was operating a 24 hour service.

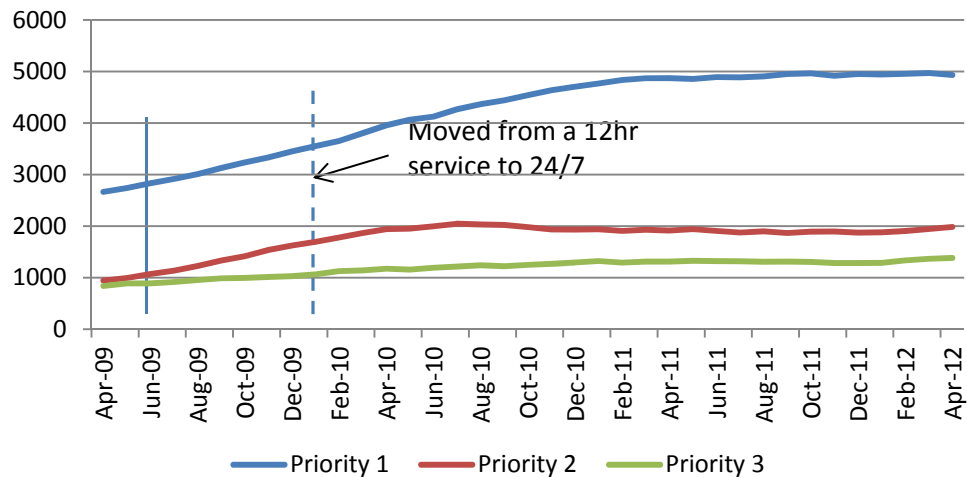
It is not clear how UCC has affected the nature of incidents being responded to

Annual growth in WFA Kapiti jobs, by priority



- The first year of the WFA UCC pilot saw a 106% increase in priority 2 jobs in Kapiti, compared to a 49% and 40% growth in priority 1 and 3 jobs respectively.
- However, volumes and priority mix for WFA have now stabilised. This likely reflects WFA’s move away from dual responses and improvements in triaging.
- It is not possible to conclude that the introduction of the UCC pilot has affected the nature of all ambulance jobs being responded to in Kapiti.

Annualised WFA jobs, by priority



Summary of the two pilots: key metrics

	Horowhenua (St John): pilot began December 2010	Kapiti (Wellington Free Ambulance): pilot began May 2009
Average annual UCC incidents	1,883 (5.2/day)	1,632 (4.5/day) (since moving to 24hr service)
Total UCC incidents/jobs during pilot period (to August 2012)	3,296 (5,635 responses)	5,114
Total ambulance incidents in the year prior to UCC	6,966	4,880
Total ambulance incidents in the final year of the pilot	10,583	8,295
Average annual growth in incidents during UCC period	18% (14% in the last 12 months)	21% (3% growth in the last 12 months)
Increase in incidents attributable to induced demand	957 (to August 2012) (46/month; representing 7.9% of activity prior to the pilot)	1,099 (June 2009 to Nov 2012) (26/month; representing 6.4% of activity prior to the pilot)
Avoided transfers to ED	735 (to August 2012) (35/month; representing 8.4% of transports prior to pilot)	1,130 (to April 2012) (31/month; representing 11.2% of transports prior to pilot)
Avoided hospital admissions	<i>Not statistically significant</i> Best estimate: 117 (to August 2012) (6/month)	<i>Not statistically significant</i> Best estimate: 437 (to April 2012) (12/month)

Comment on the key UCC metrics

- **There is clear evidence that the UCC pilots have prevented unnecessary patient transports to ED:** during the pilot period we conclude that the St John Horowhenua pilot resulted in 753 fewer patients being transported by ambulance to ED than if the service was not operating (35/month), while the WFA Kapiti service resulted in 1,130 fewer patients being transported (31/month).
- There is a striking similarity between the two pilots in their impact on reducing transports to ED (31 and 35 per month). Given the volume of incidents seen and the fact that this consistency is seen across two pilots, it may be that under the current operating model this level of reduction is what can be expected from a one vehicle UCC service.
- **However, we cannot definitively say that the pilots have reduced inpatient admissions.** Our best estimate is that the St John UCC pilot may have resulted in 117 fewer hospital admissions (6/month), while the WFA pilot may have resulted in at least 437 fewer admissions (12/month) – but we cannot discount the possibility there has been no reduction.
- Detail on the modelling methodology used for our analysis is outlined in Appendix 2.
- However, despite the success of the pilots in reducing ED transfers, there are three points of concern that have been identified from an analysis of key UCC metrics:
 1. **There has been an increase in ambulance incidents that is highly likely to be attributable to the introduction of the UCC service.** This induced demand is significant and, in the absence of some form of rationing, changes to triaging, or provision of alternative service delivery, may call into question the long-term sustainability of the UCC service.
 2. **There has been a substantial increase in total ambulance activity following the implementation of the pilots** (70% for St John and 55% for WFA). This not only reflects the increase in incidents, but indicates that UCC is not acting as a pure substitute for traditional EAS activity (i.e. UCC may often be complementing EAS activity by attending in a dual response). Given the UCC services are only pilots it makes sense for both St John and WFA to make full use of the newly available resources, but future consideration may need to be given to using UCC to reprioritise traditional EAS activity.
 3. **There is considerable duplication of ambulance resources.** An EAS vehicle attended 45% of St John UCC call-outs and 40% of WFA UCC call-outs. This raises questions about the targeting/deployment of UCC and whether UCC is likely to be cost-effective (discussed later).

CASES BEING SEEN BY UCC:
TYPE AND TREATMENT

The delivery of care by UCC

- This section examines how UCC incidents are being triggered, the types of patients and cases being seen, the treatments resulting from UCC intervention, how the service is viewed by health professionals and patients, and provides a case-evaluation of a sample of UCC cases.



- There is a clear expectation that the UCC service will reduce unnecessary transports to ED. However, the UCC service has also been designed to ensure that patients receive a higher level of care in their home from ambulance services – with the service being delivered in an integrated manner with necessary links to primary and community health providers and follow-ups made where appropriate.
- It is very relevant that patients in the Horowhenua and Kapiti face significant travel times to ED (45 minutes) – meaning that any successful treatment at home not only benefits the ED departments, but will also save time for patients and free up the capacity of ambulance services. We also note that Horowhenua has a shortage of GPs and that patients wishing timely access to primary care may sometimes encounter difficulties.
- UCC has been designed as a substitute for traditional EAS; rather than as a substitute for primary or community healthcare activity. However, if the pilots are working effectively we would expect to see some benefits if there is unmet patient demand in these areas: i.e. providing care when GPs are at capacity, or improving after-hours service. While these may not have been original policy outcomes when the pilots were designed, it is important such benefits are identified and commented upon.
- As per the St John Service Guidelines, “the focus of the UCC is on Primary Urgent Care and Emergency Medicine. The UCC paramedic will not be undertaking any chronic disease advice or management.”

Both UCC pilots have broadly similar points of entry for patients

- UCC activations in both pilots come through a central call centre
- 111 calls make up the vast majority of incidents that UCC responds to; however, both pilots have multiple points of entry for patients
- It is interesting to note that the St John UCC is considerably more likely to be activated through a 111 call than traditional EAS: 83% of UCC triggered by 111 compared with 63% of EAS incidents during same period (which reflects EAS also used for scheduled transports)

Means by which patient accessed UCC	St John UCC service	WFA UCC service
111 call	83%	80%
Non urgent line	9%	<i>category not used</i>
'Other' (incl. police, fire, medical alarm)	6%	7%
Ambulance referral	<i>category not used</i>	5%
Unknown	<i>category not used</i>	4%
ECP follows-up with patient	<i>category not used</i>	3%
St John staff	2%	<i>category not used</i>
GP surgery	<i>category not used</i>	1%

There are differences in the types of cases UCC is being used for in the two pilot areas

- There are some variations between the two pilots as to the types of cases that UCC are responding to, which may well reflect the different epidemiology and socio-economic conditions:
 - 20% of St John UCC activations are to a generally ‘unwell’ patient (vomiting, diarrhoea etc) compared with 6% for WFA UCC
 - The top single reason for WFA UCC activation is for falls: comprising 15% of cases compared with 10% for St John
- ‘Unwell’ patients are typically less likely to require ambulance treatment or transportation to hospital. Indeed such cases only resulted in transportation to ED 50% of the time that an ambulance responded before the UCC pilot. It is an open question whether such cases should be dealt with by ambulance services to such an extent.
- **It is likely that the induced demand identified earlier may be visible in St John responding to a larger proportion of generally ‘unwell’ patients now than prior to the pilot.** Such cases now make up 11% of all incidents that St John respond to in the Horowhenua, compared with 6% before the UCC service began.

Top 10 categories of St John UCC incidents	Make up of St John UCC cases
Unwell / vomiting / diarrhoea	20%
Shortness of breath / breathing difficulties	12%
Fall	10%
Abdominal pain	7%
Trauma	6%
Chest pain	5%
Haemorrhage / lacerations	5%
Back pain	3%
Community alarm (problem unknown)	3%
Fever / chills	2%
Other	28% <i>(includes, a long-tail of possible variants on the above categories)</i>

Top 10 categories of WFA UCC jobs	Make up of WFA UCC cases
Fall	15%
Abdominal pain	11%
Shortness of breath / breathing difficulties	10%
Chest pain	8%
Unwell / vomiting / diarrhoea	6%
Back pain	6%
Dizziness / faint	4%
Collapse	3%
Seizure	2%
Headache	2%
Other	34% <i>(includes, a long-tail of possible variants on the above categories)</i>

Red text denotes top category in the other pilot

UCC typically deals with the elderly

- Both UCC services typically deal with an elderly patient population. We do not have data that enables us to compare UCC patients with EAS patients, or to comment on whether demographics have changed pre and post the pilots.
- WFA UCC has an older patient population (median age of 72, compared with approximately 62 for St John UCC). This is to be expected given the older profile of the population within Kapiti.
- As we examine later, UCC patients are slightly more likely to be transported under the WFA pilot when compared to the St John pilot. However, elderly patients are typically more likely to be transported, which may help explain some of this difference.

Age of UCC patient	St John	WFA
85+	15%	22%
75 – 84	18%	23%
65 – 74	13%	11%
< 65	54%	43%
55 – 64		(6%)
45 – 54		(7%)
35 – 44		(7%)
25 – 34		(5%)
15 – 24		(8%)
6 – 14		(4%)
< 6		(6%)
Unknown	1%	2%

Frequent users may be making up a smaller share of ambulance activity

- Both St John and WFA have a small number of frequent users of the UCC service. For both pilots the top ten users comprise rest homes, medical practices and the police.
- Given the levels of induced demand that have been observed, one might expect that some institutions were aware of the value of UCC and were making the most of the service. However, the frequent users of UCC are not making up a very large proportion of UCC services:
 - The 10 highest ‘users’ of the St John UCC service have triggered incidents during the pilot period that range from 13 call outs to 52.
 - The 10 highest ‘users’ of the WFA UCC service have triggered responses incidents during the pilot period that range from 10 call outs to 56.
- The St John data enables us to make comparisons between the proportion of all St John activity in the Horowhenua that resulted from the same location – as indicated in the table to the right. If UCC was substituting for EAS activity one would expect there to be relatively little change in the figures. In fact there has been a slight decline in the concentration of St John activity around the top 5 users – declining from 9.88% to 8.88%. This would support a hypothesis that **induced demand may not be disproportionately driven by large residential homes, but may instead be due to demand for UCC in the wider community.**
- As an aside, we note that these figures are likely to be on the low side – due to variances in data entry these frequent users are likely to be responsible for larger proportions than indicated below (albeit, there will not be inconsistencies between the pre/post UCC entries).

Top 5 drivers of all St John incidents in the Horowhenua	% of incidents before the pilot	% of incidents during pilot
Horowhenua Health Centre	4.89%	4.06%
Horowhenua Masonic Village	1.66%	1.77%
Somerset Rest Home (Levin)	0.81%	1.10%
Levin Home for War Veterans	1.69%	1.04%
Madison Rest Home	0.83%	0.91%

There is a stark difference between the pilots in terms of treatment

- Both pilots treat a similar proportion of patients at the scene and are able leave without involving any other health professionals (47% and 48%). In 5% of call-outs both St John and WFA successfully treated the patient at home with medication.
- There is a striking difference in the proportion of cases where a UCC patient is transported to ED by ambulance, with 38% of patients transported in Kapiti and only 6% in Horowhenua.** Given that 45% and 40% of St John and WFA UCC responses respectively included an EAS vehicle, this likely means St John UCC is often being triggered by an EAS referral while WFA UCC is often calling an EAS vehicle for a subsequently transport.
- There is no 'right' transportation rate in this case. Indeed there are two ways to examine what a high/low rate means:
 - If the ambulance transportation rate for UCC is too high then UCC risks not being cost-effective as it is simply adding additional costs to the health system in instances where patients require transportation. This may occur when the ECP is not being effectively prioritised.
 - If the ambulance transportation rate for UCC is too low the UCC also risks not being cost-effective. This is because it may indicate that either UCC is being applied too selectively (i.e. only attending minor incidents) or that there is a problem with induced demand and UCC is dealing with incidents that would never require transport.
- The workload of the St John UCC service is higher than that of WFA (an average of 1,883 cases a year compared to 1,632), so this is not a situation where the difference in transportation rates can be explained by St John service being applied too selectively.

Broad category of treatment from UCC incident	St John	WFA
Treated at the scene	48%	47%
Referred to another provider	45%	13%
Subsequently transported	6%	38%
Other	2%	2%

- As the St John UCC is attending more incidents and having a smaller proportion of patients transported to ED, one would intuitively expect they would have considerably higher rates of avoided ambulance transports than WFA. Yet both pilots are reducing ED presentations by a similar rate (St John 35/month; WFA 31/month). We consider this is due to two reasons:
 - St John UCC is dealing with more cases where the service has created demand from patients who would otherwise not request an ambulance or need to go to ED.** This is confirmed by the growth in induced demand in the region.
 - WFA UCC is being a lot less selective in identifying the types of cases where UCC is likely to make a difference, with the service operating as a first-responder** This is confirmed by analysing the make-up of UCC activity: over the course of the pilots Priority 1 incidents accounted for 34% of St John UCC activity and 49% for WFA. This would flow through to a higher transportation rate for WFA UCC.

Interviews confirmed St John UCC is helping health services, with WFA UCC responding to emergencies

- Interviews with ECPs and GPs in Horowhenua and Kapiti have highlighted clear support for the UCC services, although there were some differences in where the services were considered to be adding value. **The value of the St John UCC service is primarily seen as supporting improved access to healthcare, while the WFA UCC service is seen as providing a higher standard of ambulance care that will enable patients to stay in the community.**

Perceived value of the St John UCC pilot

- ECPs are typically responding to events that elsewhere might be dealt with by other health professionals (*"we are doing things that others are getting paid for"*). Examples given included:
 - Supporting rest home workload: replacing catheters, wound care, general clinical support, analgesia, antibiotics for respiratory infections
 - Supporting District Nursing workload: providing IV access when DNs have difficulty, replacing catheters, wound care, general clinical support
 - Supporting general practice: providing care in their surgery, seeing overflow in community, visiting their immobile patients
- There is a relatively high level of awareness in the community that the UCC service is free. There is no question that UCC is being utilised by patients who want to avoid a GP consult; indeed **quite a few responses are to patients who are ringing 111 and specifically requesting the UCC service.**
- It was not unusual for UCC to respond to people who said they had been unable to make a GP appointment.
- If UCC was removed, health professionals considered that ambulance resourcing would be stretched in Horowhenua and other regions that would need to provide cover, while gaps that are being plugged in primary care would be uncovered.

Perceived value of the WFA UCC pilot

- The WFA UCC operates as first responders who are able to spend more time on scene and use their additional skills to try to avoid a hospital transport. The perceived value of this pilot is derived from avoiding ED transports and the benefits this brings in freeing up ambulance capacity and improving outcomes for patients.
- There is some concern that the service is relatively untargeted** and that UCC is often attending serious incidents where, although they can help the patient, there is little prospect of preventing the patient being transported to ED
- Neither ECPs or GPs consider that UCC is providing a GP-substitution service. There may be the occasional case where a practice will request assistance when they are busy, but the vast majority of cases are considered to be acute unscheduled emergency incidents.
- If UCC was removed, health professionals considered that there would be increased pressure on the health system during after-hours and weekends, with ambulance capacity also suffering through increased response times.

Surveys of health professionals show the UCC services to be highly valued

- A survey of 15 GPs within the St John pilot area found the **UCC service to be highly valued and assessed to be very effective** (13 of the 15 GPs considered the UCC service to be effective or very effective)
- In the view of the GPs, UCC was best placed to deal with 'urgent' cases and the most useful component of the service was in preventing unnecessary transports to hospital. The GPs overwhelmingly considered that having 24/7 access to the service was useful.
- While the GPs clearly valued the clinical advantages provided by the UCC, there was a recurring theme from Horowhenua GPs that the service was also assisting with their workload. This supports the contention that a significant component of the induced demand for St John represents avoided GP consultations:
 - “This has made a huge difference to the workload of the GPs after hours. Without this recruitment and retention of GPs to the area would be very difficult”
 - “Hopefully it will continue as the GP shortage worsens here”
 - “Seems an expensive way to substitute a diminishing GP presence - but for less expense than ED presentation”

Rest homes

- A survey of rest home staff in the Horowhenua found **high levels of support for the UCC service**. Benefits that were cited included the provision of after-hours care, preventing unnecessary transports, and the ability for minor procedures to be undertaken that might otherwise require an inpatient attendance.
- The biggest value provided by UCC in a rest home environment was thought to occur when there was no registered nurse on duty. In such instances, UCC staff were better placed to assess and treat patients and evaluate whether a transport was necessary.

Ambulance staff

- A survey of 39 St John and WFA staff likewise indicated support for continuation of the UCC service (64% support). Staff believed the service added significant benefit to patients.
- In contrast to the views of GPs, **most ambulance staff did not believe the UCC was offering a useful after-hours function (62%)**. This may indicate that GP valuation of afterhours is based on their reduced workload, whereas the ambulance officers believe they are not adding much value to the types of incidents they are treating after-hours.

Patients are very supportive of the service

- Surveys undertaken of patients undertaken by WFA and St John have indicated high levels of satisfaction with their treatment by UCC. There is no indication that this appreciation of UCC is abnormally high when compared with other ambulance services, but it does provide another component in assessing the value of the UCC pilot.

St John survey

- St John undertook a survey of 154 patients seen by the UCC (after contacting 535)
- Key insights include:
 - Patients were extremely satisfied with the service: 99% of respondents rating UCC as either good or excellent
 - There were very high ratings across all aspects of the UCC: response time, understanding of their problem, providing information, explaining symptoms that should be monitored, and making links to other services.
- Respondents had a range of reasons for calling 111:
 - 76% felt it was an emergency and they needed immediate assistance
 - 27% noted they were unsure of what they should do
 - 21% felt they had no other options open to them
 - 13% were unable to travel to seek assistance

WFA survey

- WFA undertook a survey of the experience of 92 patients (after contacting 100): 50 seen by UCC and 50 seen by the EAS.
- Key insights include:
 - Patients were extremely satisfied with the service, assessment and treatment they received from both the UCC and EAS paramedics (rated >9/10). Both services scored highly for arriving in a timely manner, undertaking clinical assessments, and overall satisfaction levels.
 - As one might expect, 74% of the patients transported to hospital by EAS would have preferred to be treated at home.
 - Comments from patients transported to hospital indicated frustration at having to arrange transport from Wellington back to Kapiti.

CASES BEING SEEN BY UCC:
CLINICAL DELIVERY AND PATHWAYS

There is a high standard of clinical decision making in UCC cases

- An evaluation panel of GPs, an ED consultant and the St John Clinical Manager reviewed the clinical effectiveness of a random sample of 200 UCC health pathways
 - The panel was not asked to assess the value provided by UCC, but rather whether the decisions made by UCC staff measured up against best practice
 - Each incident was assessed as either 'best practice', 'appropriate care', or 'another pathway preferred'
 - The evaluation panel found that **the clinical decision making of UCC staff was of a very high standard.** Recommendations were made to improve the level of documentation and to engage more frequently with other community health professionals to improve referrals and ensure a seamless transition for patients.
- Key findings from the clinical evaluation include:
 - 50% of cases were assessed as best practice, 44.5% as appropriate, and in 2% of cases the assessors considered there was a preferred alternative that should have been followed
 - Clinical decision making was considered to be more accurate for patients aged 60 years and over: with 98% of such patients receiving 'best practice' or 'appropriate' treatment, compared with 91% for those under 60 years.
 - These themes were confirmed in interviews with health professionals in Horowhenua and Kapiti, with the UCC service recognised as providing a high standard of care.

A pathway evaluation reinforced that St John UCC is addressing gaps in primary care

- A panel comprising an ED specialist and two experienced ambulance officers was asked to review a random sample of St John UCC case notes. Those involved were asked to evaluate the clinical pathway: including whether ambulances would typically be expected to respond to such cases; whether the UCC improved health outcomes for the patient (as opposed to an EAS attending); and what should have been the most appropriate response from the health system.
- St John cases were chosen because the case notes we had access to were more detailed and therefore better suited to enable a discussion on whether UCC was the most appropriate responder.
- The three personnel reviewed 140 cases (with overlap to assist with moderation).
- Some themes emerging from the evaluation of the role of UCC in those cases included:
 - **UCC is definitely reducing the number of ED transports that would have occurred if an EAS had responded.**
 - The ECPs were providing a high quality clinical service.
 - Many of the St John UCC cases appeared to be with patients with existing medical complaints that they were already being treated for by their GP. It was noted that **many of the UCC cases were not acute emergencies and should ideally be addressed in primary care.**
 - In many of the ‘primary care’ cases UCC patients either lacked the ability to afford a GP or lacked transportation.
 - Some considered that the ability of an ECP to “treat and leave” a patient was not vastly different to what would occur if a highly skilled EAS paramedic was to leave a patient at home. However, the value of ECP was when they had an opportunity to apply their extended skills (e.g. suturing, administering medicines, inserting IVs, neuro assessments etc.) or spend more time stabilising the patient and undertaking follow-ups (unlike EAS who have tight KPIs).



QUANTIFYING THE FINANCIAL EFFECT OF THE PILOTS

Low volumes means the services are delivering relatively expensive care

St John UCC costs

- The annual cost of running the St John 24-hour UCC service is estimated to be **\$761,000**
- This includes:
 - Staff (5.25 FTE)
 - Training costs
 - Operational costs
 - Vehicle costs, including depreciation
 - Management overheads
 - Clinical oversight
 - Indirect costs

Wellington Free Ambulance UCC Costs

- The annual cost of running the WFA 24-hour UCC service is estimated to be **\$718,000**
- This includes:
 - Staffing (5.25 FTE)
 - Vehicle costs, including depreciation
 - Training
 - Consumables
 - Clinical oversight
 - Indirect costs

- Both UCC pilots appear to have a relatively similar workload, albeit one that would appear to be relatively low given the financial cost of the service:
 - St John UCC sees on average 1,883 patients per year (5.2/day)
 - Since moving to a 24 hour service WFA UCC sees on average 1,632 patients per year (4.5 patients a day)
- **The low volumes being seen by UCC mean that the service is providing relatively expensive care** (given the nature of the health issues and when compared against other forms of health system 'contacts'). The effective cost-per-patient seen is:
 - St John UCC is operating at a cost of \$404 per patient seen
 - WFA UCC is operating at a cost of \$440 per patient seen
- The following slides quantify the costs/benefits of UCC from a 'whole of health' perspective. This entails determining, in light of the costs of the pilots, the extent to which the health system is better/worse off. We have also commented on whether the relative position of key stakeholders has changed as a result of the UCC pilots.

Impact on *secondary services* from reducing ED presentations

- An ED department operates on a capacity rather than marginal cost model, meaning that a reduction in ED presentations will have a minimal impact on ED costs unless the reduction is large enough to enable the DHB to make decisions to reduce their own operational expenses (i.e. by reducing FTEs).
- The cost 'savings' we identify do not reflect actual savings to DHBs; but rather, over the medium term will reflect a reduced need for the DHBs to upgrade their ED capacity to the extent they would otherwise have needed to. The impact of avoided ED presentations will depend on the individual ED – for example, an ED already at capacity may see considerable benefit from not having to otherwise incur significant costs in having to scale up to deal with such cases, whereas the value to another ED may not materialise for many years.
- **We consider a reasonable estimate of the marginal cost of an ED presentation to be \$156 per patient.** This reflects the likely costs of a patient attending ED for less than six hours and was produced by the CCDHB (it closely reflects a second estimate that a PHO in a major metropolitan area produced in conjunction with one of the hospitals in the area). We note this figure is approximately 50% of the average cost of a Level 5 ED attendance (\$314). We have been unable to locate any New Zealand literature attempting to quantify the marginal costs of ED activity, although note a 2007 strategic review of after-hours activity by Capital & Coast DHB used 40% of the average cost of an ED presentation as a proxy for ED marginal costs.
- As noted earlier, the UCC will also provide non-financial benefits to ED: reduced presentations may help to reduce waiting times; while preventing low-level priority cases from going to ED will help free up capacity for more serious cases

St John UCC pilot

- As previously noted, the St John UCC pilot resulted in 35 fewer ED presentations per month, or 420 in a calendar year.
- **We consider that the avoided ED transports within the Horowhenua pilot area are likely to have resulted in annual avoided costs of \$66,000** (on a marginal cost calculation).
- We note ED department staff have not noticed UCC having a measurable impact on ED activity. This is understandable given that the avoided ED presentations reflect 1.1% of all monthly ED presentations to Palmerston North hospital.

WFA UCC pilot

- As previously noted, the WFA UCC pilot resulted in 31 fewer ED presentations per month, or 372 in a calendar year.
- **We consider that the avoided ED transports within the Kapiti pilot area are likely to have resulted in annual avoided costs of \$58,000** (on a marginal cost calculation).
- We note ED department staff have not noticed UCC having a measurable impact on ED activity. As some context, the avoided ED presentations reflects 0.7% of all monthly ED presentations to Wellington hospital.

Impact on *secondary services* from reducing inpatient admissions

- Our analysis has identified that, while we consider both pilots are likely to have had an effect in reducing inpatient admissions, we cannot confirm that any reduction is statistically significant. That is, the quantum of reduced inpatient admissions we have identified for both pilots is our best-estimate, but we cannot discount the possibility there has been no reduction or that any reduction is instead attributable to other factors. For the purpose of quantifying the financial impact of UCC we have used our best estimates of avoided inpatient admissions, while cautioning that the figures are not statistically significant.
- Those patients that we have classified as an 'avoided inpatient admission' can be identified as: those patients successfully treated by UCC in home or in the community who, in the absence of the UCC service, would have otherwise been transported by ambulance to ED where they would have been assessed and admitted as an inpatient.
- As with ED presentations, there is some difficulty assessing the marginal costs of an inpatient admission. We have based our calculation on the Weighted Inlier Equivalent Separation (WIES) rating for ambulance admissions in 2011 of 0.72 and 1.17 for patients from Horowhenua and Kapiti respectively and the average unit price of a 'medical and surgical event in 2011/12 of \$4,567. CCDHB advises that a reasonable proxy for the marginal cost of a typical admission would be 65% of the average cost – which would produce marginal cost figures of \$2,137 for Horowhenua and \$3,473 for Kapiti.
- One would expect that those patients that are being successfully treated at home or in the community by UCC would, if admitted to hospital, be unlikely to spend the same amount of time in hospital as the 'typical' ambulance patient that is admitted. In particular, we note that the evidence suggests that UCC has been particularly effective in treating lower priority incidents and that a portion of such admissions will be 'social admissions' – that is, patients admitted overnight who may otherwise have found themselves some distance from home at an 'unsociable' hour and with few transport options. We have therefore applied a 33% discount to the marginal costs of ambulance admission to produce a reduced figure for the avoided costs of what would otherwise have been an admission of a UCC patient: \$1,425 for Horowhenua and \$2,315 for Kapiti.

St John UCC pilot

- As previously noted, our best estimate is that the St John UCC pilot resulted in 6 fewer inpatient admissions per month, or 67 in a calendar year.
- **We consider that the avoided inpatient admissions within the Horowhenua pilot area may have resulted in annual avoided costs of \$95,000**

WFA UCC pilot

- As previously noted, our best estimate is that the WFA UCC pilot resulted in 12 fewer inpatient admissions per month, or 146 in a calendar year.
- **We consider that the avoided inpatient admissions within the Kapiti pilot area are likely to have resulted in annual avoided costs of \$338,000.**

Impact on *ambulance services* from freed up capacity

- Reducing patient transportations not only benefits EDs but also benefits ambulance services through a) avoided costs from transports and b) improving standby ambulance capacity in Horowhenua and Kapiti. As previously noted, there are considerable opportunities for efficiency gains: as an EAS vehicle also attended a UCC incident in 45% of cases for St John and 40% for WFA.
- When one considers how much money the additional UCC resource has saved the ambulance services we have based our calculations on EAS running costs of \$0.90/km travelled (figures agreed with St John and WFA):
 - **In the absence of UCC, St John EAS vehicles would have responded to an additional 489 incidents over a 12 month period:** represented by total UCC activity (1,883), less induced demand for ambulance services that is due to the presence of UCC (547) and less those UCC incidents where an EAS was also dispatched (847; annualised). Using a proxy of 100km for a round-trip from Levin to Palmerston North; and 20km for a non-transportation event, we calculate UCC has saved St John \$39,000 in annual costs.
 - **In the absence of UCC, WFA EAS vehicles would have responded to an additional 656 incidents over a 12 month period:** represented by total UCC activity (1,632), less induced demand for ambulance services that is due to the presence of UCC (314) and less those incidents where an EAS was also dispatched (662; annualised). Using a proxy of 100km for a round-trip from Paraparaumu to Wellington; and 20km for a non-transportation event, we calculate UCC has saved WFA \$39,000 in annual costs.
- As well as producing financial savings to the ambulance services, the freed up EAS capacity is likely to have materialised through improved response times in the two regions. As noted earlier, since the introduction of the UCC pilot both services have increased the proportion of priority 1 incidents that are responded to within 8 minutes in the pilot areas: from 55% to 59% for St John and 55% to 57% for WFA. We have also shown that since the introduction of UCC, EAS are responding to a higher proportion of priority 1 incidents.

St John UCC pilot

- The St John UCC pilot resulted in EAS vehicles responding to 489 fewer incidents annually and making 420 fewer transports to Palmerston North ED. This represents a **direct savings to St John of \$39,000** from the avoided km's
- The reduced EAS utilisation will also represent an additional standby capacity. With an average time spent of 25 minutes per call-out (10 minute response and 15 minutes on scene) and an additional 113 minutes per transportation (including an average of 23 minutes spent at ED), we calculate UCC may have freed up to 60,000 minutes or 42 full days of EAS capacity across the response area. With 3 EAS in Levin, **UCC is responsible for a 4.0% increase in EAS availability in the Horowhenua.**

WFA UCC pilot

- The WFA UCC pilot resulted in EAS vehicles responding to 656 fewer incidents annually and making 377 fewer transports to Wellington ED. This represents a **direct savings to WFA of \$39,000** from the avoided km's.
- The reduced EAS utilisation will also represent an additional standby capacity. With an average time spent of 25 minutes per call-out (10 minute response and 15 minutes on scene) and an additional 114 minutes per transportation (including an average of 24 minutes spent at ED), we calculate UCC may have freed up to 59,000 minutes or 41 full days of EAS capacity. With 3 EAS in Kapiti, **UCC is responsible for a 3.8% increase in EAS capacity in Kapiti.**

Impact on funding for *ambulance services* from reducing transports

- Both St John and WFA receive funding from ACC based on the volumes of patients with accident–related emergencies that require transportation. This funding stream actually creates a perverse incentive for ambulance services to transport such patients rather than attempt to treat them at home or in the community – a characteristic that is inconsistent with the central objective of the UCC service.
- UCC has reduced the number of transports that would otherwise have taken place. The impact on the funding of ambulance services from transporting fewer patients includes:
 1. **Reduced ACC payments:** by successfully using UCC to treat accident emergencies in the home/community, both St John and WFA will be receiving less ACC revenue than they otherwise would have done (\$658/transport in 2011/12). We do not have access to data to determine the extent to which avoided ED transports were likely to be ACC or medical emergencies, so have assumed that the avoided transports would mirror the UCC casemix (with ACC accounting for 20% of UCC activity)
 2. **Reduced patient co-payments:** by using UCC rather than an EAS to treat medical related emergencies in the home/community St John is receiving less in the way of patient co-payments (\$65/call-out; no co-payment for WFA)

St John UCC pilot

- The St John UCC pilot resulted in 35 fewer ED presentations per month, or 420 in a calendar year. On an annual basis, 84 of these avoided transports would have otherwise received ACC funding.
- Because of the UCC pilot **St John is receiving \$55,000 less annually in ACC funding** than it otherwise would have.
- **St John is also receiving \$25,000 less each year from avoided co-payments** from the 380 fewer medical-related callouts that would otherwise have been attended by EAS and have attracted a fee (representing 80% of the avoided EAS call-outs).

WFA UCC pilot

- The WFA UCC pilot resulted in 31 fewer ED presentations per month, or 377 in a calendar year. On an annual basis, 75 of these avoided transports would have otherwise received ACC funding.
- Because of the UCC pilot **WFA is receiving \$49,000 less annually in ACC funding** than it otherwise would have.

Impact on funding for *ambulance services* from incident growth

- The Ministry of Health bulk funds both St John and WFA to respond to medical emergencies. As the organisations are capacity-funded they face minimal marginal cost once the EAS and UCC are operating efficiently.
- As noted, our analysis shows that UCC is likely to have been responsible for a significant degree of induced demand for ambulance services in the pilot areas – with induced demand representing 7.9% and 6.4% of total ambulance incidents in Horowhenua and Kapiti respectively prior to the implementation of the pilots.
- Both organisations have been able to absorb the increased demand for services, as they have received external funding from the Ministry for the UCC pilots. **However, should the induced demand continue:**
 - The organisations may well struggle to maintain their service delivery standards within pilot areas
 - The Ministry may be called upon to increase funding levels to support capacity upgrades
- While St John and WFA will be receiving less ACC funding (from fewer accident transportations), in the longer term their funding from the Ministry may actually need to increase as a result of the induced demand – with incident growth bringing forward a need for capacity upgrades. It is not practical to attempt to model this change, which is subject to too many variables. For example, as we discuss later in the report there may well be options for attempting to reduce levels of induced demand.

Impact on *patients* and *primary care* from avoided consultations

- It is our view that the UCC pilots will have had an effect on primary care consultations, with some patients substituting a GP home-visit with the UCC service. In essence this represents what we have termed ‘induced demand’, with some patients taking advantage of the free paramedic service rather than utilising primary care services.
- It would appear the reduction in GP consults and home visits is largely incidental to the objectives of the UCC service and it is for policy makers to assess the extent to whether it represents a valuable use of health resources. **What is clear is that UCC is relieving GP workload, a conclusion that is supported by our interviews with health professionals.**
- **We consider UCC may have resulted in 36-43 fewer consults per month in the Horowhenua and 19-24 fewer in Kapiti.**

Calculating avoided GP appointments / home visits	Horowhenua (to August 2012)	Kapiti (normalised to April 2012)
UCC incidents	3296	4,603
Exclude those seen by UCC that were still transported to ED / MAPU (i.e. unlikely there would be a GP consult in such situations)	-164	-1,780
Exclude those that were referred by UCC to a GP or afterhours (i.e. removing role duplication)	-1,497	-932
Exclude those that would have been transported to ED in the absence of UCC (i.e. would have gone straight to ED rather than to GP)	-735	-1,130
Apply a range reduction of 15% to reflect that a portion of those UCC patients treated at home would not have called/visited GP (i.e. reflecting induced demand, that some would have travelled to ED, some would have waited to see a GP etc)	-15%	-15%
Range of avoided GP consults	765 - 900 (437 – 514 / year)	647 – 761 (216 – 254 /year)
Annual transfer in value from GPs to patients (with patients avoiding a co-payment and GPs losing the co-payment; nominal figure of \$50 used)	\$22,000 to \$26,000	\$11,000 to \$13,000

Summary: the financial impact of UCC

From a health-funding perspective the financial system benefits of UCC largely accrue to both primary and secondary care. While the relative positions of others have certainly been affected (e.g. ambulance services receiving less ACC funding; ACC having to pay out less funding), these relative changes have not necessarily generated value from a systems view. It is also important to note that not all the benefits from the pilots can be quantified – and include improved care and convenience for patients and improved response times. Furthermore, as noted, some of the data around the impact of WFA UCC inpatient admissions has limitations, which may be unduly exaggerating the difference between the two pilots.

Key entities	Category of cost/benefit	Annual financial impact of St John pilot	Annual financial impact of WFA pilot
Secondary services	Avoided ED presentations	\$66,000	\$58,000
	Avoided inpatients	\$95,000	\$338,000
Ambulance services	Avoided transport costs	\$39,000	\$39,000
	Reduced ACC funding	(\$55,000)	(\$49,000)
	Reduced user co-payment	(\$25,000)	n/a
Patients	Avoided GP fees from UCC substitution	\$22,000 to \$26,000	\$11,000 to \$13,000
	Avoided ambulance co-payment	\$25,000	n/a
Primary care	Reduced GP fees from UCC substitution	(\$22,000 - \$26,000)	(\$11,000 - \$13,000)
ACC	Reduced transport payments	\$55,000	\$49,000
UCC cost to health system	Operating costs	(\$761,000)	(\$718,000)
TOTAL (NEGATIVE) ANNUAL FINANCIAL IMPACT		(\$561,000)	(\$283,000)

While UCC is having a positive impact, the pilots do not represent best value for money

- From a health systems perspective, **the current UCC models are unlikely to represent best value for money if the objective is solely to save costs in secondary care** through the reduction of unnecessary ambulance transports and subsequent inpatient admissions.
- However, the evidence suggests that the benefits of UCC go beyond simply creating capacity in secondary care. While we have previously commented on the nature of the value of these aspects, they cannot be easily quantified:
 - delivering an **improved standard of care** to patients through UCC follow-ups, delivery of co-ordinated care with local providers, and ECPs being able to spend more time on the scene with patients that EAS are able to.
 - **there are health and social benefits** to those patients no longer being transported considerable distances to ED in Horowhenua and Kapiti. Being able to successfully keep frail patients at home is a potentially significant benefit and will be resulting in longer-term health benefits that are not immediately visible (e.g. a reduction in falls).
 - **improving system capacity**: we are aware that there are pressures on accessing primary care in the Horowhenua and UCC is therefore adding value by providing healthcare delivery where it otherwise may be difficult to access (and is relieving the workload of GPs). Similarly, UCC will be adding value to the delivery of emergency ambulance services by freeing up capacity (approximately 3%) and improving response times.
- We therefore need to consider whether the likely financial cost to the health system that we have identified on the earlier slides is outweighed by these ‘unquantifiable’ economic/health UCC benefits. Using the annual UCC activity to calculate the impact per UCC response we can determine that, based on the likely financial impact from the earlier slide:
 - due to the difference in avoided inpatient admission for the St John pilot to have a net positive impact, the value of the ‘unquantifiable’ benefits would need to exceed \$298 per patient (this is the annual financial cost of the service spread across all UCC patients)
 - for the WFA pilot to have a net positive impact the value of the ‘unquantifiable’ benefits would need to exceed \$173 per patient (this is the financial cost of the service spread across all UCC patients)
- While we consider both the St John and WFA UCC pilots are having a positive impact on the delivery of health services in Horowhenua and Kapiti, we do not consider that they are offering best value-for-money in the pilot format to the health system as a whole.

Conclusion: the impact of the pilots

- It is clear that UCC has been successfully reducing the number of patients that would otherwise have to undertake relatively lengthy transportations to ED – thereby freeing up ambulance capacity, ED and inpatient resourcing, alleviating the workload in primary care, and providing value to patients by enabling them to be successfully treated at home or in the community.
- However, given the relatively high cost and low volumes of patients seen by the service, we do not consider that the pilots are offering value for money in their current form.
- **The ideal UCC likely reflects a service with attributes from both pilots - with a number of operational changes and productivity gains we think UCC can be refocused and achieve greater benefits.**

St John UCC pilot (Horowhenua)

- UCC is definitely providing a valuable service and there would be strong negative effects for both primary care and ambulance care in Horowhenua if it was withdrawn.
- However, at present the St John UCC service is primarily addressing a problem that it was not actually designed to address: it is helping to address issues with access to primary care in the Horowhenua, rather than necessarily having the impact it was designed to in reducing ED presentations. In the absence of UCC many of the incidents being dealt with would otherwise not come through to St John (i.e. UCC is dealing with unmet demand for care).
- In its pilot format it is unlikely the service is providing best value for money to the health system.
- The service needs to be refocused: either becoming an integrated part of the delivery of primary care in Horowhenua, or a rationing system is needed so it is primarily supporting episodic emergencies.

WFA UCC pilot (Kapiti)

- The WFA is acting as substitute for traditional ambulance response with highly trained paramedics
- At present it is unlikely the service is providing value for money to the health system. However, the cost-effectiveness of the WFA UCC could be further enhanced because:
 - It is not being appropriately targeted at low priority incidents, so only a small proportion of patients seen will actually be amenable to treatment at home
 - It is not seeing enough patients
- Despite these two limitations, UCC is still having a relatively significant impact on reducing ED presentations. With some operational refinements it could have an even larger impact.

KEY LEARNINGS / REFLECTIONS

Defining the boundary between UCC and primary care: a need to address induced demand

- There is a tension between two competing objectives for UCC: ensuring that the UCC service is productive and not underutilised, while also making sure that demand for the service does not undermine the sustainability of ambulance services.
- It is clear that the presence of UCC has altered patient behaviour, with patients now contacting ambulance services regarding health issues where they previously would not have done so, and even specifically requesting treatment by UCC. This is particularly the case in Horowhenua where interviews have confirmed that UCC is being utilised to 'plug the gaps' in primary care (note, demand has increased by 46/month in Horowhenua compared with 26/month in Kapiti).
- Induced demand for ambulance services is not inherently problematic, particularly if it provides health services to patients who would otherwise not seek assistance. However, it does raise policy questions about whether ambulance services are the appropriate provider for some of the primary-care type issues being treated. In particular, **there is a risk that in the longer term UCC will become the first port-of-call for socio-economically deprived patients (potentially creating a second tier of health services), that it will encourage some patients to postpone seeking care until an emergency arises, and that a lack of continuity of care will create issues.**

St John UCC pilot (Horowhenua)

- There is a need to improve access to care in the Horowhenua – either through UCC or some other initiative(s).
- **We consider a conscious decision needs to be made to focus the St John UCC service:** either explicitly recognise it plays a key role in supporting the delivery of primary care in Horowhenua, or clarify that it is intended to substitute for traditional EAS activity and should be primarily be responding to episodic incidents:
 - If refocusing on ambulance delivery: demand will need to be rationed in some manner, most likely by introducing a fee-for-service
 - If refocusing towards primary care: opportunities need to be explored for delivering UCC in a primary care setting. There may well be value in UCC being integrated with a primary care team with ECPs having access to patient records, broad responsibility for providing acute care in the community, and limiting the down-time between call-outs.

WFA UCC pilot (Kapiti)

- The data shows that the issue of induced demand is not such a problem in Kapiti – primarily due to the profile of the patients, the lower workload of GPs, and the presence of an after-hours service. The fact that WFA has always offered a free-to-the patient service is also another reason why the introduction of a free UCC service has not had such an impact on demand for ambulance services.
- The WFA service is more obviously being implemented as an emergency responder. As such we consider that, the extent to which induced demand interferes with the capacity of ambulance services can likely be appropriately managed through control over triaging and dispatching.

Improving the productivity of the UCC service

- **Despite cases of induced demand, the UCC service is not particularly active given the level of investment:** seeing 5.2 and 4.6 patients per day in Horowhenua and Kapiti respectively, at a combined annual cost of \$1.5m.
 - Put simply, the UCC service needs to be seeing more patients per day – particularly of the relatively low priority episodic incidents where they are most likely to reduce the need for an ED transport.
 - A key factor limiting the capacity of the ECPs to see more patients is that each UCC incident typically takes between 60-90 minutes to resolve. For a patient that does not require transportation this will typically involve 20-30 minutes getting information from the patient/family and doing a ‘head to toe’ assessment; 20 minutes treating, giving advice and instructing support staff/family; and 30 minutes to document the visit and fax through a write-up of the case to the relevant GP or referral.
 - Should the UCC service continue, there is merit in both St John and WFA considering:
 1. Reducing the reporting obligations on ECPs
 2. Investigating options for reducing time-on-scene for ECPs
 3. Improving access to shared records
1. ECPs at both St John and WFA commented on their **time-consuming recording and reporting requirements**, with post-incident administration taking 30 minutes to complete. ECPs could see more patients if they were not required to provide so much information to GPs (EAS only have to complete a one-page form), or if the referral tool could be simplified (e.g. secure wireless reporting at the scene).
 2. While a key characteristic of UCC is the ability of paramedics to spend extended time with the patient to stabilise and treat them, there may well be opportunities for **reducing the time ECPs spend on the scene** (typically 1 hour on scene). Health professionals commented that this level of involvement seemed high and that a detailed audit/assessment of UCC activity should identify productivity gains (i.e. reducing the ‘full barrage of diagnostics’ that ECPs often undertake) – albeit, it was noted that as ECPs get experience their ability to quickly diagnose will improve.
 3. A key factor that limits the productivity of ECPs is **the lack of shared/integrated records**. Unless the patient can advise the ECP of their medicines or care plan then an ECP will often spend time on the scene ringing GPs, District Nurses, or specialists. St John ECPs specifically noted that they often visit people who have been discharged from ED within the past week without discharge notes and spend a lot of time on the phone to ED. The development of a shared patient record would provide significant productivity enhancements – and the absence of such a record may strengthen the case for the St John UCC service to be integrated into a primary care team.

The importance of targeting UCC deployment

- The key feature that determines the impact UCC can have on ED presentations and the health outcomes for patients, is the deployment decisions. Triaging and dispatch is done centrally and paramedics in both organisations expressed some dissatisfaction at being dispatched to cases where it was obvious from activation that an EAS and transportation would be needed.
- **There are opportunities to enhance UCC delivery by identifying the types of incidents where UCC is having the greatest impact and amending the deployment plan** accordingly. Ideally there should be minimal duplication in terms of UCC and EAS having to attend the same incident and the current figures of duplication in 2012 are too high (45% and 40% for St John and WFA respectively)
- If UCC is the only resource available then both organisations will dispatch the ECP, which makes sense. However, in the context of reducing ED transportations we consider there are opportunities for improvements for both UCC services:
 - St John will consciously activate UCC for Priority 2 & 3 incidents, with Priority 1 when they are the only resource available. However, it is clear that UCC is often being triggered following an EAS call-out (45% of UCC responses involve EAS, with only 6% transported), meaning there are opportunities for further improvements, particularly around deployment of EAS.
 - By contrast, WFA will dispatch the nearest vehicle to an incident, meaning that UCC is often attending Priority 1 incidents. While they may be unable to prevent an ED transport from taking place, by arriving on the scene earlier than the EAS they may well be able to take steps to help stabilise and treat the patient. WFA paramedics noted it was relatively common for them to have to request an EAS to attend their incident – a comment which is borne out by the statistics showing UCC patients are much more likely to be transported by WFA (38%) than St John (6%).
- Although we have highlighted a problem with St John attending incidents best addressed by primary care, this is a weakness in entry into the service (i.e. being barrier free) rather than a weakness in triaging/dispatch.
- WFA has acknowledged that they initially tried to send UCC to low priority calls, but this reduced the volumes of incidents that UCC could respond to, making them less cost-effective. Nevertheless, given the high proportion of incidents where the WFA UCC is duplicating resources (i.e. the 38% where EAS was requested to transport a patient), we consider there would be considerable advantages in refining the WFA deployment plan. The ECPs are likely to be best placed to know the types of cases where they can make a difference and should be engaged in efforts to identify the types of cases amenable to UCC activity.
- **Investment in triaging and deployment could also be widened** so that, rather than there being a binary decision between activating EAS or UCC, the patient could be redirected to the most appropriate provider – whether that is a GP, District Nurse, or an ambulance. We understand that use of Healthline as an access centre is to be trialled soon, which could be a valuable development.

A need to change the ACC funding model if UCC is to continue or be deployed elsewhere

- A key source of revenue for St John and WFA is derived from transporting accident emergencies to approved medical facilities. The payment of a \$658 per transport (in 2011/12) is incompatible with the intention of the UCC pilot to treat patients in their home/community.
- ACC incidents likely accounted for approximately 20% of St John and WFA UCC incidents. If avoided transports mirrored this casemix then because of the two pilots:
 - St John will be receiving \$63,000 less annually in ACC funding than it otherwise would have; and
 - WFA will be receiving \$56,000 less annually in ACC funding than it otherwise would have.
- In the absence of changes to the funding model (or cessation of current Ministry funding) it is conceivable that UCC may be targeted at responding primarily to medical emergencies so that UCC is not cannibalising revenue that St John and WFA receive from ACC.
- **If the UCC service is to be supported (or even expanded), then ambulance funding arrangements will need to change.** Ideally ambulance services will be no worse off financially if they were to treat a patient at home. This may require legislative change so that ACC funding is not so directly tied to transportation, or alternative sources of government funding might be made available to offset losses in revenue resulting from treating patients at home.

**APPENDIX 1:
EVALUATION SCOPE AND FRAMEWORK**

Evaluation scope

- Sapere Research Group has been contracted to finalise the evaluation of the Urgent Community Care (UCC) pilots in the Horowhenua and Kapiti

Objective of the evaluation

- The purpose of this evaluation is to assess whether the UCC pilots represent value for money relative to maintaining the status quo in Horowhenua and Kapiti.
- The evaluation will provide a comprehensive picture of the impact the pilots have had on the delivery of care in the two regions and will be robust enough to be relied on in subsequent decisions on the future of the services.

Final report

- Will be completed by early December

Our staged approach to the evaluation

- confirm the evaluation framework and key questions (as set out in this document)
- interview stakeholders to ascertain views on the pilots and to identify priority areas to be examined through the evaluation (largely completed)
- data extraction from Lightfoot/Francis Group, complemented by specific data requests to DHBs/PHOs
- data analysis: including updating data from previous evaluation, filling in gaps, and correcting inaccuracies
- establish the counterfactual (what would have occurred in the absence of the UCC) and identify changes attributable to UCC
- quantitative and qualitative analysis of the impact of UCC
- workshop preliminary findings and views on data
- completed draft circulated for comment and possible workshop
- final draft

Evaluation framework

- Even though the ideal is to evaluate a policy intervention against the original objectives, the interviews have revealed that the pilots have evolved overtime and may be delivering benefits in areas not initially anticipated (e.g. there is anecdotal evidence that UCC may be being used as an after-hours substitute for traditional GP care)
- The evaluation questions have therefore been designed to capture a broad range of the benefits and costs that may have resulted from the pilots.
- The following is a summary of the key evaluation questions and proposed methodology

Primary questions	Secondary questions
1. Do the pilots represent value for money?	<ul style="list-style-type: none"> a) What were the benefits? b) Who accrued the benefits? c) What were the costs? d) Who bore the costs?
2. What was the impact of the UCC pilots?	<ul style="list-style-type: none"> a) To what extent have the pilots had an impact on patient outcomes/experiences, including through improvements in clinical integration? b) To what extent have the pilots had an impact on the delivery of ambulance services? c) To what extent have the pilots had an impact on use of secondary services? d) To what extent have the pilots had an impact on use of primary services?
3. What are the key learnings from the pilots?	<p>Commenting on findings with respect to:</p> <ul style="list-style-type: none"> a) Induced demand b) Consumption of other services (including examining substitution and duplication of existing services, and deferred demand) c) Triaging d) Integration of care e) Other possible means of achieving objectives

APPENDIX 2: DATA MODELLING METHODOLOGY

Data modelling methodology

The available data

- Data was received from St John and Wellington Free Ambulance for incidents, responses and ED transfers. Data was also received from Capital and Coast DHB and Mid-Central DHB for ED visits and inpatient admissions.
- For the incident and ED transfer time series for this analysis St John and WFA data was used. For the avoided inpatient admissions the Capital and Coast DHB and Mid-Central DHB data was used following the integration of ED and inpatient data by NHI and date of admission.
- The data was aggregated to counts by year, month, weekday, hour, region, and UCC pilot. In the Wellington region the data was divided into the Kapiti (pilot) region and all others and in the Manawatu region the data was divided into Horowhenua (pilot), Palmerston North and All Other region. This was done by use of the health domicile code, the call region or the address text depending on what was available.
- For St John the domicile addresses were coded to NZ Deprivation 2006 decile scores and the data was aggregated by this as well, for the single analysis determining the relationship between Deprivation deciles and induced demand of incidents.

Methodology

- In all cases the data were modelled in 'R' (32-bit, version 2.15.2) using a Poisson regression model. The models were all fit with main effects and first order interactions. The model was fit using a backwards stepwise regression and the AIC and analysis of deviance on the individual parameters were used as criteria for the model fit.
- In both pilot analyses, the induced incident demand and avoided ED transfers, a log offset of incidents or ED transfers was included in the model from the regions that were not included in the pilot. This was done to adjust for effects across the region that may have occurred during the pilot period only and so as not to include them in the estimate of the intervention effect.
- For the avoided inpatient admissions the rate of inpatient admission from ED to the hospital was modelled for all data in the service region (Wellington or Manawatu) so where the pilot and non-pilot regions had variation in common it was accounted for as part of the service region trend and not the pilot effect. As above, this was done to adjust out effects across the region that may have occurred during the pilot period only and were not attributable to the intervention.