

Operation Pasture

Section B: Summary of application -

Scanning

Agriculture in the Lune-Valley accounts for 38% of North-Lancashire revenue, and ranks highest across the County in corn-maize/beef production. Partner-data highlights local rural roads as the third worst in the UK for collisions, with farm-vehicles working a patchwork of fields over 5000 acres in different parishes, a major-contributor to this distinction.

Analysis

In 2006, 48 highway-disruption incidents, including 1 serious/8 slight-injury collisions were attributable to mud on roads, and farm-vehicles emerging from fields with limited forward visibility. Road-cleansing operations cost £14,720 with 250 hours police/engineer's time addressing these preventable incidents. It has been further identified farmers do not use warning-signage.

Extrapolation of NFU crash data, who insure 87% of all farmers, indicate collisions in this region accounted for 9% of UK total claims, attributable to mud/limited visibility, including 31 damage-only claims. Met-office data revealed 375mm of rainfall in 2007, set against 198mm in 2006, making harvesting increasingly difficult with incidents/collisions becoming more frequent.

Response

Support from the National Farmers Union, local authority and agricultural contractors/manufacturers shaped a citizen-focused, user-friendly approach, encapsulated in Operation Pasture, utilising a 3-point plan: Awareness - Education – Partnerships, addressing national/force casualty reduction objectives;

- Design/evaluation of temporary warning-signs, and specially commissioned £20,000 road-cleaning trailer, both a national first.
- Consultation surveys amongst farmers and other road-users, in particular, motorcyclists.
- Multi-agency 'Safety Awareness Days' (SAD's).
- Range of resources developed including leaflets/flyers.
- Publicity endorsement by motorcycle professional-racer, '*John McGuinness*'
- Vegetation/field access management at collision hotspots.

Assessment

Vegetation/field-access management has greatly improved forward visibility, with lightweight/temporary mud-warning signs and high-vis tabards provided to 250 farmers, who now enthusiastically accept they are highly-effective in mitigating potential crashes,

In 2007, farm-vehicle collisions reduced significantly for first time in 3 years, with serious injuries reduced by 100% to zero, and slight injuries down to 1. It is known a serious injury collision costs £142,000 and a slight-injury £14,000. If reductions are set against 2006 figures, we have saved £340,000, set against a 96% reduction in calls to police/highways, saving £14,118 road-cleansing costs and 240hrs resource attendance. The NFU have also seen non-reportable claims dropping from 31 to just 5.

The successful road-blaster evaluation has led to further dialogue with County Council for contractors to undertake further road-cleansing in the area. The farmers have embraced the non-statutory safe-working practices, generating many financial savings, most importantly, we have prevented further tragedy; therefore savings in human emotion terms are priceless.

SCANNING

Overview of the problem



Section C: Description of project -

Scanning:

The Lune Valley

This designated National Park is famed for its grandeur and tranquility. Amidst the striking landscape is evidence of 7,000 years of farming, with partner data highlighting local roads as the UK's third worst for injury-collisions, with agricultural vehicles a major contributor to this unfortunate distinction, and primary threats occurring during peak harvest months, where crash-data demonstrates a correlation between farm-vehicle movement and mud on the road. Prior to 2006, nothing was done to tackle the problem.

Agriculture

For over 200 years, the North-West has been the UK's largest regional economy, bigger than 14 European Union countries. The food and drink sector alone is worth £9.5billion, with the farming industry providing 12% of regional income. Agriculture in the Lune-Valley is vital to that economy, with the local farming-industry increasing by 20% over the past 5 years, and 60% of land managed by estates with tenanted farms, in contrast to other areas across Lancashire, where owner-occupied farmland has been sold for suburban development, as profitability has been under pressure, and farm-labour declined. The dynamics of farming are also changing, with two-tiers of local agriculture; traditional farms rearing live-stock, and the emerging trend of niche-farming, where farmers grow corn-maize, used for cattle feed, enabling additional income to be drawn from land. Local agriculture accounts for 38% of Lancashire food revenue, and ranks highest across the N.West in corn-maize and meat production, driven by consumer demand.

Partner Concerns

In 2006, 48 highway-disruption incidents, including nine injury-collisions were attributable to mud on roads, and farm-vehicles emerging from fields with limited visibility. Road-cleansing operations consumed valuable police and highway-engineer deployment time and costs addressing these preventable incidents. Further concerns highlighted farmers were not using any warning signage, and did not understand implications of not doing so. The National Farmers Union (NFU) confirmed a further 31 damage-only collision claims occurred in the area, concerning mud/limited visibility, with concerns farmers/agricultural contractors did not understand current legislation concerning debris on roads, resulting in lengthy civil litigations. Met-office data revealed 375mm of rainfall in 2007, set against 198mm in 2006, making farming increasingly difficult and incidents/collisions becoming more frequent.

Public dissatisfaction

During 2006, 23 complaints were recorded from residents, and road-users, in particular motorcyclists, exacerbated by continued calls for service, and collisions. The problem was becoming a significant issue across the breadth of the community, with ward councilors having shared concerns.

ANALYSIS

Identification of the problem

Analysis:

Data Sources

- Lancashire Constabulary Intelligence
- Department of Environment
- National Farmers Union (NFU)
- Health & Safety Executive (HSE)
- Lancashire County Council
- North West Farmers Auctions
- Metrological Office
- Independent Maize Growers Association
- Institute of Advanced Motorcyclists
- European Road Assessment Programme
- English Nature

To better understand farmer's attitudes and responses was critical to future actions. It was equally important to access these viewpoints in real-time through open-meetings, as forums for discussion on agricultural workplace issues. In response to initial findings, coupled with robust interrogation of electronic media data-systems, 250 local farmers were sent a survey questionnaire;

A total 212 (85%) provided the following key responses:

Negative narrative

- Respondents had no understanding concerning their legal obligations to remove debris from roads, and of the firm belief they only became legally culpable if warning-signs were deployed.
- Respondents would not use Highways Authority approved signage as it was cumbersome, heavy, over-priced and impractical for narrow grass-verges.
- Only 2% admitted understanding road-traffic legislation relating to farm-vehicles.
- 92% indicated little interest or incentive to improving their personal road safety, or that of other road users.
- Respondents believed leaving mud on roads was not irresponsible, nor did they believe it to be their responsibility to clear it up.

The initial meetings, despite being a painful experience, identified the more compliant from the not so, and formed the basis of a citizen-focused plan using the Problem Analysis Triangle (PAT) as a framework to break the problem down into three key areas; *Location, Victim, Offender*, as well as allowing analysis of impact factors linking to the problem.

Location

The Lune Valley covers 100 sq-miles of outlying rural landscape with a diverse mix of residents from the farming community, locally employed, and retired persons. The region is entwined with country-lanes where farmers work a patchwork of different fields, over 5000 acres, in several different parishes, with harvesting, tilling, crop-rotation and silageing resulting in more exposure time on tractors, increased movements from field to field using public roads, coupled with increased incidents and collisions.

Victim

During 2006, door-step surveys in problem areas revealed 23 complaints, principally from older-retired residents, over instances of mud on roads, with similar feedback from parish council meetings, conveying a blame-culture against farmers. It was clear the perception that farmers were wholly responsible was flawed. I decided this could taint findings from the outset, as many complainants were related to those perceived at fault, leading to my understanding the response must correct this misperception.

The farmers themselves are victims, with food-retailers placing increasing demands to process more meat to meet consumer demand, perpetuating the problem, and as land was more intensively farmed to meet the demand, a number of field tracks and exits had significantly deteriorated, causing more mud to be dragged on to roads, making other road-users, in particular motorcyclists, potential victims.

A consultation survey with 70 riders from the local Institute of Advanced Motorists (IAM), motorcycle section generated an overwhelming consensus of opinion that farm-equipment emerging onto rural-roads from fields and leaving mud deposits with no warning-signs was their number one safety hazard, based on riding experiences in the Lune Valley.

Government Agency Concern

Road Collisions

In 2004, following 38 crashes involving agricultural vehicles, 1 of which was fatal, 14 serious and 25% involving motorcyclists, including the fatality, Operation Pasture fixated on enforcement, targeting defective agricultural-vehicles, with 210 checks revealing 90% with serious defects. In 2005, 195 further checks revealed just 24 with mostly minor-defects, representing a 64% improvement. Whilst collisions reduced marginally, it was apparent something was still amiss, with calls for service not diminishing, and complaints from farmers they were being discriminated against, akin to treating tooth-ache with pain-killers, but not addressing underlying causes.

In 2006, in-depth re-scanning and detailed analysis of comparative collision data for harvesting periods, with off-peak periods, revealing a disturbing increase of 42% between 2003-06, including 1 collision, resulting in major-incapacitating injuries, and 8 slight-injury collisions, from 48 highway-disruption incidents attributable to farm-vehicles emerging from fields with limited forward visibility, and mud left on the carriageway, Harvesting periods also appeared to shift forward incrementally by 2-3 weeks annually, for no apparent reason, resulting in the 2006 harvest running from July-December, in comparison to June-November for the 2005 harvest, aggravated by inclement weather continuing unabated, providing scope for further tragedy.

Private Sector Concern

Extrapolation of crash-data from the National Farmers Union (NFU), who insure 87% of farmers, highlighted collisions in this region accounted for 6% of UK total claims, totaling approx £53m paid out in 2006, attributable to mud/limited visibility, including 31 damage-only claims. Partner-data also highlighted 76% of blame-worthy collisions involved farmers, suggesting a relationship with training and competence.

The A683, running through the region, was cited as the UK's third most dangerous road for collisions in 2006 by the European Road Assessment Programme (Euro-Rap). These facts contribute to the number of collisions costing the UK insurance industry £600 million annually, adding to motorists premiums. Every household in the country therefore becomes a victim through increased cost.

Calls for Service

Police

In 2006, 48 calls for service relating to mud on roads in the Lune Valley accounted for 3% of total calls and police officer deployments, costing the division £2,390 and 82 hours in resources.

Environmental Management

Additional information highlighted similar demands placed on the local authority road cleansing call-out system, with highway engineer and road sweeper/operative attendance to the same incidents costing £11,880 and 168 hours in resources. Total calls and responses were consuming a disproportionate share of resources, with 250 hours and £14,270 expended by both the police and partner service providers attending these preventable incidents.

Offender

The surveys identified the farmers were 98% male, ranging from 29-81 years. The mean age was 61, with 11% septuagenarian's, who had farmed between 4-56 years, and an average 28 years. They provided guarded responses in surveys and meetings, were suspicious of law-enforcement and anti-regulation, although very well-versed in crop-allotment grants and subsidies, highlighting a fundamental disconnect with a group accepting subsidies, but rejecting road-safety regulation. Whilst identified as hard-working indigenous civilised citizens, they were proving a hard to reach group, with misconceptions they held impunity from traffic-law. The farmers were essentially refusing to admit to a problem, leaving us, as professionals, trying to solve a problem they did not think they had. Their attitude of not wanting to make change brings to mind the fallacy of the commons – for each individual the risk is small, but collectively for society the impact is large.

Impact Factor

Climate change

Met-office and National Statistical data revealed 375mm of rainfall in 2007, set against 198mm in 2006, making it the wettest summer in the region since UK precipitation records began in 1766.

Independent research corroborates analysis:

In order to better understand how climate change contributed to the problem, I consulted with an agricultural scientist, and an agronomist, who revealed maize crops damaged by torrential downpours cause plants to fall over, which then become difficult to harvest. Small areas may be harvested during brief dry spells, but the resulting crop is left damp, resulting in expensive drying processes using expensive fuel. The long string of wet weather is pushing crop growth about a week ahead of the crop-harvest cycle each year, resulting in farmers becoming frustrated and taking crops off rain-sodden fields, supporting the notion that changing weather patterns, with continual seasonal rainfall is a primary causal-factor, with further escalation across the region almost inevitable if left unchecked.

Information Gaps

Researching collisions involving farm-vehicles was problematic, as vehicle-type coding was not consistently followed due to uncertainties amongst police-officers, how farm-vehicles are defined. In order to obtain more accurate data, I hand searched records to discern vehicle-type from report narrative.

Time constraints precluded a wider survey of motorcyclists, however, numbers consulted provide a representative response.

RESPONSE

**What was done to address
the problem**

Response:

Analysis identified whilst enforcement proved useful addressing mechanical deficiencies, it acted like a demolition team pulling apart the fabric of trust. As Tilley states “*A police force that concentrates on enforcement is confusing means with the ends.*” (2003). Tilley et-al, identifies a key principle, that success is a subjective measurement, based on content and quality of community interactions and satisfaction, rather than on objective statistics. This awoke my resolve to revamp the initiative to bridge the gaps, and work closely with farmers to gain their trust and encourage empowerment. Sir Robert Peel, founder of modern policing, expressed the notion in 1829, “*the police are the public and the public are the police.*” which further underlined my resolve to adopt a velvet glove, rather than steel gauntlet response to achieve success. Qualitative and quantitative analysis provided a ‘*smorgasbord*’ of data, validating the NFU as primary partner, enabling a cohesive plan of action with objectives aimed at sustainable change:

- Shared ownership through partnership working.
- Reduce number of incidents and calls for service.
- Reduce number of road collisions, preventing further tragedy.
- Changing farmers attitudes towards road safety
- Implementing non-statutory working practices, creating a safer-working environment.
- Community reassurance and establishing confidence in road-safety.

There is a secondary objective, where benefit and outcomes are sought from partner interventions and design to achieve primary objectives:

- Minimise environmental impact and maintaining landscape character.

My chosen delivery method concentrated on a citizen-focused approach, encapsulated under three broad headings;

- Awareness
- Education
- Partnerships

Awareness

Farmers Flyer

This hand-out offered guidance for farmers when emerging from field entrances, and addressing debris left on roads. The local cattle-auction printed 1500 free-gratis, distributed through farming supply-chains and dealer networks.

Mud-Slider Flyer

This aptly named flyer was devised in consultation with the IAM, raising awareness to motorcyclists, concerning farm-vehicles and mud-debris, with 1000 promulgated through bike-dealers and rider venues.

Partnership Pamphlet

I identified a gap in the county portfolio of road-safety literature, and devised a corporate-style pamphlet, containing a précis of legal-issues, and user-friendly advice for road-users concerning farm-vehicles on rural roads, with 1000 distributed to agricultural and private-sector outlets across the region.

Community Engagement

As a pro-active response, an information leaflet about the initiative was given to complainants, and local residents. I further cultivated relationships with the community by attending parish council meetings in 11 wards across the beat area to talk with residents, appeasing their concerns and expectations, whilst addressing the misconception that farmers were totally to blame.

Farm-Vehicle Guide

A practitioner guide was devised to assist operational officer's interpretation of what constitutes a farm-vehicle, and overview of the strategy.

Media Campaign

Wide-ranging publicity and feature articles were printed in farm-trade journals, parish news-letters, local papers, and posted on community web-sites, along with 8 live radio interviews, and presentations to over 500 people. Motorcycle professional racer, '*John McGuinness*', personally endorsed the initiative, leading to positive articles in motorcycle periodicals.

Education

Safety Awareness Days (SADs)

Held at local cattle-auctions, with cross-agency support encouraging compliance to the key objectives. Primary topics included a safe tractor-driver initiative, dovetailed with safe road-side signage deployment, legislation and field-access management presentations. Sessions were repeated across two half-days, typically attended by 70-100 farmers. The cattle-auction provided a notice board with strategy literature and forthcoming presentation dates displayed. With crop-harvest calendar baselines changing, I also stimulated dialogue for farmers to consider adaptation measures to meet the challenges posed by climate change, as identified in analysis.

F.A.R.M.R Presentation

To further consolidate key objectives, make training cost effective and accessible, I devised the **F.A.R.M.R – '*Farm Accidents on Rural Main Roads*' workshops**, provided free to farmers, addressing safe tractor driving, focusing on precipitating factors in collisions, warning-sign deployment / risk-assessment and countryside stewardship.

Internet outreach

Lancashire Libraries provided support, with installation of an internet link/desktop-PC in the beat-area unoccupied police-house, providing an out-reach facility for farmers to see the **F.A.R.M.R presentation on-line**.

Partnerships

Temporary Signage

In the survey, farmers thought use of temporary signage could be beneficial. I worked closely with them, designing a lightweight portable sign, and consulted with the Highways Agency (HA), as the proposal did not meet statutory provisions governing roadside-signage. Months of protracted meetings and tabled proposals/designs finally saw regulatory constraints relaxed, allowing their use.

Road Blaster Trailer

The survey also highlighted farmers believed road cleansing equipment is a good idea, but costly to buy. I contacted Major Agric-Equipment, based in Ireland, who built a £20,000 trailer, with grant support funding, to fire high-pressure jetted water to break up mud and float it to the surface, followed by rotating brushes to clean roads. Named the

'*Road-Blaster*', it was permitted be trialed on public roads by the HA, together with the signs, the first time such permission has been granted for either initiative on public roads across the UK.

Evaluation

An initial batch of 30 signs were distributed to farmers in incident hotspots, together with deployment of the 'Road-Blaster' via a selected agricultural contractor to clean the roads whilst the maize crop harvest was in full swing. Sign and trailer deployments were coordinated and recorded by farmers and contractors, and monitored by the police, who randomly sampled other road users, in particular motorcyclists, as to the merit of the signs and road cleanliness during the 3-month evaluation period.

Vegetation / Field Access Management

Farmers, landowners and highway engineers were consulted concerning field exits with badly overgrown vegetation and field access sites near collision and incident hotspots.

ASSESSMENT

The results of our approach

Assessment:

Meeting Set Objectives

Calls For Service

Police/highways deployments to mud on road incidents in the area reduced by 96% from 48 in 2006, to just 3 in 2007, resulting in an overall saving of 240 hours and £14,118 as a direct result of farmers embracing the non-statutory working practices. From those figures, savings to the police amounted to 77 hours and £2,290, with 168 hours and £11,355 savings to the local authority. The reductions in response officer and highway engineer attendance, has allowed those valuable front-line resources to be allocated to higher priority calls.

Collisions

In 2007, farm-vehicle collisions attributable to mud on the road, or farm-vehicles emerging from areas of poor visibility have reduced significantly for first time in 3 years, with serious injuries reduced by 100% to zero, and slight injuries from 8 to 1, The NFU Mutual have also seen non-reportable claims dropping from 31 to just 5. It is known a serious injury collision costs society £142,000 and a slight-injury £14,000. If reductions are set against 2006 figures, we have saved £340,000.

Public satisfaction

The *Farmer* and *Mud Slider* flyer's saw demand out-strip supply, resulting in a print re-run. The corporate pamphlet also proved popular with the local authority adopting the idea, with distribution across Lancashire networks. The practitioners guide to assist operational officers identify farm-vehicles also proved popular, with feedback indicating it will assist in more accurate completion of collision reports.

Community Reassurance.

Quality of life has greatly improved, by replacing resident's concerns with reality, with re-visits to the 23 complainant's, showing, all but one were now completely satisfied, having seen a marked improvement in road-cleanliness and driving standards. Positive responses were also received from ward councilor's who backed the campaign and conveyed resident responses, having seen the community handout, turned previous dissenters into vocal supporters.

Safety Awareness Days (SAD's)

Three SAD's have been undertaken, attended enthusiastically by 300 farmers, achieving the primary aim of capturing, and more importantly, changing farmer's mindset and behaviours, in particular, in their attitude to other road users, and land management practices, with the net-offset of achieving tangible reductions in calls for service and road casualties.

Post Strategy Evaluation

239 (96%) of farmers from the original consultation survey provided positive feedback: 95% stated the SAD workshops increased awareness to their own safety, and that of other road users. All respondents accepted the non-statutory working practices were highly beneficial, and created a safer-working environment. They unanimously

believed provision of temporary signs were an effective way to mitigate potential crashes as they now understood their legal obligations following attendance at presentations. Two letters of appreciation have been received from participants, with two respondents indicating they would not recommend the initiative to others. 75 randomly selected road-users stated local roads were much cleaner, and advance warning signs increased their awareness to take greater care where mud-debris was prevalent.

F.A.R.M.R Presentation

The '*Farm Accidents on Rural Main Roads*' presentations have proved very popular, having been seen by 120 farmers from across the region, and into Cumbria. The NFU have adopted the strategy for presentation at bi-monthly meetings to further engage farmers.

Internet outreach

The on-line workshop presentation, available through county libraries P.Net (people's internet) service, has been viewed over 50 times, with local authority data indicating 80% of service users are from rural communities.

Mud on road signs

The successful evaluation has seen £4000 partner funding raised, enabling printing and provision of 250 temporary signs and high-vis tabards, to local farmers, who asked for additional temporary signage to warn road-users concerning farm traffic, livestock movement and hedge-clippings, which were provided, with all signage consistently used across the region in 2007.

The Cooperative Society, the famous corner shop, and world's largest consumer-owned retail business, place the biggest demands on farmers to meet consumer demand. The Society has adopted a local community accountability policy, by supporting the strategy with a funding donation, enabling production of the signs.

Road-Blaster

The successful road-blaster evaluation has led to further dialogue with County Council with proposals for agric-contractors to undertake further road-cleansing in the area, sub-contracted to the local authority. This is a complex, but viable and cost-effective proposal, being progressed through legal channels at County hall.

As an unintended consequence, the evaluation identified a gap in insurance provision from the NFU-Mutual to its members, excluding farmers from using road-cleansing attachments on tractors. The underwriters are correcting this anomaly, thereby allowing farmers across the UK to lawfully clean the roads with appropriate indemnities in place. This also places legal obligations on agric-contractors to clean roads, whilst undertaking contractual activity on behalf of farmers. Lifting the exclusion has also led to several farmers/contractors who identified an imbalance in their machinery capacity forming an informal 'machinery-ring' to allow wider accessibility to road-cleansing attachments for fitment to their tractors. The farmers adopt a user-friendly and cost-effective stance by cooperating and sharing the surplus capacity to clean local roads.

Meeting Secondary Objective

Vegetation Management / Field access

Two dangerous field-exits at collision hotspots have been closed, with compacted building-rubble and hardcore aprons placed at several field-exits leading on to main roads. Field access gravel tracks have also been created, as a

result of informal permissive access agreements between farmers/landowners, with the tracks successfully linking a number of outlying farms/fields, thereby significantly reducing tractor movement and mud-debris on roads. Materials were sourced from demolished/abandoned outbuildings, which enhanced landscape character, and utilised carbon-free, recyclable, and environmentally friendly material. Vegetation management at several additional sites has also greatly improved forward visibility, reducing potential for further collisions.

Climate change

The threats are serious and challenge sustainability of the Pasture strategy. Understanding the issue is complex, but both important and necessary to address the risk, from a problem-solving and social stand-point, as we simply act as caretakers for those that follow. In that regard, a climate change action-plan is being developed, working with the NFU, researching ways to undertake predictive analysis to highlight seasonal weather pattern changes affecting crop-harvest cycles. In turn, farmers and contractors have been encouraged in the responses to consider adaptation and mitigation measures, integrated with the non-statutory working practices, linking to the application end-point; preventing collisions, attributable to mud-debris dragged off rain-sodden fields.

The web-based F.A.R.M.R. resource is under review, exploring possibilities to help farmers manage the challenges in a user-friendly way, by posting key information, without getting bogged down in scientific language. Furthermore, an additional flyer; '*Farming to the Future*' provides farmers advice on preventative working practices to adapt to the threats and maintain landscape character, thereby protecting the rural communities quality and way of life. Partnership working has seen Major Plc provide warning signs/strategy literature at point-of-sale with all agricultural equipment sold across the UK, and designing an environmentally friendly slurry-trailer to further reduce mud-debris on the regions roads.

Diffusion of Benefits

The project principles are a transferable commodity, having been successfully implemented in other areas across the force, with elements being considered for inclusion in a proposed '*Rural Safer Transport Guide*' being prepared by the NFU for the Highways Agency. Farmer's were charged a nominal fee for the temporary signs, with funds donated to the Royal Agricultural Benevolent Fund through the NFU.

Conclusion

This is not just a good example of bringing about a reduction in casualties and calls for service, but a live example of partners, working together applying groundbreaking problem-solving to precipitating factors surrounding climate change to address, and maintain, the rich and fragile ecology of the area with multiple environmental designations. These have been embraced both sympathetically and appropriately with advice and experience of the NFU and English Nature, working with farmers/landowners to reduce environment impact, with the positive outcomes resulting in local farmers becoming true '*guardians of the countryside*' through voluntary compliance to strategy objectives, testifying to the impact a shared and citizen-focused approach to problem solving can have on a significant public safety issue.

It is difficult to quantify resources that have been applied to the project, as expenditure has been in participant's personal time and commitment, and cannot be easily valued. Whilst inevitably, police-resources have been applied, these have been undertaken predominantly by one officer, and easily justify the outcomes achieved. Operation Pasture has fostered positive relationships between farmers, police and local-authority officers, in turn, generating many financial savings, however, and most importantly, we have prevented further tragedy, therefore the savings in human emotion terms are priceless.

