SCHOOL OF POPULATION HEALTH

Research Projects 2013

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Responsible, conscientious students with well-developed interpersonal and written communication skills are sought for these projects.

It is expected that candidates will draft, under supervision, a paper for publication in a scientific journal. This is the first step in your research career!

Research projects
A wide range of potential projects are available, some of which are listed in the following pages.

- Most projects can be tailored to Honours, 12 point Masters Project, 24 point Masters dissertation or PhD scope. These are indicated by *.
- Projects suitable for 24 point Research Dissertation, MPH by research thesis or Phd are indicated by **
- Projects of specific lengths are indicated *** for Honours/12 point Masters **** for Honours

Although some projects use linked data and require a high degree of analytical aptitude, there are many other projects that require different skills.

Given the scope of projects available, a great project can be found to match your own interests and skills.

Want to know more?
Contact Graduate Research Coordinator:
Winthrop Professor D’Arcy Holman
School of Population Health
Tel: +61 8 6488 1251
Fax +61 8 6488 1188
Email: darcy.holman@uwa.edu.au
Childhood Predictors of Adult Health**

Supervisors: W/Prof Matthew Knuiman (SPH), Dr Michael Hunter (BHS), Clin/Assoc/Prof Alan James & Prof Joseph Hung (SCGH) & other BHS researchers depending on topic focus

Background: The Busselton Health Study (BHS) is one of the longest running epidemiological research programs in the world. Residents of Busselton, a coastal town in south-west WA, have been involved in a series of health surveys since 1966. To date over 20,000 people of all ages have taken part and have helped contribute to our understanding of many common diseases and health conditions. See www.busseltonhealthstudy.com

Surveys of school children included a questionnaire on health history and symptoms (especially respiratory and allergy) and physical measures of body size, lung function, blood pressure and cardio-metabolic blood measures. Several people who attended a survey as a child also attended the 1994/95 follow-up survey as a young adult and it is also possible to access their 1980-2010 hospital admissions. Many diseases have their origins in childhood and it is important to identify early indications and risk factors for diseases that are common in adults.

Outline: This project will investigate childhood predictors of adult health based on two independent community cohorts of school children surveyed in 1970 (birth year 1955-1964, n=1463) and 1983 (birth 1967-1976, n=1509) with follow-up data from the 1994/95 survey (799 from 1970 cohort, 615 from 1983 cohort) and hospital admissions when they were aged 25-44 years for the 1970 cohort and when aged 25-34 years for the 1983 cohort.

The project will involve a literature review to explore the data and define specific hypotheses, followed by the development, preparation and submission of an application to Busselton Population Medical Research Institute and UWA Human Research Ethics Committee. Finally, the student will analyse data, compile results and prepare a report/dissertation and manuscript for publications.

This project is suitable for a student with an understanding of the epidemiology of common chronic diseases and a good understanding of biostatistical regression methods (eg from PUBH8769).
Physical Activity in the Early Years*
Supervisors: Asst/Prof Hayley Christian, Prof Fiona Bull (Centre for the Built Environment and Health (CBEH)) & W/Prof Steve Zubrick (TICHR)

Background: There is growing interest in built environment interventions targeted at increasing children’s physical activity due to their potential reach and impact on the health and well-being of future generations. In the last decade there has been a 20% increase in the number of 0-4 year olds in WA with 63% of 2-3 year olds attending some type of child care. This is where children spend a large part of their time and is an important setting in which they should have the opportunity for physical activity and other unstructured physical play.

Outline: The main aim is to examine the influence of the physical, social and policy environment on young children’s physical activity and sedentary behaviour at childcare. It will provide information on how best to create a healthy childcare environment and will involve qualitative research with children, parents, staff and key stakeholders, objectively measuring the physical activity and sedentary behaviour of young children and the environment of childcare centres. This research will form the basis for an intervention study.

The Built Environment and Child Health and Development*
Supervisors: Asst/Prof Hayley Christian (CBEH) & W/Prof Steve Zubrick (TICHR)

Background: Research on the impact of the built environment (BE) on adult health has increased over the past decade but little is known of the effect on early child health and development. Environments supporting healthy child development may impact child health over their lifetime and are critical for overall community health and wellbeing. More evidence is needed on what is a child-friendly neighbourhood environment and what are optimal levels of BE features for early child health and development. The BE incorporates land-use patterns, density, connectivity, transportation systems, building design and social infrastructure including public open space, and creates conditions that are optimal (or detrimental).

Outline: The aim is to identify BE aspects important for child health and development. This will help fill the knowledge gap on how to design urban landscapes that are supportive of good child health outcomes. This project involves a systematic review of the relationship between the BE and child health and development outcomes. It aims to develop measures to study this relationship within different settings.
Reasons and Implications for Regional Differences in Colonoscopy in WA*

Supervisor: Prof David Preen (Centre for Health Services Research (CHSR) SPH)

Background: Colonoscopy is used to investigate gastrointestinal symptoms. In WA colonoscopy is one of the most commonly performed invasive procedures in hospital. Anecdotal observation suggests that colonoscopy is commonly used for screening and may result in lower mortality from colorectal cancer. Earlier work has shown that the use of colonoscopy for rural Western Australians is lower than for their metropolitan counterparts.

Outline: Linked hospital admission data will be used to determine regional differences in colonoscopy in WA between 1991 and 2002. The aim is to identify factors that may account for this trend of lower procedure rates in rural WA for specialised interventional procedures, which has also been shown for cataract surgery, prostate surgery and treatment of kidney stones.

Environmental Exposures and Children’s Health Study*

Supervisor: Asst/Prof Peter Franklin, (Occupational Respiratory Epidemiology (ORE) SPH)

Background: The Peel children’s health study investigates psychosocial, biological and environmental factors that may impact on child health and wellbeing. Central to the study is the recruitment of a large birth cohort of up to 1000 children and pregnant women. This provides an ideal opportunity to investigate very early (pre- and early post-natal) influences on child health.

For environmental exposures this study will focus on pollutants in and around the home. Environmental data that will be collected includes house dust, air pollutants and various biomarkers of environmental exposures. House dust will be analysed for metals, allergens and endotoxin. Air pollutants will be measured both inside and outside the home. Finally, maternal and infant blood and/or urine will be analysed for biomarkers of exposure to cigarette smoke and heavy traffic. There are a number of opportunities within the Peel study for postgraduate or honours research projects.
Uptake of Treatment for Sleep Apnea in a Community-based Screening Study of Sleep Disordered Breathing **
Supervisors: Clin/Assoc/Prof Alan James (West Australian Sleep Disorders Research Institute SCGH), W/Prof Matthew Knuiman (SPH) & Dr Michael Hunter (BHS)

Background: Obstructive sleep apnea (OSA) is characterised by recurrent episodes of partial or complete occlusion of the upper airway which can result in hypoxemia and frequent arousals from sleep. OSA is associated with impaired cognitive and psychomotor functioning, reduced quality of life measures, increased risk of injury and of hypertension, stroke, cardiovascular disease and insulin resistance.

Outline: This project will investigate the factors influencing the uptake of therapy or intervention for OSA in a semi-rural community cohort, identified from studies undertaken as part of the Busselton Health Study. The study will aim to:

- investigate whether in-home screening promotes treatment or lifestyle changes
- describe successful OSA therapy factors and the health and quality of life effects
- identify barriers to treatment

**Suitable for MPH 24 point dissertation.

Mental and Physical Health of Adults Exposed to Asbestos in Childhood*
Supervisors: Dr Peter Franklin, Dr Alison Reid (ORE) & Dr Monique Robinson (TICHR)

Background: Nearly 2,500 children lived in the blue asbestos mining town Wittenoom and had considerable blue asbestos exposure. Many contracted disease; most have seen family and friends die or be incapacitated by asbestos-related disease and are aware of their own ongoing risk of developing serious disease many years after exposure. This may impact on their psychological well being even if disease does not develop. The study aims to investigate overall mortality and morbidity, specific causes of death and disease and mental health of the former ‘Wittenoom children’.

Outline: Physical and mental health questionnaires will be sent to all available former ‘Wittenoom children’, covering physical health issues such as respiratory, cardiovascular and autoimmune disease and mental health issues such as depression, anxiety and personal control feelings. Siblings who did not live in Wittenoom will form a control group. Participants will be invited to take part in further psychological health assessments.
Environmental Contributors to Disease Progression in Adults with Chronic Obstructive Pulmonary Disease*
Supervisors: Asst/Prof Peter Franklin & Clin/Prof Bill Musk (ORE) & Prof Grant Waterer (School of Medicine and Pharmacology RPH Unit)

Background: Air pollution may be an important trigger for exacerbations of disease in patients with chronic obstructive pulmonary disease (COPD). Two of the most important contributors to poor air quality are traffic (outdoor air pollution) and unflued gas heaters (indoor air pollution).

Outline: The COPD-linkage program is a community based, chronic disease management program with over 500 patients involved. All patients have full lung function testing, walk testing, quality of life assessment and medical review at entry into the program, and repeat spirometry and walk testing at three-monthly intervals. The aim of the study is to determine potential exposure to indoor and outdoor air pollution and the extent that these exposures can contribute to disease progression in these patients.

Lung Function Decline in Asbestos Exposed Individuals; Relationship with Radiological Abnormalities*
Supervisors: Asst/Prof Peter Franklin & Clin/Prof Bill Musk (ORE)

Background: Exposure to asbestos is a cause of asbestosis and of a number of benign radiographic pleural abnormalities such as pleural plaques, thickening and effusions. Asbestosis is associated with impaired pulmonary function but the effect of the other abnormalities on pulmonary physiology has not been fully established. The aim of the proposed study is to assess the relationship between radiographic abnormalities, with and without disease, and pulmonary function in asbestos exposed cohorts.

Outline: This study is based on analyses of over 20 years of existing data from the ongoing Asbestos Review Program (ARP) participants. Analyses will focus on lung function changes prior to and after the development of radiographic abnormalities. Based on chest x-rays, individuals will be categorised into four groups: asbestosis, diffuse pleural thickening, pleural plaques or no radiographic abnormalities. Both cross-sectional and longitudinal analyses will be conducted.
Child Health and Dog Ownership*
Supervisor: Asst/Prof Hayley Christian (CBEH)

Background: Physical inactivity and rising levels of overweight and obesity are a public health concern. Dog ownership is associated with higher levels of physical activity in adults but few studies have examined the physical, social and emotional health benefits associated with dog ownership in children.

Outline: The study aim is to examine the association between dog ownership and physical activity, sedentary behaviour and overweight/obesity in children. The relationship between family dog ownership and dog-facilitated physical activity from active play with a family dog or walking with a dog will be examined for different child age groups (e.g. early years/primary school/adolescence). The influence of socio-demographic, social, physical and environmental factors will be considered. There is scope for qualitative research with parents and children on the motivators and barriers to dog walking and dog-centred play, as well as intervention research to determine strategies for improving the child health benefits of family dog ownership.

The Social and Community Health Benefits of Dog Ownership*
Supervisors: Asst/Prof Hayley Christian & Assoc/Prof Lisa Wood (CBEH)

Background: Pet ownership is associated with higher self esteem and decreased loneliness, social isolation, stress and depression. Pet benefits are seen at the individual, family and community level. Further study of the links between dog ownership and social and community health is needed, as well as investigation of the mediators of these relationships.

Outline: The project aims to examine the association between dog ownership, dog walking and measures of community health and social capital and cohesion. Data from the RESIDential Environments (RESIDE) and Dogs And Physical Activity (DAPA) projects data will be used to explore the effect of acquiring or losing a dog on social and community health outcomes. There is scope to also conduct qualitative research with community groups.
Public Risks From and Management of Fire-Damaged Asbestos Structures*
Supervisors: Assoc/Prof Alison Reid, (ORE) Assoc/Prof Jane Heyworth (SPH) & Mr John Howell (Environmental Health Directorate, Department of Health)

Background: Asbestos was extensively used in building until the mid-1980s. Most houses of this period contain asbestos. The release of asbestos fibres when such buildings are disturbed poses a potential risk to the public. Fire damage to asbestos differs from other forms of physical damage in that explosive breakage occurs during fires as well as powerful air movements and physical changes to the mineralogical form of the asbestos. There is a need to better assess the risks for proper management strategies to be developed including dealing with community perceptions of the risks.

Outline: A thorough literature review will be undertaken including accessing records and reports and there will be an opportunity to conduct interviews and seek expert information. Analysis of held samples of fire damaged asbestos will be managed and surveys conducted of the asbestos contamination from any fires that occur during the lifespan of the project. Outcomes would include conclusions as to the qualitative risks to the public as the result of a range of typical fire events and recommendations on how these risks would be best managed. Ideally, guidelines for the management of these risks would be developed with a view to them being implemented in the State. Some background in physical sciences such as chemistry may be an advantage.

Topics in Health Economics****
Supervisor: Prof Elizabeth Geelhoed (SPH)

There is the opportunity to undertake honours in the area of health economics. Please make an appointment to see Professor Elizabeth Geelhoed to discuss potential projects in this area.

Contact details:
Prof Elizabeth Geelhoed
Tel: 6488 7129 Fax: 6488 1188
Email: Elizabeth.Geelhoed@uwa.edu.au

****Suitable for Honours project
Measles Elimination in Europe and Western Pacific Regions: Prospects and Challenges *
Supervisor: Prof Niyi Awofeso (SPH)

Background: Measles is a highly contagious viral disease, preventable by immunization and affecting mostly children. Most people recover in 2–3 weeks. However, serious complications can occur including blindness, encephalitis, severe diarrhoea and pneumonia, particularly in those malnourished or with reduced immunity. In 2005, the World Health Organization (WHO) set a target date of 2012 for regional measles elimination, recently reset to 2015. Key strategies include very high (≥95%) vaccination coverage, high-quality case-based measles surveillance, and access to an accredited measles laboratory network for case testing and genotype identification. While some remarkable gains have been made, challenges and outbreaks persist.

Outline: Designed for students interested in adopting Systems Thinking approaches to public health issues, the study entails developing an evidence base for measles immunization progress and obstacles. Practical strategies will be formulated for nations in the two WHO regions for achieving (or getting closer to) their respective measles elimination targets.

Assessment of Community Noise Concerns in Suburbs of Perth *
Supervisors: Prof Jane Heyworth (Environmental Epidemiology (EE) SPH) & Assoc/Prof Alison Reid (Centre for Medical Research/ORE)

Background: Noise is a health issue that is increasingly becoming one of community concern. Unwanted noise impacts on quality of life by disrupting individual activities including concentration, relaxation and sleep. However there are limited recent data on the extent to which people are concerned about noise and whether this varies by source.

Outline: This project will include a review of the health effects of noise and collation of existing data on noise levels across Perth and noise annoyance in Australia. In addition, a noise questionnaire will be developed and used to survey residents in selected suburbs across Perth. The survey will address main sources of noise in the community and the extent to which these impact on annoyance, quality of life or self-reported health effects.
Australian Aboriginal Pharmacopoiea - *Duboisia myoporoides*
Supervisor: Prof Niyi Awofeso (SPH)

Background: Commonly known as Soft Corkwood, *Duboisia myoporoides* is an alkaloid-rich Indigenous Australian herbal medicine whose leaves have been harvested commercially for the extraction of scopolamine, often used for motion sickness. Scopolamine is a highly toxic drug and is usually prescribed in very small dosages. Prior to colonialism, Indigenous Australians applied corkwood-derived scopolamine’s neurological effects for hunting animals. It was also reportedly used in the treatment of gastric ulcers. *D. myoporoides* is probably the most important of the Australian native medicinal plants.

Outline: This study is designed for students interested in Australian Indigenous herbal medicine as well as the processes for transforming traditional therapies and herbs into mainstream chemotherapy. Topics to be covered include Indigenous medicine in Australia, pharmacology, events which led to the ‘discovery’ of *D. myoporoides* by European scientists during World War 2, and current uses of corkwood in modern medicines.

Evaluation of Rottnest Island’s Sustainable Development Projects*
Supervisor: Prof Niyi Awofeso (SPH)

Background: Rottnest Island (RI) is one of the top 10 tourism destinations in WA. The 2009-2014 management plan places high priority on sustainable development which “meets the needs of the present without compromising the ability of future generations to meet their own needs.” The Development Planning Guidelines state “all proposals for development on Rottnest Island must demonstrate how the development is environmentally, socially and economically sustainable.” Over the past decade major development projects have been introduced but are yet to be evaluated.

Outline: This project aims to evaluate three sustainable projects on RI; (1) wind-powered electricity generation; (2) water desalination and recycling; (3) forestry regeneration. Evaluation will entail documenting progress on specified sustainable development projects in the three areas, estimating efficiency and national and international benchmarking. Authorisation to conduct this study must be secured from the Rottnest Island Authority prior to commencement.
Exploring Children's Favourite Parks: Importance of Appealing Aesthetics****
Supervisors: Dr Karen Villanueva & Ms Nicole Edwards/Ms Paula Hooper (CBEH)

Background: Childhood obesity and physical inactivity are major public health issues. Promoting active play is one strategy to increase physical activity levels. Previous studies have explored the activities of children in parks and their perceptions on appealing park attributes but few if any have investigated the attributes that actually exist. Such information would help to inform activity interventions and park design.

Outline: This project will investigate the attributes of children’s favourite parks using existing data: in 2007, 1480 Perth students completed a survey, mapping destinations they usually walked or cycled to, including local parks and their favourite park. The project involves using Geographic Information System (GIS) software and analysing audit data to explore park facilities and features. Similarities within favourite parks (e.g., playground types, lighting, other amenities), the environment around parks (e.g., busy roads, distance) and differences between other parks and favourite parks may be considered. There is scope for the student to develop project details to suit their research interests and skills.

Validating the Google Walk Score® for the Perth Metropolitan Area****
Supervisors: Ms Roseanne Barnes & Asst/Prof Sarah Foster (CBEH)

Background: Online Walkscores, allowing individuals to obtain a rating of how walkable their neighbourhood is, are now freely available globally. Few studies have validated these walkscores against walkability assessment methods that have been used in the literature and the majority of these have been US based.

Outline: A Google Walk Score® will be measured for a sample of participant addresses. These walk scores will be compared to the walkability index results measured from Landgate land use data, using ArcGIS software. The study will inform researchers of the potential to use the free, online, Google Walk Score® to obtain walkability data and highlight any nuances between the two methods. Reasons for differences found will be explored through further statistical analyses.

***Suitable for Honours or Masters project
****Suitable for Honours project
**Does the Work Environment Influence Healthy Eating and Physical Activity?***
Supervisors: Prof Fiona Bull & Mrs Gina Trapp (CBEH)

Background: The level of obesity and physical inactivity in the WA adult population are both major public health issues. Promoting healthy eating and regular physical activity are two priority targets of the State Health Department. The work, home and neighbourhood environments influence opportunities to make healthy choices. Measuring these environments is now a major field of research alongside assessing the importance of each of these contexts in determining health behaviours.

Outline: This project will use data collected by Project RESIDE – a six year longitudinal study of adults relocating to new neighbourhoods across metropolitan Perth. The student will use GIS to geocode participants’ worksite locations and contribute to analyses of the work environment for healthy eating and physical activity. The project will include a literature review, use of GIS software and analysis to examine the influence of workplace food environments on eating behaviour. The project will provide the opportunity to be involved as an author in the development of a journal paper relating to the results.

**Socio-economic status and equitable access to resources***
Supervisors: Asst/Prof Sarah Foster & Ms Paula Hooper (CBEH)

Background: The most disadvantaged groups have the poorest health and highest risk factor exposure. Tackling upstream environmental factors is important to minimise health inequalities, as intrinsic neighbourhood factors may disproportionately affect resident health behaviours. This resonates for socio-economically disadvantaged populations, who may be exposed to more ‘health-compromising’ retail and poorer quality public open space (POS) and lack the resources to move.

Outline: The aim is to investigate access to resources promoting healthy behaviours based on area level deprivation. Pre-existing datasets are available including the locations of retail and activity destinations in Perth (e.g. alcohol, tobacco and fast food outlets, recreation centres) and an audit of POS attributes that may promote physical activity (e.g. shade, paths, amenities). The project will involve a literature review, data analyses examining different access to resources by neighbourhood SES, and the opportunity to develop a journal paper based on the research findings.
Perceived Playground Risks – What is the Evidence?*
Supervisors: Rsch/Assoc/Prof Lisa Wood & Rsch/Asst/Prof Karen Martin (CBEH)

Background: Restrictions in children’s independence to attend local playspaces have arisen due to concerns that children are at undue risk of injury or abduction. Evidence suggests that risk and injury perceptions far exceed reality and that children are disadvantaged in leading an increasingly “cottonwool childhood”. Preliminary research indicates that playground injury rates are low and that abduction is almost always from a relative (custody issues) or known perpetrators.

Outline: This project will involve a literature review on children’s injury from playgrounds, pedestrian, cycling and other causes. Safety, injury and playground-related litigation data will be analysed, including any detected socio-economic differences. An information brochure will be developed giving evidence-based information for parents and other stakeholders to make informed decisions on real vs perceived risk and strategies to address safety issues.

Factors Influencing Survival from Colorectal Cancer*
Supervisors: Dr Terry Boyle, Prof Lin Fritschi (WA Institute for Medical Research (WAiMR)) & Assoc/Prof Jane Heyworth (EE)

Background: In WA around 200 males and 200 females died of colorectal cancer in 2006: the third highest cancer deaths in both males and females. Treatment and tumour stage are the main predictors of death from colorectal cancer. In recent years lifestyle factors (such as physical activity and diet) effects on prognosis have received some attention, but research in this area is limited.

Outline: The WA Bowel Health Study (WABOHS) was a case control study in which 918 colorectal cancer cases and 1021 age- and sex-matched controls participated, with data collected on demographic factors, diet, smoking, physical activity, occupation, alcohol and medication. The case participants were linked for follow up at the end of 2010. Treatment information will be collected where possible (about 50% of the cases). A range of factors, other than physical activity, and their impact on survival may be chosen for study.
Dexamethasone Use in Palliative Care Patients: A prospective study*
Supervisors: Assoc/Prof Rhonda Clifford (School of Biomolecular, Biomedical and Chemical Sciences (SBBCS)) & Prof Elizabeth Geelhoed (SPH)

Background: Dexamethasone is widely used to relieve suffering in palliative care patients, but evidence-based guidelines for its use do not exist. Dexamethasone can cause a significant increase in blood glucose levels, leading to adverse effects of hyperglycaemia such as confusion, polyuria, malaise or dizziness, indicating that blood glucose monitoring may be required in symptomatic patients.

Outline: The aim is to determine if blood glucose levels are significantly increased by dexamethasone, with a view to making recommendations on whether it should be best practice to monitor blood glucose levels in patients on this medication. Blood glucose levels in palliative care patients on dexamethasone therapy and experiencing hyperglycaemia will be measured and demographic data collected, including medications and medical conditions to determine if there are other factors affecting blood glucose levels. Ethics approval has been granted and field work is at Bethesda Hospital and SJOG Murdoch.

Particulate Matter in al fresco Dining Areas and Beer Gardens Before and After the Implementation of the Tobacco Products Control Amendment Bill***
Supervisor: Asst/Prof Peter Franklin (ORE)

Background: In September 2009 WA Parliament passed the Tobacco Products Control Amendment Bill 2008 (TPCAB) prohibiting smoking in all al fresco dining areas and in 50% of outdoor beer gardens attached to pubs. Airborne concentrations of particulate matter were measured in al fresco dining areas, cafes and beer gardens in the Perth Metropolitan area both before and after implementation of the TPCAB to determine if there was a reduction in exposure to particulate matter.

Outline: Monitoring for airborne particulate matter was conducted on 3 occasions in a sample of 27 venues that originally permitted smoking in outdoor areas. Measurements were collected 6 months and 1 month prior and 6 months after the implementation of the TPCAB. Global and comparative analysis of the data over the three time periods will be undertaken, with variables and covariate factors analysed.

***Suitable for 12 point project.
Topic and Issues in the Health Workforce*
Supervisor: Asst/Prof Ian Li (SPH)

Background: Workforce planning is a critical aspect of maintaining a healthy workforce. In Australia, the importance of planning for a healthy and sustainable workforce has been highlighted by the formation of Health Workforce Australia (HWA), a body dedicated to the development of workforce policy. A recent report by HWA projects a shortage of the Australian health workforce by 2025. The health workforce shortage can be attributed to a combination of demand-side factors, such as an aging population and supply-side factors, such as the aging health workforce and the trend of decreasing working hours of the health workforce (due to feminisation and work-life balance). These factors highlight the issues faced in health workforce planning and policy and mirror the challenges identified in the international literature.

Outline: Health workforce trends will be examined using a national cross-sectional dataset. Several issues relating to the health workforce may be explored. Labour market outcomes of university graduates in a health-related field of study may also be explored, as this will help direct workforce development and training.

Water Contaminants and Pregnancy: An Exposure Assessment and Biomarker Validation Study*
Supervisors: Assoc/Prof Angus Cook & Res/Asst/Prof Kimberley McAuley (Ecology and Health (E&H) SPH)

Background: Trihalomethanes (THMs) are common disinfection by-products (DBPs) produced during the disinfection of water supplies, particularly in Perth due to the high organic molecule levels in groundwater. THMs are potential risk factors for adverse pregnancy outcomes including birth defects. Exposure occurs through water ingestion, inhalation or dermal absorption through showering and swimming.

Outline: The study aims to test whether THM exposure in Perth can be modelled in view of water supply variations and uses and to evaluate the blood folate/THM exposure relationship using an interactive model. Pregnant women from two Perth regions with different THM concentrations will be studied. Absorption will be estimated via a water use diary, a questionnaire and swimming pool, tap and urine sample analyses plus blood folate levels. The analyses will inform a major NHMRC cohort study and assist development of a DBP exposure matrix superior to any currently existing for maternal populations.
Reproductive Hazards of the Workplace*
Supervisor: Asst/Prof Adeleh Shirangi (CHSR)

Background: Workplace reproductive hazards (WRH) can be chemicals, drugs, alcohol, conditions (heat, vibration, noise, radiation, long work hours, physical and psychological stress) or biological hazards. These may affect female or male reproductive systems (reproductive toxicity) and/or fetus (developmental toxicity) and can result in pregnancy delay/prevention, low birthweight/preterm, miscarriage and malformation. Short term exposures during a critical period can result in long term health effects so early risk recognition and intervention are very important.

Outline: Students will apply an established Job Exposure Matrix (JEM) to WA Data Linkage Unit data to assess occupational exposures to WRH in relation to specific reproductive outcomes such as birth defects, birth weight, preterm birth, birth complications, fetal loss, sub-fertility and hospital contact in later life. The JEM can also be applied to selected reproductive cancers, childhood cancer and child Autism. The aim is to identify occupations at risk and provide preliminary evidence for further studies taking into account more detailed parental occupational exposures.

Reproductive Health Study in Female Veterinarians*
Supervisor: Asst/Prof Adeleh Shirangi (CHSR)

Background: Veterinarians have potential exposure to known occupational hazards which can be summarised in the following general categories: physical hazards e.g. radiation and psychological stress; chemicals e.g. anaesthetic gases, pesticides and toxic drugs; and biological hazards including zoonotic diseases. Some of these are listed as teratogenic and mutagenic agents or suspected carcinogens. All may result in adverse reproductive outcomes.

Outline: A reproductive health study in a cohort of 1100 Australian female veterinarians was conducted to determine whether perceived psychological stress (work and life stress) and other occupational hazards (physical and chemical hazards) are associated with pregnancy outcomes and infertility. Students can review the relevant literature and analyse the data to determine the association of psychological stress and other hazards in relation to birth weight, gestational age, miscarriage, birth defects, menstrual dysfunction and infertility. This survey has UWA Human Research Ethics Committee approval.
Projects from the Eye and Vision Epidemiology Research Group*

Supervisors: Prof David Preen, (CHSR), A/Prof Nigel Morlet (Department of Ophthalmology, RPH) Prof Bill Morgan, (COVS/LEI) & Dr Jonathon Ng (SCGH)

Eye and vision disorders are a major cause of morbidity, with almost half a million Australians visually impaired in both eyes and over 50,000 blind. The major causes of blindness in Australians aged 40+ are glaucoma, macular degeneration, diabetic eye disease and cataract. In Australia, the total cost of vision disorders to the community was estimated in 2004 at $9.8 billion.

As a major problem in the community, eye and vision epidemiological research has the potential to significantly contribute to improving health and well-being by providing the evidence for clinical decision making and creating better policy by informing policy makers on the effectiveness of current programmes.

Interested students will play a major role by undertaking one of the many projects available and it is envisaged that students would take a primary role in preparing their work for publication.

Complications and Outcomes of Cataract Surgery

Research into cataract surgery is a major interest for the Group and has resulted in two major NHMRC grants. Data from the Western Australian Data Linkage System is used to examine the trends and major complications in cataract surgery. Potential study areas include other postoperative complications (ophthalmic such as retinal detachment and corneal decompensation or non-ophthalmic such as venous thromboembolism). Post-surgery survival can also be examined. This could have important policy implications on wait lists and on surgery benefits.

Cataract Surgery and Car Crash

Older drivers are a growing segment of the driving population. While involved in fewer crashes compared with other age groups, the crash risk is equivalent to that of young drivers considering the lower exposures. This retrospective study examines the impact of cataract surgery and visual impairment on crash risk in older drivers using linked data.
Fitness to Drive Knowledge in Eye Clinic
This project would be of interest to a student seeking survey methodology experience. It will involve the design, administration and analysis of a suitable survey to gauge current knowledge amongst eye clinic patients about fitness to drive with visual impairment and advice provided by health care professionals.

Glaucoma Epidemiology
Using newly available linked Commonwealth pharmaceutical data, it will be possible to conduct large studies into glaucoma on the entire WA population. Potential projects using these data include trends in glaucoma medication use, trends in glaucoma surgery, persistency with medication use, medication interactions and side effects.

Systematic Review on the Risks for Postoperative Endophthalmitis
Postoperative endophthalmitis is uncommon but one of the most serious and potentially sight-threatening complications of cataract surgery. Many studies on risk factors are small, resulting in inconsistent conclusions. This project would involve a literature review and synthesis of the risk related evidence using pooled data and meta-analysis.

Seasonality and Retinal Detachment
A number of reports suggest an increased risk of retinal detachment during winter. The WA Data Linkage System can be used to identify all cases of retinal detachment in WA since 1980. This would provide a large population-based cohort over an extended time period with which to test the hypothesis that retinal detachments have a seasonal basis, using time-series analysis.
Epidemiology of Blinding Eye Diseases
The major causes of blindness in Australia are glaucoma, age-related macular degeneration and diabetic eye disease. This is a major new project seeking first to validate the coverage and accuracy of the current blind registry data. It will then be possible to carry out a comprehensive epidemiological study into blindness in WA. It is also proposed to compare the utilisation level of health service to determine the economic cost of blindness in the health system.

Post-traumatic and Endogenous Endophthalmitis
Endophthalmitis is a serious infection of the internal ocular structures. Most cases occur after surgery but endophthalmitis can also occur after penetrating eye injuries or with systemic infection. This project involves the clinical epidemiology description of a cohort of patients with either post-traumatic or endogenous endophthalmitis, undertaking a review of patient records and performing descriptive and basic statistical analysis.

Community Approaches to the Conservation of Remnant Bush Areas in the Perth Metropolitan Area*
Supervisor: Dr Sue Bailey (Social Work and Social Policy (SWSP))

Background: Awareness is increasing on the importance of remnant bush areas for maintaining biodiversity as well as enhancing a sense of community. Trigonometric Park is a 2.2 hectare remnant bush area on a limestone outcrop in Duncraig and is the highest point within the City of Joondalup (CoJ). The site is classified by the WA Government as a priority to conserve. A community group “Friends of Trigonometric Park” (FOTP) has recently formed to tackle conservation work in concert with the CoJ.

Outline: This project is an exciting chance for a student to be involved in research with community members, the City of Joondalup, UWA and other external funding bodies. FOTP have offered suggestions for projects including; the development of a management plan; assessing community and health benefits of interaction in a Friends group; community education; flora and fauna surveys; seed collection, germination and planting; and a student’s own project of interest. This project will provide experience in community practice in the conservation context with an interested and engaged community group.
State-of-the-Art Cardiovascular Research*
Supervisors: W/Prof Matthew Knuiman, Assoc/Prof Tom Briffa, Asst/Prof Frank Sanfilippo & Asst/Prof Siobhan Hickling

Background: Cardiovascular disease (CVD) is costly and prevalent worldwide. Monitoring and reporting trends in CVD is a national priority health area and is a driver of health policy aimed at improving its healthcare delivery and outcomes.

Outline: Various projects in specific areas are offered. These will involve examining the trends and models of care in CVD prevention, treatment and management and may consider clinical epidemiology, health outcomes, pharmacotherapy, prevention, cost-effectiveness and community engagement. A range of areas include:
- Atherothrombotic disease across the vascular territories
- Monitoring coronary artery disease
- Busselton Health Study
- Management of coronary heart disease in the Indigenous population
- Diabetes and CVD
- Peripheral arterial disease
- Health in Men Study
- Risk Factor Prevalence Study
- Coronary artery revascularisation
- Chronic kidney disease progression and cardiovascular diseases

Topics in Health Promotion****
Supervisor: Assoc/Prof Colleen Fisher (SPH)

There is the opportunity to undertake honours in the area of health promotion, particularly in the areas of prevention and early intervention in family and domestic violence.

Please make an appointment to see Associate Professor Colleen Fisher to discuss potential projects in this area. colleen.fisher@uwa.edu.au
Tel: 6488 2193

****Suitable for Honours project.
Physical Activity Intervention Targeting Dog Owners*
Supervisors: Asst/Prof Hayley Christian & Assoc/Prof Lisa Wood (CBEH)

Background: There is growing awareness about the importance of dog ownership to physical and emotional human health. Almost half of all Australian households own a dog. Dog owners do more walking and physical activity compared with non-owners. Dog walking has been shown to be a potentially viable strategy for increasing the proportion of the community who are sufficiently active for health benefit.

Outline: This project will involve intervention research to examine the potential of dog walking to contribute to owners overall physical activity and increase the proportion of people who meet the recommended level of physical activity. The project is likely to have significant implications for health promotion policy and practice and will involve working closely with industry partners.

Mental Health Well-Being and Field Education*
Supervisors: Asst/Prof Katrina Stratton & Dr Susan Bailey (SWSP)

Background: Field Education is a core part of professional education across a range of disciplines, including social work, medicine, nursing, dentistry, teaching, occupational therapy and business. Field Education presents a range of challenges and opportunities for students. The educational, role and time demands of placement mean students are at risk of experiencing stress and vulnerability. The Field Education Team, Discipline of Social Work and Social Policy, in 2011 ran a pilot project to develop mental health wellbeing seminars for students on placement.

Outline: Based on the success of the pilot project, opportunities exist for expanding the use of mental health wellbeing concepts and strategies across disciplines, and outward to other stakeholders in the teaching and learning community such as placement organisations and supervisors. There are also opportunities to expand these to industry. A range of evaluative and action research opportunities exist in developing these streams.
An Action Research Assessment of the Work of Remote Community Child Protection Workers*
Supervisor: Dr Susan Young (SWSP)

Background: Remote Community Child Protection Workers (RCCPW) have been employed in remote locations of WA for eight years to work with communities and Police to help keep children and women in Indigenous communities safe. The Department for Child Protection instituted this programme following the Gordon Inquiry in 2001 which found a lack of coordination between service providers working with Indigenous Communities. One of the responses was to co-locate Police and RCCPWs in communities. An initial evaluation was conducted in 2006.

Outline: The DCP commissioned a research activity which would work with the RCCPWs to identify the micro practices they employed in their roles. The Action Research/Action Learning project has been running for a year to identify with the workers what they consider works with the communities to assist in protecting children. The project is expected to continue into 2012.

Evaluating Full Service Schools*
Supervisor: Dr Susan Young (SWSP)

Background: Full Service Schools (FSS) provide a range of health and welfare related services in or linked with schools located in low socio-economic neighbourhoods. The aim is to address some of the health and welfare needs of children and their families to enable them to take full advantage of their education. FSS are new to WA, having been adopted in their contemporary form in the US and the UK over the past two decades. In WA there are two fully functioning FSS with increasing interest being shown by the Education Department.

Outline: Over the past five years a number of programmes have been instituted in FSS which are now beginning to be evaluated. A range of opportunities exist for evaluation.
Developing an Understanding of Living Apart Together (LAT) Relationships*  
Supervisor: Asst/Prof Karen Upton-Davis

Background: LAT relationships (where those in a romantic relationship keep separate addresses) are an increasing relationship form. According to national data there are over 1.1 million people Living Apart Together in Australia. This represents 24% of the supposedly single adult population. Among the reasons for making an active choice to LAT is the autonomy, reduced risk of asset depletion if the relationship breaks down and enhanced ability to manage relationships with others such as children, parents and friends without the intrusion of introducing a new live-in person to the household.

Outline: Exploring the implications of LAT for the individuals involved, for their relationship with each other and for friends and family are possible research directions. LAT also has social policy implications in areas such as health, housing and the environment as care-giving arrangements alter and greater physical resources are required to sustain separate households. Study in any of these areas would make an important contribution to understanding a relationship form that has ramifications for society as well as for the individual.

Long Term Trends in Avoidable Harms and Injuries to Children and Responses to Them*  
Supervisor: Assoc/Prof Maria Harries, (SWSP)

Background: Child protection data is collected routinely in all jurisdictions and began electronically in WA in 1989: a 50-field database was built on the differentiation of reports about ‘harm’ (Child Maltreatment Allegations) and about ‘concerns’ (Child Concern Reports) – a distinction that started to be applied in child protection policy and practice in WA in 1995. The database enabled the linking of reports, decisions, responses and events that followed including outcomes: it was an ‘international first’.

Outline: Using the comprehensive WA database from 1990-2005, the authors are analysing core elements of data about all 100,707 reports about 55,785 children in adversity that were made to the statutory authority during this time. The aim: to gain an overall picture of allegations, substantiations, harms and outcomes to provide a picture of changing practices in child protection, with particular attention to Indigenous children. The findings will be of relevance to child protection services in WA, nationally and internationally.
Male Victims of Intimate Partner Violence*
Supervisor: W/Prof Donna Chung (SWSP)

Background: Gender symmetry amongst victims of intimate partner violence (IPV) is much debated. Research generally shows that it is a gendered phenomenon where the vast majority of victims are female but this has been disputed on ideological grounds and using a range of measures. This study will critically review how the concept of ‘male victim’ has been defined and applied in various research contexts and qualitatively examine how similar or different the experiences and effects are for male victims of intimate partner violence compared to that documented for female victims of IPV.

Outline: This exploratory study funded by the British Academy examines two key aspects. It is a review of the various methodological approaches used in the study of IPV and how the definitions, measurements and sampling procedures used can lead to such wide ranging and contradictory findings. There will be data collected from professionals working with male victims and interviews with male victims to gather information about their experiences, help seeking and effects of IPV on their lives.

Primary Prevention of Violence Against Women through Workplace Health Promotion*
Supervisor: W/Prof Donna Chung (SWSP)

People spend much of their adult life in the workplace. Social and cultural values are often reflected and transmitted there: they also provide a site to promote attitudinal change. This study examines how violence against women impacts on the workplace, from workplace sexual harassment, sexist attitudes and behaviour through to employees affected by violence in their personal lives, as perpetrators or victims. Individual employers are promoting domestic violence as unacceptable and providing support to employees but this tends to be piecemeal and it is unclear what works or is promising practice.

Outline: This VicHealth funded evidence review shows the importance in workplace culture of diversity and inclusion to begin to prevent such violence. Approaches trialled internationally by governments, employers, agencies and trade unions are reviewed and elements of good practice noted. This is an emerging field so consideration is given to prevention approaches from other fields and how corporate social responsibility could provide support for the prevention of violence against women.
Nature Contact and Children’s Mental Health*
Supervisors: Asst/Prof Karen Martin & Assoc/Prof Lisa Wood (CBEH)

Background: Evidence suggests that contact with nature is beneficial to adults’ health and, while more scarce, research is beginning to link nature contact and children’s physical and emotional wellbeing.

Outline: This research could incorporate a cross sectional survey about the relationship between children’s mental health and time in nature. A small intervention could be developed to assess the impact of introducing increased time in nature into children’s lives (using qualitative data collected from children and parents to assist with developing the intervention).

Is Higher Physical Activity During School Breaks Related to Bullying within the Primary School Setting?*
Supervisor: Asst/Prof Karen Martin (CBEH)

Background: The research questions to be explored include: does the physical activity environment (physical, social and policy e.g. sport culture, unlimited access to sports equipment etc) impact upon bullying behaviour at school? Does less bullying occur in schools in which there is higher physical activity during school breaks or does participation in competitive sports during schools breaks support bullying behaviour?

Outline: This study would involve secondary analysis of The ACTIVE Schools Project data, which includes bullying questions within a project which explored the physical activity environment of 27 Perth primary schools and physical activity data from over 1000 students. This data is ready for analysis. Children were asked questions to ascertain their frequency of bullying and being a victim of bullying. Children also wore accelerometers to ascertain their physical activity participation for seven days. Aspects of the schools environment were also measured.
Raine Study: Cardiovascular-Metabolic PhD Projects***
Supervisor: joint Raine Study and SPH staff

Background: Launched in 1989, the Raine Study examined ultrasound imaging of 2900 pregnant women recruited at King Edward Memorial Hospital Perth, WA. Women were assessed at 18 weeks of pregnancy and again at various time points until 38 weeks gestation. Information was collected on the parents including exercise, diet, work and health. The children were assessed at birth and followed up at 1, 2, 3, 5, 8, 10, 14, 17 and the current follow up at 20 years of age, measuring height, weight, development, lifestyle habits, cardiovascular measures, medical conditions and illnesses. At each follow-up information has also been collected from the parents or primary carer.

The Raine Study has amassed one of the most unique and important collections of data in the world and is one of the few where information has been collected on the pregnant mother and subsequently the child through to adolescence and adulthood. Information collected over 20 years ago has provided a better understanding of how events during pregnancy, as well as in childhood and adolescence, affect later health and development. The Raine Study has amalgamated an extensive database on demographic, developmental, psychological, physical and many other factors around the life of children and families. It provides a unique source of information regarding complex causal pathways to health outcomes. Scientific detail from the Raine Study has also been widely used by the media.

Outline: The Cardiovascular-Metabolic group at Royal Perth Hospital has a number of studies planned examining the influence of maternal, birth, anthropometric and lifestyle factors on cardiovascular and diabetes risk factors in the Raine participants, both cross-sectionally and longitudinally. If you interested in undertaking a PhD and would like to work with the Raine Study team please contact Winthrop Professor Lawrie Beilin (92240258), Professor Trevor Mori (92240273) or Assistant Professor Rae-Chi Huang (0402 131 555) for further information. This project would be performed under joint supervision by academic staff affiliated with the Raine Study and from the School of Population Health.

***Suitable for PhD project.
Building Capacity in Palliative Care Clinical Training*
Supervisor: Assoc/Prof Rosemary Saunders (SPH)

Outline: The project involves clinical placement of health professional students within an inpatient palliative care unit and a community palliative care service to provide them with an opportunity to work within a multidisciplinary team, participate in care delivery to a range of palliative patients, and experience assessment, symptom control and care in the terminal phase of life (in accordance with Australian National Palliative Care Guidelines).

Both projects are funded by Health Workforce Australia. There are several studies that could be linked to either project. Please contact Rosemary Saunders to discuss potential projects and supervisors: Phone: +61 8 6488 8108

Beyond the Teaching Nursing Home*
Outline: This Community Partnership of Learning and Care project involves development of an unoccupied nursing home, co-located with an existing residential aged care hostel and independent living units, to create a clinical learning environment for health professional students and aged care staff. This community of learning will have a focus on evidence based practice and care, by engaging people residing at the facility and the wider local community in health professional education.

Topics in Labour Economics*
Supervisor: Asst/Prof Ian Li (SPH)

Studies in the exciting and dynamic area of labour economics deal with issues of skills utilisation, training and workforce development. The research projects in this area may be focused on the health sector, such as health workforce development, or look at health-related workforce issues. Please contact Ian Li to discuss potential projects or for more information.

Contact details:
Assistant Professor Ian Li
Tel: 6488 1295
ian.li@uwa.edu.au
Research Groups and Centres at SPH
Our research strengths include a strong evidence-based approach to services and health program evaluation. We have a proven record of achievement in preventative, clinical and occupational epidemiology and have been instrumental in setting world standards in population health databases through record linkage.

- Centre for Health Services Research: A leader in its field through its work with linked medical and health data and the evaluation of health services, patient safety, surgical care and pharmaco-epidemiology.

- Centre for the Built Environment and Health: A multi-disciplinary centre of policy-relevant research that builds capacity and influences planning and urban design policy and practice, to create healthy and sustainable communities.

- Occupational Respiratory Epidemiology: Investigates cancer and respiratory disease outcomes due to occupational and environmental exposures, in particular asbestos, silica and the aluminium industry.

- The Cardiovascular Research Group: Aims to reduce the burden of disease through research into trends and determinants of acute events, treatment, management and outcomes.

- Environmental Epidemiology: Investigates cancer causes and methods of prevention including protection from exposure to carcinogens.

- Busselton Health Study: Manages and maintains the Busselton Health Study database, one of the longest running epidemiological studies in the world.

- Ecology and Health: Investigates the relationship between ecosystem health and human health.

- Women’s Health: A particular focus on reproductive health, childbirth and chronic illness including cancer and the health impacts of caring.

- Aged Care Research and Evaluation: Evaluating the Commonwealth-funded Aged Care Assessment Program (ACAP) in WA.

- Nursing Research: Undertaking key research in maternal and child health, mental health, acute care nursing practice and nurse-sensitive outcomes.

- Social Work and Social Policy: Covering a broad range of issues including child and family welfare, community practice and child protection, early childhood trauma, adolescent suicides and Indigenous and cross-cultural issues.

There are opportunities to undertake research in most fields in the School of Population Health. Contact us - we’ll put you in touch with the right supervisor for your interests: darcy.holman@uwa.edu.au