



Investigating the impact of defects on key stakeholders in the UK new housing sector

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Research supported by Engineering and Physical Sciences Research Council (EPSRC)-funded
Industrial Doctorate Centre: Technologies for Sustainable Built Environments (EP/G037787/1)



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Background

Pressures the UK house building industry is facing:

- Need to increase supply
- Zero Carbon homes agenda

Industry response:

- Increase supply
- Incorporate new technical solutions into new homes



Research Problem

More homes, more defects?

Source: theguardian.com



Source: nihospicecare.com



Less



Low carbon requirements, more defects?



Source: oxfordsolar.energyprojects.net



Source: thenbs.com

Dual pressure, dual defects?!

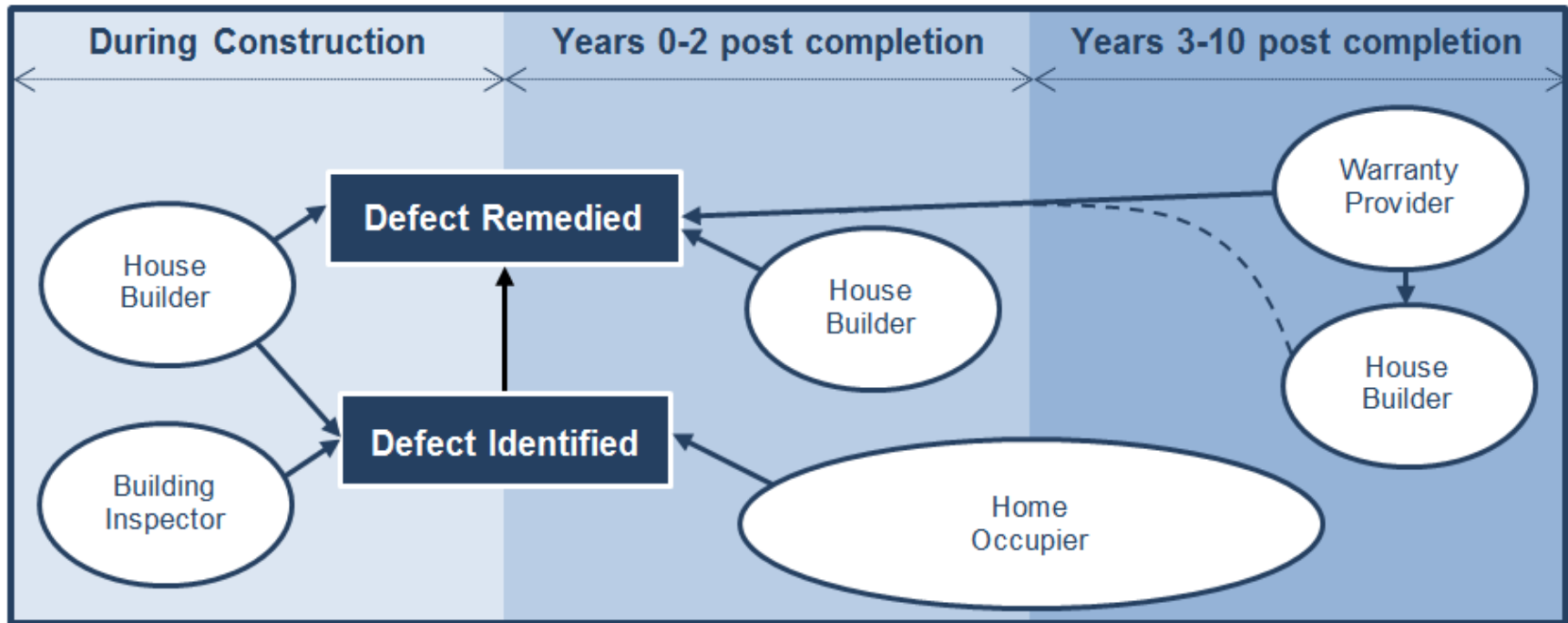
Construction Defect Literature



- General findings
- Individual types of defect
- *Lacking understanding of impact defects*
- *Lack of models to quantify the impact*



UK housing defect detection and remediation process



Impact of Defects Literature

Three distinct impact factors:

- H&S implications
- Cost incurred
- Disruption caused



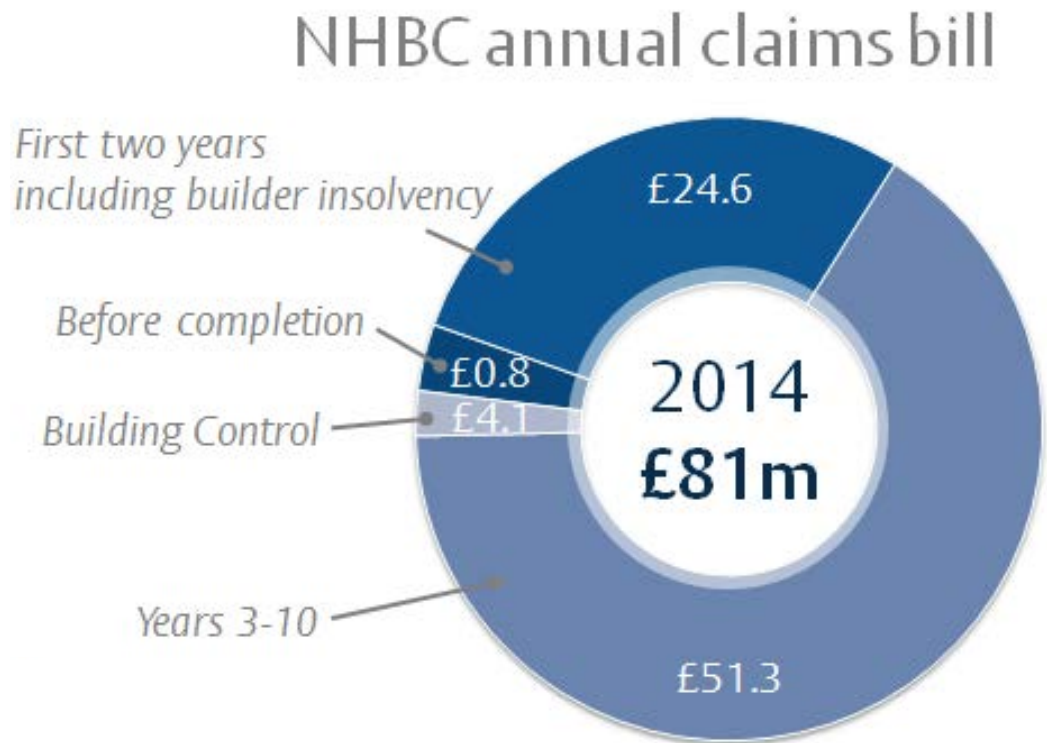
H&S Implications

- Danger to workers on site
- Danger to home occupants
- Other?



Cost Incurred

- Investigation
- Remedial works
- Complaints
- Warranty repairs (premium)
- Fines/legal action
- Other?



Builder undertakes 50% of 3-10 repairs

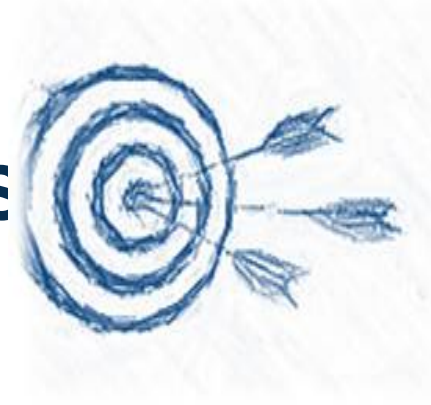
Source: NHBC

Disruption Caused

- Construction Programme
- Arranging for trades to return
- Trades returning
- Other?



Aim & Objectives



Aim

- Better understand the impact of defects on key stakeholders who detect and rectify defects in new homes.

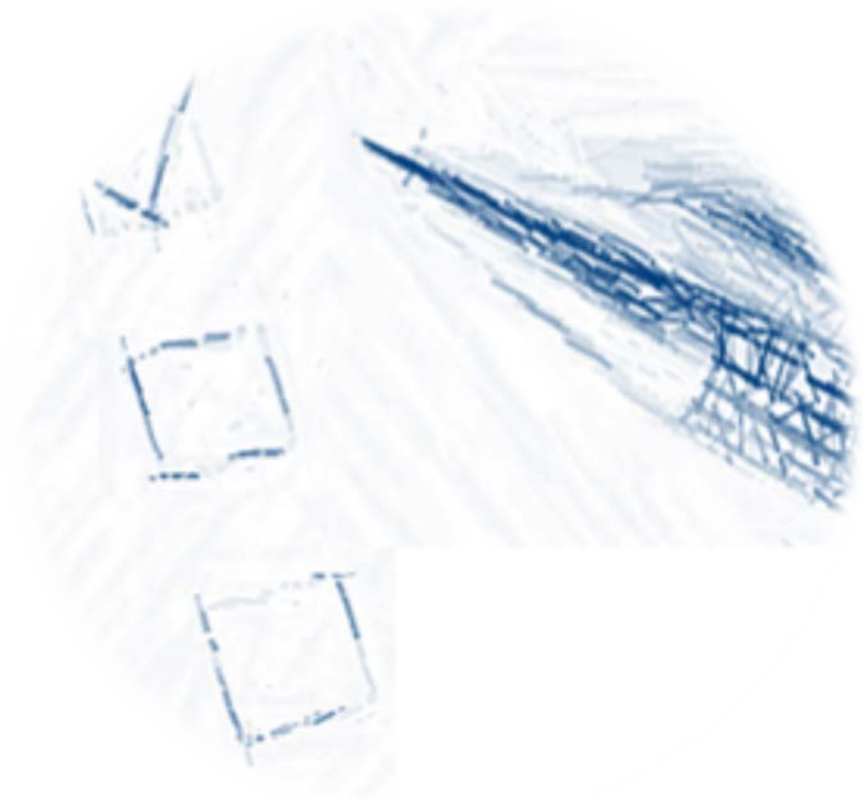
Objectives

- Determine which of the identified aspects are more important to the relative stakeholders, and why.
- Develop and verify a defect impact assessment system for the purposes of defect analysis.

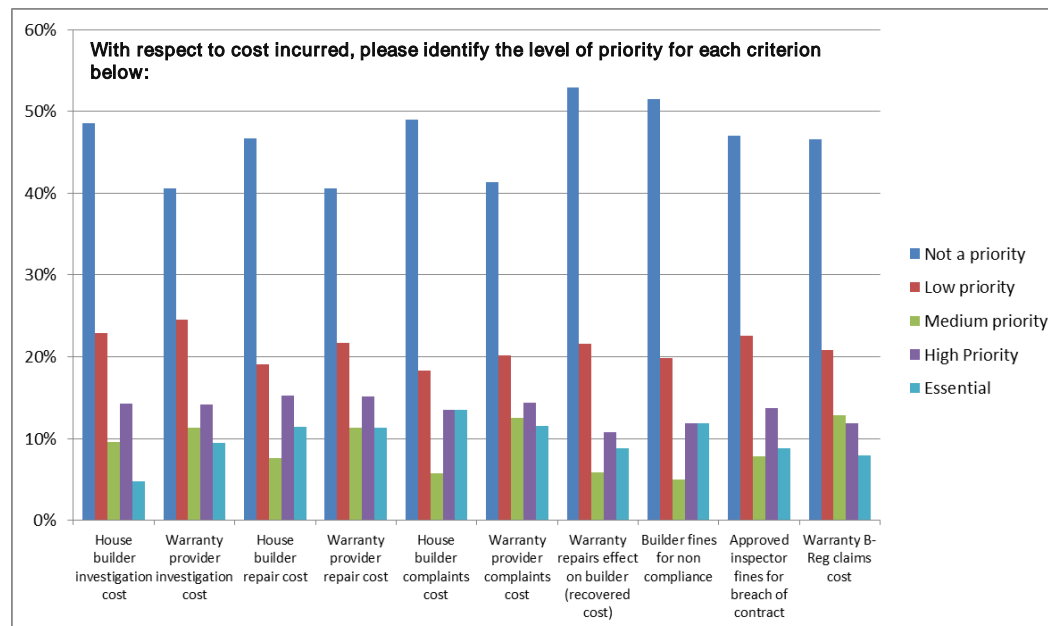
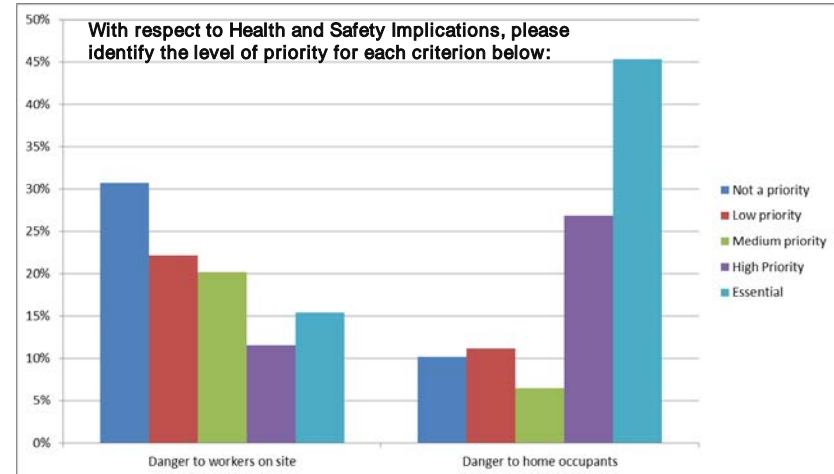
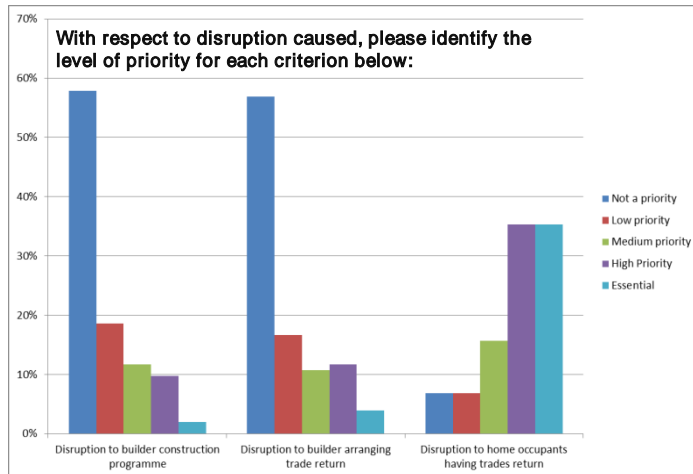
Research Method

Questionnaire survey

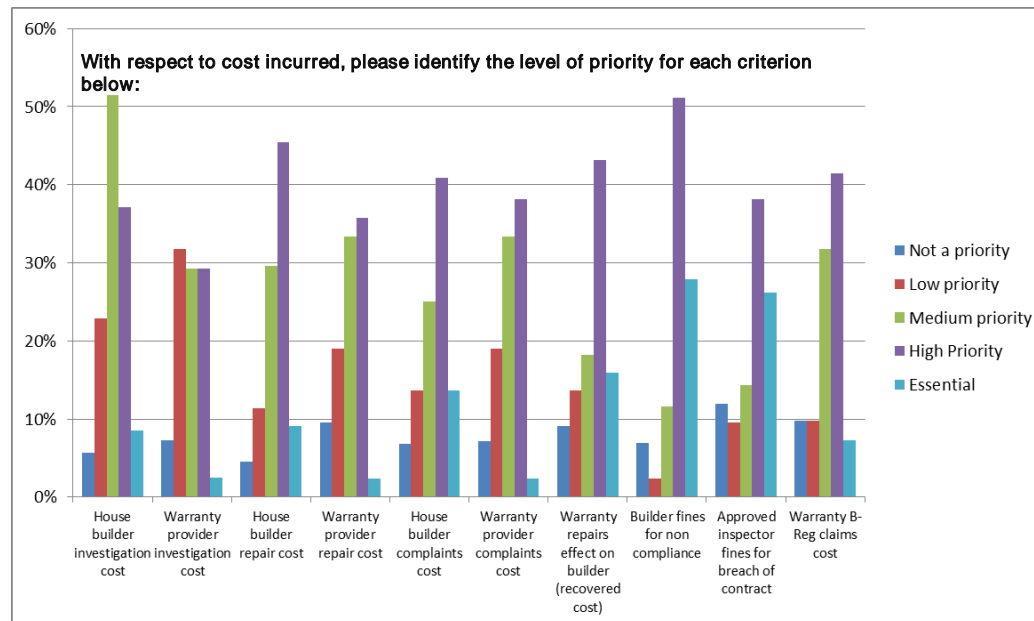
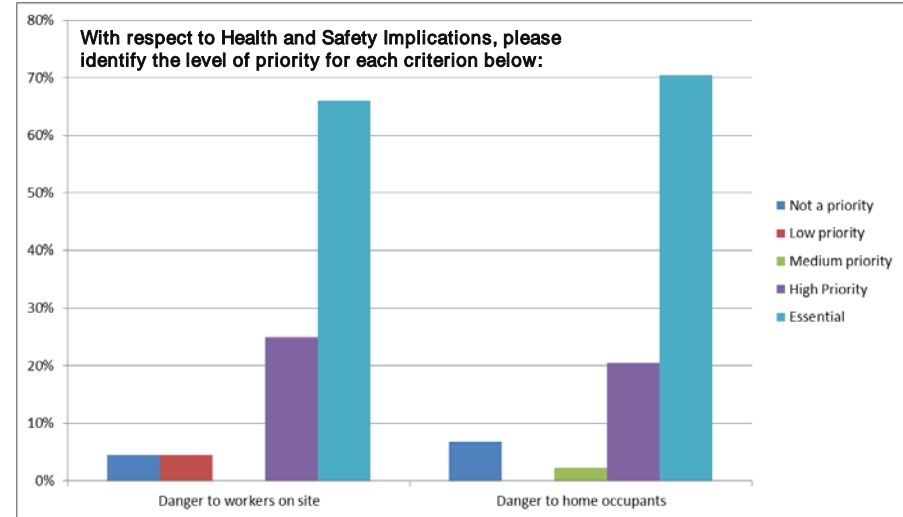
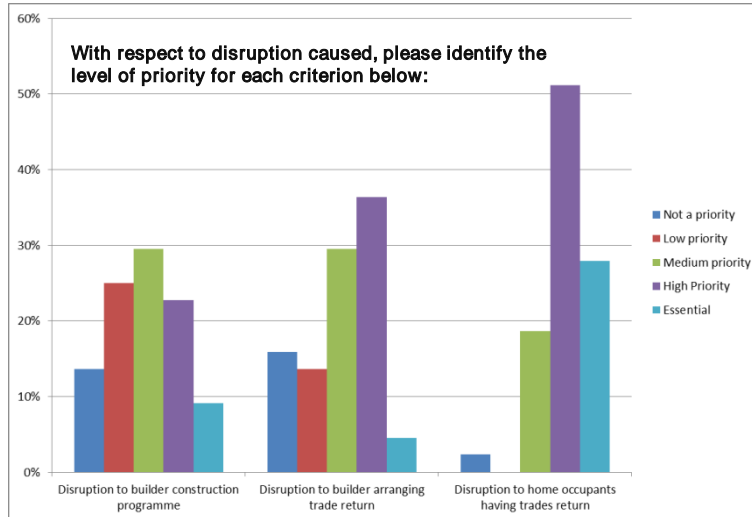
- Web link through email
- 1 month duration
- Follow up emails
- House builders
- Building inspectors
- Warranty provider
- Home owners



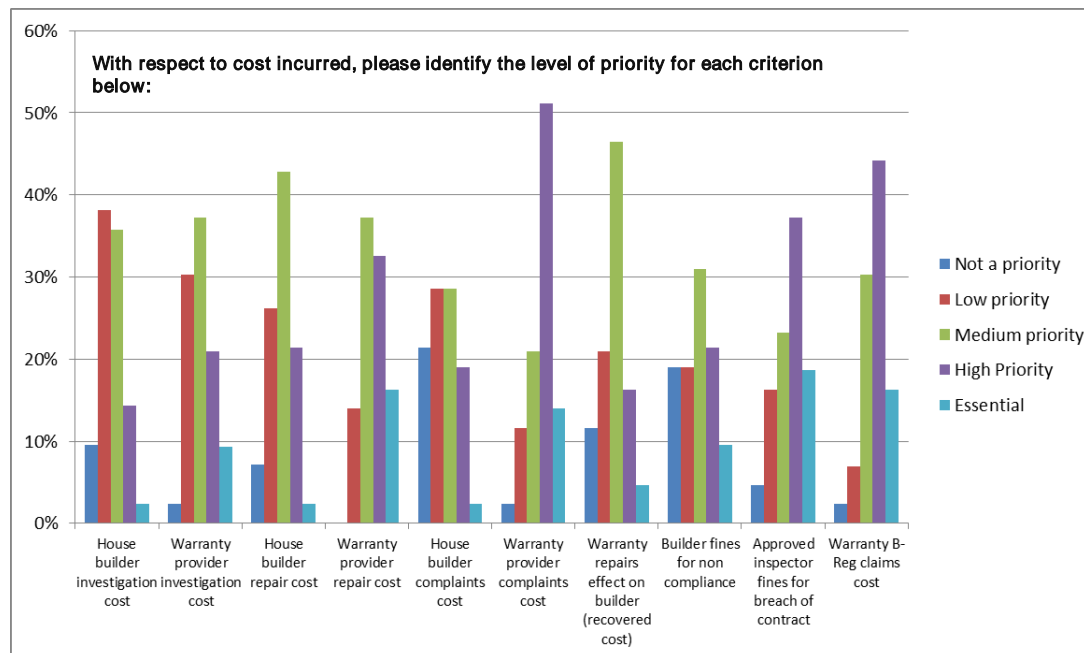
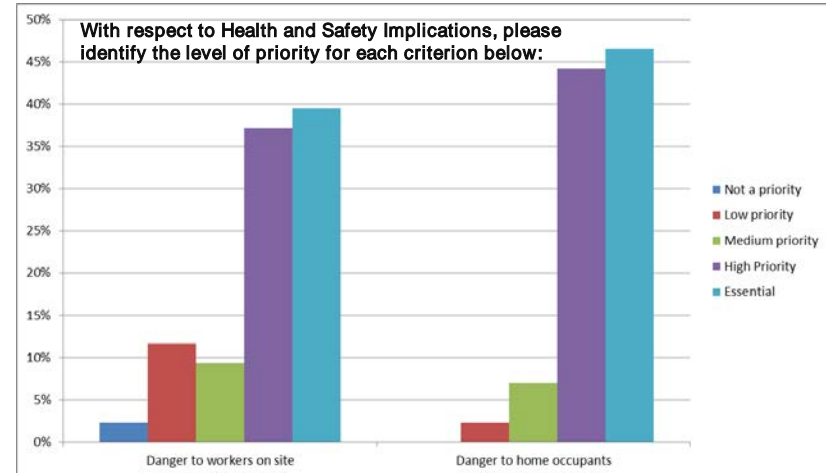
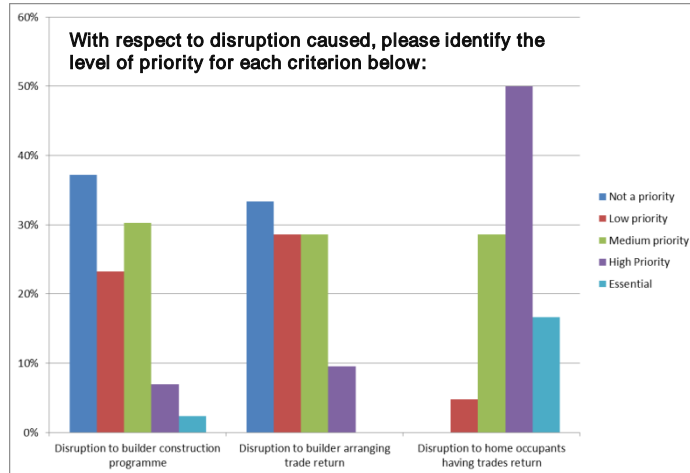
Early findings: Home occupants *(n=143)*



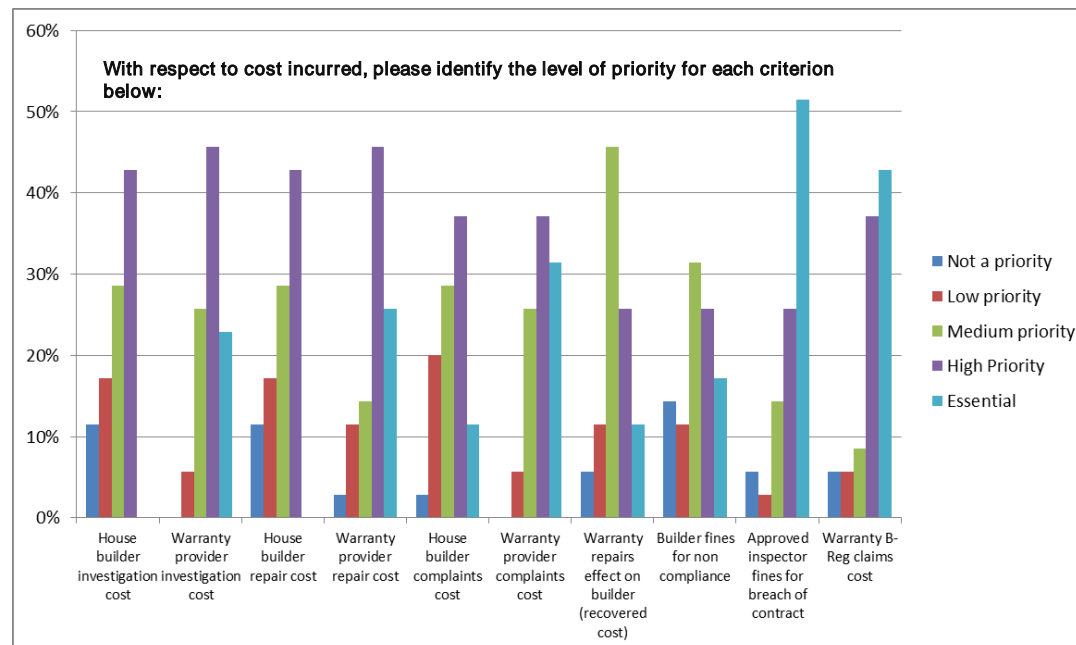
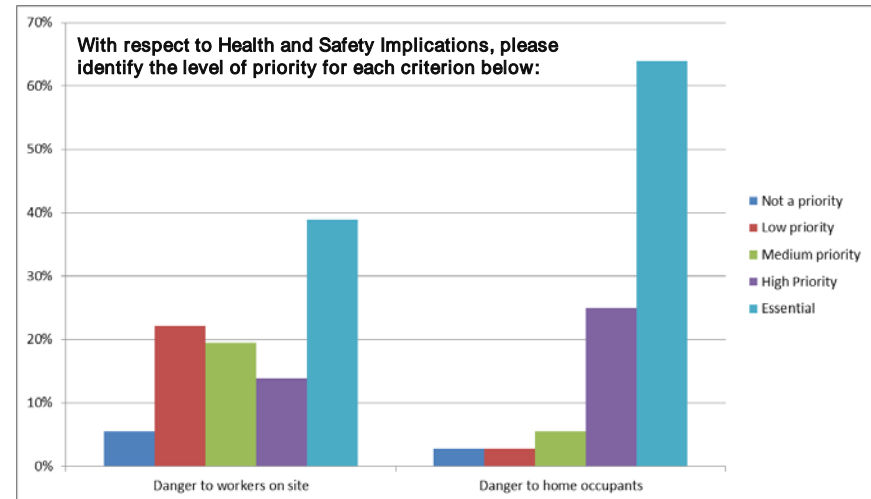
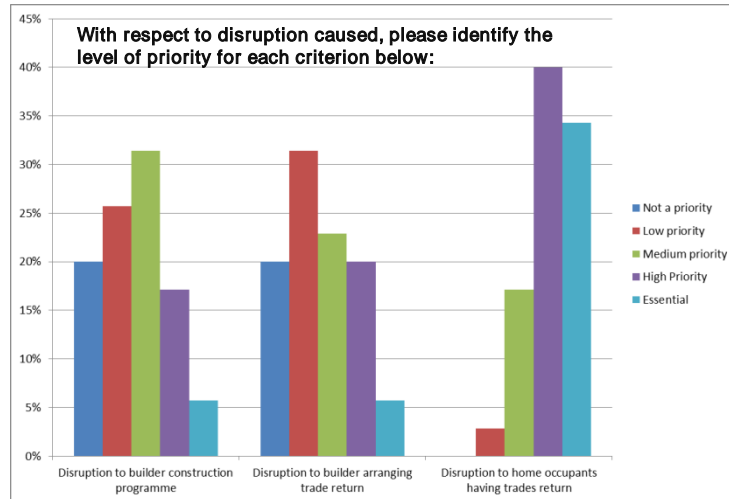
Early findings: House builder *(n=50)*



Early findings: Warranty provider ($n=52$)



Early findings: Building inspector (n=42)



Discussion

		House Builder	Warranty provider	Building Inspector	Home occupant	Average overall
With respect to Health and Safety Implications, please identify the level of	Danger to workers on site	4.43	4.00	3.58	2.59	3.65
	Danger to home occupants	4.48	4.35	4.44	3.86	4.28
With respect to cost incurred, please identify the level of priority for each criterion below:	House builder investigation cost	3.16	2.62	3.03	2.04	2.71
	Warranty provider investigation cost	2.88	3.05	3.86	2.27	3.01
	House builder repair cost	3.43	2.86	3.03	2.26	2.89
	Warranty provider repair cost	3.02	3.51	3.80	2.35	3.17
	House builder complaints cost	3.41	2.52	3.34	2.24	2.88
	Warranty provider complaints cost	3.10	3.63	3.94	2.35	3.25
	Warranty repairs knock on to builder (recovered cost)	3.43	2.81	3.26	2.01	2.88
	Builder fines for non compliance	3.91	2.83	3.20	2.13	3.02
	Approved inspector fines for breach of contract	3.57	3.49	4.14	2.15	3.34
	Warranty B-Reg claims cost	3.27	3.65	4.06	2.14	3.28
With respect to disruption caused, please identify the level of priority for each criterion below:	Disruption to builder construction programme	2.89	2.14	2.63	1.79	2.36
	Disruption to builder arranging trade return	3.00	2.14	2.60	1.89	2.41
	Disruption to home occupants having trades return	4.02	3.79	4.12	3.85	3.95

Next steps

- Finalise questionnaire findings
- Develop defect assessment method from the findings
- Apply to individual defects from claims files
- Verify and/or improve from industry expert focus groups

Thank you...



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